



## Design Options for a Forest Carbon Legal Framework for Lao PDR: Drawing lessons from across the globe

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## ACRONYMS

AAU	Assigned Amount Unit, carbon credit equal to one tCO <sub>2</sub> issued to Annex B countries under the Kyoto Protocol
ACR	American Carbon Registry
AFOLU	Agriculture, Forestry and Other Land Use
AR	Afforestation and Reforestation projects
BAPPENAS	National Development Planning Agency, Indonesia
BNDES	Brazilian Development Bank
CBM-CFS3	Carbon Budget Model of the Canadian Forest Sector
CCBA	Climate, Community and Biodiversity Alliance Standard
CCRA	Climate Change Response Act 2002, New Zealand
CCX	Chicago Climate Exchange
CDM	Clean Development Mechanism under the Kyoto Protocol, UNFCCC
CDM EB	CDM Executive Board
CECLIMA/SDS	State Center for Climate Change, State of Amazonas, Brazil
CER	Certified Emissions Reductions under the CDM
CIFOR	Center for International Forestry Research
CLIPAD	Lao-German Program on Climate Protection through Avoided Deforestation
CRT	Climate Reserve Ton, carbon credit equal to one tCO <sub>2</sub> issued by the Climate Action Reserve to verified emission reductions from approved offset projects
CSIRO	Commonwealth Scientific and Industrial Research Organisation, Australia
DAFO	District Agriculture and Forestry Office, Lao PDR
DEGRAD	System to identify areas in process of deforestation, Brazil
DETER	Real Time Deforestation Detection System, Brazil
DETEX	System for detection of selective logging activities, Brazil
DLMA	District Land Management Authority, Lao PDR
DNA	Designated National Authority
DNPI	National Climate Change Council, Indonesia
DOE	Designated Operational Entity
DOF	Department of Forestry, Lao PDR
DOFI	Department of Forestry Inspection, Lao PDR
ER	Emissions Reductions
ESIA	Environmental and Social Impact Assessment
FAS	Fundação Amazonas Sustentável, State of Amazonas, Brazil
FCPF	World Bank's Forest Carbon Partnership Facility
FIMP	Forest Information Management Program, Lao PDR
FIPD	Forest Inventory and Planning Division, DOF, Lao PDR
FLEGT	Forest Law Enforcement, Governance and Trade legislation, European Union
FPIC	Free Prior and Informed Consent
FRDF	Forest Resource Development Fund

FSI	Forest Survey of India
FSIP	Forestry Strategy Implementation Promotion Project, Lao PDR
FullCAM	Full Carbon Accounting Model, Australia
GCF	Governors' Climate and Forests Task Force
GHG	Greenhouse Gas
IBAMA	Brazilian Institute of Environment and Renewable Natural Resources
IFM	Improved Forest Management
INPE	Brazilian National Institute of Space Research
IPCC	Intergovernmental Panel on Climate Change
ITL	International Transaction Log
JICA	Japan International Cooperation Agency
KfW	German Development Bank
Lao PDR	Lao People's Democratic Republic
ICER	Long-term certified emission reductions
LMRP	Lao-German Land Management and Registration project
LOI	Letter of Intent
LUCAS	Land Use and Carbon Analysis System, New Zealand
LUCAS	Land Use and Carbon Analysis System, New Zealand
LULUCF	Land Use, Land Use Change and Forestry
LUP-LA	Land Use Planning and Land Allocation
MAF	Ministry of Agriculture and Forestry
MOIC	Ministry of Industry and Commerce, Lao PDR
MRV	Monitoring, Reporting and Verification System
MtCO <sub>2</sub>	Million tonnes of carbon dioxide
NAFES	National Agriculture and Forestry Extension Service, Lao PDR
NAFRI	National Agriculture and Forestry Research Institute, Lao PDR
NAI	National Afforestation Inventory
NCAS	National Carbon Accounting System, Australia
NCAT	National Carbon Accounting Toolbox, Australia
NEC	National Environment Committee, Lao PDR
NFCMARS	National Forest Carbon Monitoring, Accounting and Reporting System, Canada
NFI	National Forest Inventory, Brazil
NGO	Non-governmental organization
NLMA	National Land Management Authority, Lao PDR
NPA	National Protected Area
NTFP	Non-timber forest product
NUOL	National University of Laos
NZ ETS	New Zealand Emissions Trading Scheme
NZEUR	New Zealand Emissions Unit Register
NZU	New Zealand Unit, domestic carbon credit equal to 1 tCO <sub>2</sub> issued under the NZ ETS
PAFO	Provincial Agriculture and Forestry Office, Lao PDR
PAS	Sustainable Amazon Plan
PDD	Project Design Document
PES	Payments for Environmental Services

PLMA	Provincial Land Management Authority, Lao PDR
PLUP	Participatory Land Use Planning and Land/Forest Allocation at village and village development cluster level
PPCDAM	Plan for Prevention and Control of the Legal Amazon Deforestation, Brazil
PRODES	Legal Amazon Deforestation Monitoring Program, Brazil
QUEIMADAS	System for monitoring forest fires, Brazil
RED	Reducing Emissions from Deforestation
REDD	Reducing Emissions from Deforestation and Forest Degradation
REDD+, REDD-plus	Reducing Emissions from Deforestation and Forest Degradation, Conservation and Enhancement of Forest Carbon Stocks, and Sustainable Management of Forest
REL	Reference Emission Level
RFI	Request for Information platform, Markit Registry
RMU	Removal Units. Carbon credits equal to one tCO <sub>2</sub> e issued under the Kyoto Protocol to developed countries for net removals by sinks from LULUCF activities
R-PP	REDD Readiness Preparation Proposal
SBSTA	Subsidiary Body for Scientific and Technological Advice, UNFCCC
SFB	Brazilian Forest Service
Sida	Swedish International Development Cooperation Agency
STEA	Science and Technology Agency
SUFORD	Sustainable Forestry and Rural Development project - Government of Laos, World Bank and Government of Finland
tCER	Temporary certified emissions reductions
tCO <sub>2</sub>	Metric tonnes of carbon dioxide
tCO <sub>2</sub> e	Metric tonnes of carbon dioxide equivalent
UKP4	Development Monitoring and Control Unit, Indonesia
UNFCCC	United Nations Framework Convention on Climate Change
UNREDD	United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries
VCS	Voluntary Carbon Standard
VCU	Voluntary Carbon Unit, carbon credit equal to one tCO <sub>2</sub> issued by the Voluntary Carbon Standard to verified emission reductions from approved offset projects
WCS	Wildlife Conservation Society
WREA	Water Resources and Environment Administration, Lao PDR
WWF	World Wide Fund for Nature



## EXECUTIVE SUMMARY

This study looks at the possible design options that could form the basis of a legal framework for carrying out forest carbon activities and investments in Laos by both public and private sector actors. It provides an overview of the features of forest carbon schemes across the globe and examines Laotian forest-related legislation and implementation. It then suggests possible REDD+ options for Laos consistent with and building on both current Laotian policies and international thinking. Items investigated include scope and eligibility requirements, linking sub-national activities to national level accounting, institutional arrangements, MRV systems, and carbon registries.

Current UNFCCC REDD proposal and CDM AR project requirements were assessed, along with a mix of practical national, sub-national and project-based approaches across compliance and voluntary markets. These include Brazil's Amazon Fund and policies of the State of Amazonas, Indonesia's evolving policies, New Zealand's ETS, and the Climate Action Reserve of North America. The evolving national forest carbon MRV systems of Australia, Canada and India were also examined.

In three years **Brazil** developed important components of a nationwide REDD+ framework including establishing an effective MRV system, setting up the Amazon Fund to receive payments for performance, building institutions and involving local communities through pilot projects. Annual donor contributions into the Amazon fund are for carbon gains associated with verified reductions in deforestation below a rolling average baseline. The system is linked to high-quality deforestation monitoring via remote sensing and real-time enforcement and control on the ground. It does not link emissions reduction activities and actors to direct rewards and incentives. Key policy measures put into place to address the deforestation drivers were creation of new protected areas, regularization of timber production through forest concessions and blocking of agricultural credit to non-compliant landholders.

The **State of Amazonas in Brazil** adopted a law that supports the private sector and state government agencies to carry out GHG emissions reduction projects and sell the credits in international offset markets. Unlike the Amazon fund, the Amazonas state programs and projects directly reward communities on the ground for stopping deforestation. Funding support is received from the state, the private sector and the Amazon fund; and direct financing from voluntary carbon markets for actual emissions reductions. Brazil thus has various independent overlapping legislations at the national and state levels allowing different activities and financing mechanisms and needs to reconcile national and sub-national activities to avoid **double counting of emissions reductions**.

Numerous bilateral, NGO and private sector REDD+ projects are in progress on the ground in **Indonesia** but implementation is constrained by unclear regulations and markets combined with high costs of methodology development. Norway's recent pledge to contribute one billion US\$ based on Indonesia fulfilling a list of required policy measures has set off a flurry of activity at the national level. A draft National REDD+ strategy has been prepared. Indonesia will likely allow for all possible REDD+ activities by all forestry tenure-holders in the entire range of forest types. The country aims for national-level accounting and subnational implementation, with

financing from both fund and market-based approaches. Supportive policy reforms are planned in the following areas: land use planning, forest area stabilization and forest administration, governance, agriculture and mining sector. Stakeholders are to be involved using the concept of Free Prior and Informed Consent (FPIC).

**New Zealand**, an Annex 1 country to the Kyoto Protocol is obliged to account for its GHG emissions from deforestation of forests established before 1 January 1990 and for any net carbon sequestration change as a result of afforestation or reforestation since 31 December 1989. Based on the assessment at the end of the first commitment period, New Zealand would receive carbon credits (RMUs) for any net emissions reductions from 2008 to 2012. New Zealand passed on these Kyoto obligations and benefits to private forest landholders by including them in its National Emissions Trading Scheme on a mandatory (owners of pre-1990 forests) or voluntary (owners of post-1989 forests) basis. Penalties are included to ensure permanence.

To encourage private reforestation activities, the scheme issues domestic credits (NZUs) prior to any available RMUs issued to New Zealand under the Kyoto Protocol after 2012. NZUs are backed by Kyoto-compliant AAUs and are thus convertible and tradeable in the international compliance market. The government ultimately takes responsibility for remaining shortfalls or reversals. New Zealand's Land Use and Carbon Analysis System (LUCAS) system provides information for national-level reporting on afforestation, reforestation and deforestation removals and emissions, and simultaneously supports the ETS by providing high level land use data for targeted monitoring of individual participant landholdings.

**The Climate Action Reserve** is a voluntary standard for issuing carbon offset credits (CRTs) to GHG emissions reduction projects in North America. Resultant credits can be traded in the voluntary carbon markets. The Reserve has a detailed Forest Project Protocol for determining project eligibility and sequestration reversal risk, as well as monitoring, calculating, reporting and verifying GHG emission reductions and removals. Forest carbon activities included are reforestation and improved forest management on private and public lands, and avoided conversion on private lands. Natural management practices (such as native species and multiple ages) and long-term harvesting practices are favoured. Projects have to show clear ownership of land and carbon and fulfil numerous other additionality criteria. Permanence of credits is required for 100 years and projects have to compensate for reversals. The Reserve also maintains a buffer pool for reversals due to unavoidable causes.

**Lao PDR** has indicated that it is open to the range of possible REDD+ activities; to allowing sub-national activities within a national accounting system; to alternative financing mechanisms, and to both public and private actors implementing and participating in REDD activities. Lao's evolving **state Production, Protection and Conservation Forest Areas** cover roughly 70% of the national territory and are to be managed for biodiversity conservation, environmental protection and sustainable low-impact production. These lands are largely in natural forest, though much of it is degraded and subject to multiple conversion and degradation pressures from large and small-scale actors. Thus there is plenty of room to implement measures to reduce emissions from deforestation and forest degradation, enhance carbon stocks and sustainably manage the areas for the stated goals.

REDD+ could be implemented area-by-area and ultimately mandated on all the state forest land categories to reduce emissions at a national scale and avoid widespread leakage. Government management agencies, NGOs and donor projects are the likely implementers of REDD+ on these lands. As per current regulations, private sector involvement is not sought after and the local community's role may mainly be restricted to participatory inventory and patrolling activities, and restoring degraded areas. The roles of these actors could be reconsidered and optimized; and environmental, social and governance safeguards put in place. REDD+ Readiness Funds could help delineate and set up the Protection, Conservation, Production, Village Forest and Household Use Areas; develop management plans and benefit-sharing schemes; and provide alternative livelihoods and other incentives to communities.

On other **forest lands under individual, community or private sector management; voluntary REDD+ activities** by the owners, managers or lessees could be promoted to provide an avenue for these groups to participate and benefit, and reduce degradation and conversion pressures on adjacent state forest lands. Natural forest management, protection and enhancement activities could be conducted in village forests. On private sector or individual lands, only plantations are permitted at the moment. The activities should not result in conversion of natural forests or other natural ecosystems. Native and mixed species plantations, longer rotations, natural management practices and low-impact harvesting practices should be favoured.

Small village forests and communal and household plantations have to be aggregated and supported for cost-effective REDD+ implementation, and monitoring and rewarding the outcomes. Satisfactory completion of the participatory land use planning and titling process, use of the FPIC concept and negotiated stakeholder agreement on rights and responsibilities are highly recommended. Legal clarification is required on the communal titling option, and whether villagers in villages within the three different state forest land categories can avail of the land lease/concession and contract farming options.

The report explores two instances where sub-national forest carbon activities coexist with higher level monitoring and accounting (New Zealand and Brazil). **A possible nested REDD+ model** that integrates the multiple crediting and financing pathways sought by Laos is presented in Section 5.4. It includes many of the pluses of the New Zealand and Brazilian models while attempting to overcome the minuses and gaps. The model allows for REDD+ actions primarily through large to small sub-national project activities on the ground with clear boundaries, ownership and management plans. It simultaneously allows for national-level actions (such as policies, capacity-building and enforcement) that will also be reflected in national-level emissions reduction performance. Different types of sub-national activities – small household landholdings to large Production Forest Areas, mandatory and voluntary actions, avoided deforestation and reforestation – can all be integrated in the model. It provides choice in carbon crediting through national protocols, and external voluntary and compliance standards as and when they emerge. It allows for financing through funds, compliance and voluntary markets and refines the fund-based approach to also reward the stakeholders on the ground for their concrete REDD+ actions. Sub-national activities and credits are effectively integrated into national-level accounting to avoid double counting.

A rigorous National REDD+ regulation for all sub-national activities and a rigorous National REDD+ Fund protocol with clear streamlined processes and safeguards are required to effectively implement the model. These should ideally be developed participatorily with national and international stakeholders and experts for credibility and widespread acceptance. Also sub-national project performance should be delinked from the risk of broader national program failure to encourage and sustain sub-national level actors and investments. Provision has to be made for permanence of emissions reductions at sub-national and national levels. The government takes responsibility and liability for overall net emissions reductions at the national level according to a pre-determined strategy.

Minimal **institutional arrangements** required to effectively implement REDD+ are forest area management/supervision agencies from national to local levels, a cross-sectoral coordinating institution to address the drivers of deforestation, a credible MRV institution that works with research and other agencies, an enforcement agency and an agency overseeing the carbon registry. The institutional roles and responsibilities should be clear and streamlined with no overlaps and effective coordination processes put in place. Transparent information and decision-making processes would help enhance credibility. As far as possible, Laos could use and strengthen existing institutions and coordination structures rather than build new institutions for REDD+ that overlap with existing ones.

Following the example of Annex 1 countries New Zealand, Australia, and Canada; and developing countries Brazil and India, Laos could gradually work towards setting up a satisfactory **Tier 3 MRV system** at the national level. The system would incorporate remote sensing, national forest inventory, and a data management and modelling system. Laos could start with aboveground biomass reporting and add the other four pools at a subsequent date. Protocols should be developed and tested for accurate, consistent and cost-effective estimates with credible independent verification. Till appropriate methodologies are developed for national-level accounting of IFM and forest degradation, the focus could be on reducing deforestation and on conservation and enhancement of forest carbon stocks. Sub-national and national level RELs and MRV should be reconciled to obtain consistent estimates. Laos could avail of any forthcoming technology and assistance from the other countries. Laos may also want to consider designing and implementing real-time deforestation monitoring for control and enforcement as Brazil has done.

Following the international examples, Laos should develop a national registry system to record and track: a) Discrete forest carbon activities on the ground and their associated carbon emissions and removals, and b) National level emissions reductions and reconciliation with sub-national project activity emissions reductions. The registry should ensure no double counting or resale of the same credits. Standard and useful features of a registry system are listed in Section 8.5. Laos could develop and manage its own national registry or use an established commercial registry service to do the same based on a cost-benefit analysis. Ideally all carbon credits (REDD, CDM and any other mechanism) arising from Laos could be recorded and tracked in the same registry.

## 1. INTRODUCTION

REDD or *Reducing Emissions from Deforestation and Forest Degradation* is a concerted international proposal for developed countries to reward developing countries, particularly tropical forest countries, for their efforts to conserve and maintain their forest resources and associated carbon stocks as a critical component of global climate change mitigation. Under the United Nations Framework Convention on Climate Change (UNFCCC), REDD has since evolved into REDD+ to additionally include Conservation and Enhancement of Forest Carbon Stocks, and Sustainable Management of Forest.

The Governments of developed countries such as Norway, Germany and Australia are already making large bilateral contributions to initial REDD+ readiness preparation phases in developing countries. Key multilateral capacity-building and early financing efforts include the World Bank's Forest Carbon Partnership Facility (FCPF) and the United Nations Collaborative Programme on REDD (UNREDD). Some countries (68 so far) have forged a REDD+ partnership<sup>1</sup> to enable effective transparent and coordinated fast action on REDD in developing countries. The Partnership is considered an interim platform and is expected to be replaced by or incorporated into a UNFCCC REDD+ mechanism once established. Recent REDD+ partnership discussions in October 2010 have been bogged down by differences on stakeholder participation and financing.

Forest carbon conservation and sequestration are also features of the earlier Kyoto Protocol under the UNFCCC. The Protocol set rules and guidelines for developed countries to report on their land use-based emissions and sinks, and allowed developing countries to develop Afforestation-Reforestation (AR) Projects under the Clean Development Mechanism (CDM). Carbon absorbed or conserved by the Land Use, Land Use Change and Forestry (LULUCF) category can earn credits and be used to meet emission reduction targets under the Kyoto Protocol. The credits can be traded in international emissions reduction markets, both Kyoto compliance and voluntary markets.

Some countries and/or sub-national provinces and states within countries are developing their own domestic and international forest carbon schemes as part of their evolving climate change-related regulations. New Zealand (linked to the Kyoto Protocol), the State of New South Wales in Australia, Brazil and the State of Amazonas in Brazil have operational schemes in place. Indonesia issued several forest carbon-related regulations and has prepared a draft national REDD+ strategy. Important attempts were made by the USA and Australia but both have since deferred or abandoned their climate change-related proposals due to domestic political discord. As part of election campaigning, the Australian government is currently proposing to allow foresters and farmers to create carbon offset credits verified to national carbon accounting standards for domestic and foreign sale.<sup>2</sup> California and other states across the USA are now trying to establish their own climate change bills which aim to include REDD+ elements. We may see more such developments across sub-national levels within other developed countries.

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<sup>1</sup> <http://reddpluspartnership.org/65226/en/>

<sup>2</sup> Australia mulls foreign-linked carbon offset scheme. 16 August 2010. Carbonpositive.  
<http://www.carbonpositive.net/viewarticle.aspx?articleID=2078>

Besides the established and proposed compliance regimes with REDD+ elements, there exists a small but growing voluntary market (40, 37 and 21 M US\$ in 2007, 2008 and the first half of 2009 respectively) for forest carbon credits across the globe<sup>3</sup>. These markets increasingly demand credible, transparent, long-term emissions reductions from forest-based activities fulfilling high quality standards and providing substantial environmental and social co-benefits. These voluntary markets are important in the absence of strong compliance regimes and may continue to persist even when such compliance regimes are established, filling in the gaps and serving as an alternative private sector mechanism. The UK recently introduced the Woodland Carbon Code<sup>4</sup> for domestic voluntary carbon sequestration projects and it is currently in the pilot phase. The code has been criticised for lack of additionality and leading to double counting since the UK already has mandatory emission reduction targets under the Kyoto Protocol. China is developing the Panda standard<sup>5</sup>, a voluntary standard for the Chinese markets with an emphasis on Agriculture, Forestry and Other Land Use (AFOLU) projects in China.

Lao PDR is considered an important potential REDD+ country given its high tropical forest cover, the high deforestation and degradation pressures and rates of the last decades, and its recent efforts to reform forest administration and follow a more sustainable resource management path. It became one of the first 14 member countries of the Forest Carbon Partnership Facility in July 2008 and submitted a REDD Readiness Preparation Proposal<sup>6</sup> (R-PP). The R-PP is currently in the last stages of obtaining approval following minor changes to be made. Laos is one of the participant countries in the World Bank's Forest Investment Programme and is also part of the interim REDD+ partnership. A multi-sectoral REDD Task Force established by the Ministry of Agriculture and Forestry (MAF) is currently coordinating REDD readiness activities and there is donor support for remote sensing, field demonstration activities, policy development and capacity building.

*The Forestry Strategy Implementation Promotion (FSIP) project* funded by JICA<sup>7</sup> and Sida<sup>8</sup> supports forest sector management and addresses key strategic priority actions including forest carbon and REDD policies. The *Lao-German Climate Protection through Avoided Deforestation (CliPAD) program* supports REDD+ policy, institutional and capacity development at national and local levels. The FSIP and CliPAD programs jointly designed this study to contribute to the legal and institutional development for REDD+ implementation in Lao PDR. This study looks at the possible design options that could form the basis of a legal framework for carrying out forest carbon activities and investments in Laos by both public and private sector actors. It provides an overview of the features of forest carbon schemes across the globe and examines Laotian forest-related legislation to arrive at possible REDD+ options consistent with and building on both current Laotian policies and international thinking.

This study focuses on some key practical aspects of potential REDD+ legal frameworks and includes an investigation of:

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<sup>3</sup> State of the forest carbon markets 2009: Taking root and branching out. 2010. Katherine Hamilton, Unna Chokkalingam, Maria Bendana. Ecosystem Marketplace. <http://www.forestcarbonportal.com/resource/state-carbon-market-report>

<sup>4</sup> <http://www.forestry.gov.uk/carboncode>

<sup>5</sup> <http://www.pandastandard.org/standard/index.html>

<sup>6</sup> Forest Carbon Partnership Facility Readiness Preparation Proposal (R-PP) for Lao P.D.R. 11 October 2010.

<sup>7</sup> Japan International Cooperation Agency

<sup>8</sup> Swedish International Development Cooperation Agency

- The scope of REDD+ activities and eligibility requirements
- Linking sub-national activities to national level accounting
- Monitoring, Reporting and Verification (MRV) systems
- Institutional arrangements, and
- Registries for forest carbon.

This work builds on the recently-completed FCPF REDD Readiness Preparation Proposal development and is a further step in the process towards building a concrete national REDD+ strategy and implementation plan.

## 2. METHODS

A desktop review was conducted of a) some existing and proposed forest carbon-related schemes and legislation at national and sub-national levels across the globe, and b) current Laotian legislation and implementation status related to the land, forests, carbon, environmental protection, biodiversity conservation, production, social issues and investment. Global forest carbon legislation was examined for the general requirements, practical design options, and trends and points of convergence. Current Laotian legislation was specifically examined for provisions that influence the scope and institutional options of any future REDD+ legal framework, i.e. to ensure that any proposed REDD+ regulatory framework options are aligned with and build on existing policies and planned activities for optimum effectiveness. Keeping in mind that forest carbon concepts and schemes are nascent and evolving around the globe, any national legal framework also needs to be flexible to adapt to and benefit from different possible future scenarios.

Current UNFCCC REDD proposal and CDM AR project requirements were assessed, along with a mix of practical national, sub-national and project-based approaches across compliance and voluntary markets, and developing and developed countries as outlined below. Cases that were most advanced in terms of detailing out options on the specific aspects of interest were chosen.

- Indonesia and Brazil are noted REDD-potential countries with evolving national and sub-national strategies and implementation at various levels.
- New Zealand is an extremely interesting and unique case in that it has incorporated avoided conversion, afforestation and reforestation activities into its national emissions trading scheme, and successfully linked sub-national activities to its national accounting system to avoid double counting and provide credible, transparent, permanent credits that are highly valued.
- The Climate Action Reserve (Reserve) of North America is a good practical working example of a voluntary carbon market standard and scheme that has successfully incorporated different forest carbon project types and continues to work on refining the fine details. Other voluntary standards such as the American Carbon Registry (ACR), Voluntary Carbon Standard (VCS), Plan Vivo, Chicago Climate Exchange (CCX), CarbonFix, Greenhouse Friendly and the latest Panda Standard of China were not investigated in this study.
- Besides Brazil and New Zealand; Australia, Canada and India also have evolving national forest carbon MRV systems with different features which have been considered in this study.

The study draws on the author's knowledge and familiarity with New Zealand's and Indonesia's forest carbon-related legislation, and the global compliance and voluntary forest carbon markets<sup>9</sup> through work done prior to this consultancy. In this study, experts in the different countries were consulted for information and updates on recent forest carbon developments. Annex 1 provides a comparison of the scope and eligibility requirements of the international forest carbon schemes.

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<sup>9</sup> State of the forest carbon markets 2009: Taking root and branching out. 2010. Katherine Hamilton, Unna Chokkalingam, Maria Bendana. Ecosystem Marketplace. <http://www.forestcarbonportal.com/resource/state-carbon-market-report>



Annex 2 contains a list of domestic legislation identified by the authors or interviewees as relevant to the different forestland categories in Lao PDR. Legislation examined in this study are indicated in the list. Key personnel from the Planning, Production, Protection and Conservation divisions of the Department of Forestry; the Research and Information wing of the National Land Management Authority; and the Luang Namtha Provincial Forestry Office provided further information on legislative intent and implementation through interviews and survey forms. The study also included interviews of representatives of non-governmental organizations (NGOs), development projects and the private sector familiar with the Lao PDR forest-related legislation, implementation status and activities on the ground.

### 3. SCOPE AND ELIGIBILITY REQUIREMENTS

Which REDD+ activities and forest management systems on which lands to address which drivers? What role for the state, the private sector both domestic and foreign, the NGOs and communities in REDD+? Are there voluntary and mandatory actions? What eligibility requirements, guidelines and safeguards? What financial mechanisms and how distributed? Annex 1 provides a comparison of the scope and eligibility requirements of the international forest carbon schemes.

#### 3.1 UNFCCC REDD-plus

As per the last draft documents and decisions<sup>10</sup> under the UNFCCC, “REDD-plus” is to include the following mitigation actions in the forestry sector by developing countries:

- a) Reducing emissions from deforestation (or Reducing deforestation),
- b) Reducing emissions from forest degradation (or Reducing forest degradation),
- c) Conservation of forest carbon stocks,
- d) Sustainable management of forest, and
- e) Enhancement of forest carbon stocks.

Actions can include both policy approaches and positive incentives. The text is still under discussion and below are some of the principles and elements being negotiated across political, environmental, social, financial, technical and other aspects. Actions should:

- Be country-driven and voluntary based on national circumstances and capabilities. Consistent with national sustainable development goals and national forest program objectives. Promote good governance. Be transparent and participatory.
- Have environmental integrity. Promote sustainable management, natural forests and biodiversity. Not include industrial-scale logging activities, conversion of natural forests to plantations, and other environmentally and socially adverse actions.
- Guarantee indigenous and local rights. Lead to poverty alleviation. Ensure equitable distribution of funds, transparent and participatory mechanisms, FPIC. Resolve tenure issues. Include assessment of socio-economic impacts on communities.
- Be supported by adequate, predictable and sustainable financing and other assistance from developed countries. Use existing bilateral and multilateral channels. Not include

<sup>10</sup> a) Decisions 1 & 2/CP.13 Bali Action Plan, Dec 2007.

<http://unfccc.int/resource/docs/2007/cop13/eng/06a01.pdf#page=3>

b) Non-Paper No. 39. Draft text for Subgroup on paragraph 1(b) (iii) of the Bali Action Plan. AWGLCA 7<sup>th</sup> session, Barcelona, Nov 2009.

[http://unfccc.int/files/meetings/ad\\_hoc\\_working\\_groups/lca/application/pdf/awglca1biiinp39051109.pdf](http://unfccc.int/files/meetings/ad_hoc_working_groups/lca/application/pdf/awglca1biiinp39051109.pdf)

c) AWGLCA 7<sup>th</sup> session report, Bangkok & Barcelona, Oct-Nov 2009.

<http://unfccc.int/resource/docs/2009/awglca7/eng/14.pdf>

d) Decision 4/CP.15, Copenhagen, Dec 2009. <http://unfccc.int/resource/docs/2009/cop15/eng/11a01.pdf#page=11>

e) AWGLCA 8<sup>th</sup> session report, Copenhagen, Dec 2009. <http://unfccc.int/resource/docs/2009/awglca8/eng/17.pdf>

f) AWGLCA 11<sup>th</sup> session, Bonn, July 2010. Text to facilitate negotiations.

<http://unfccc.int/resource/docs/2010/awglca11/eng/08.pdf>

g) AWGLCA 12<sup>th</sup> session, Tianjin, Oct 2010. Text to facilitate negotiations.

<http://unfccc.int/resource/docs/2010/awglca12/eng/14.pdf>

market mechanisms and offset mechanisms<sup>11</sup>. Provide for various approaches, flexible combination of approaches including funds and use of market mechanisms to promote actions and make them cost-effective. Some of the statements here are in direct contradiction to others, such as not use market mechanisms versus allow for a combination of approaches indicating divergent viewpoints.

- Be results-based and reduce emissions below an identified national forest reference emission level (REL) or forest reference level, or if appropriate, subnational forest reference emission levels or forest reference levels. Develop reference emission levels transparently based on historic data adjusted for national circumstances.
- Address the underlying causes across sectors. Have environmental, social and governance safeguards. Address reversal and leakage risks.

### 3.2 The Clean Development Mechanism

The Clean Development Mechanism of the Kyoto Protocol allows developing country parties to develop Afforestation and Reforestation (AR) projects as per defined criteria. Carbon sequestered by such projects can be used by developed country parties to meet their emission reduction obligations. The credits can be traded in international Kyoto compliance markets and have also been traded in available voluntary markets. Project crediting periods can be 30 years fixed, or 20 years renewable up to a maximum of 60 years.

Eligibility requirements of CDM AR projects are summarized below.

- Projects started on or after 1 January 2000 on land that was not forested (as per the submitted national forest definition) on December 31, 1989 and also on project start date are eligible. The proponent is to prove that the land was/is not in forest, the existing vegetation is not likely to grow into a forest under the current baseline activity, and that the land is not temporarily unstocked due to harvesting or natural disturbance. Proof should ideally be in the form of aerial photos, satellite imagery and maps; or data from official ground based surveys<sup>12</sup>.
- Project proponents have to demonstrate that the net carbon sequestered through the afforestation or reforestation activity is real and measurable, and additional to any sequestration that would have occurred in the baseline scenario identified. The participants could use the following approaches among others to prove additionality<sup>13</sup>:
  - a) Assess different potential options and indicate why the non-project option is more likely; and/or
  - b) Assess one or more barriers<sup>14</sup> (technological, investment, financial, institutional, site conditions, local tradition, social conditions, prevailing practice and other) facing the proposed activity; and/or
  - c) Indicate that the AR activity is not required by national legislation or that those regulations remain systematically unenforced.

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<sup>11</sup> Offset: Allowing countries or entities to use REDD+ credits to meet their emissions reduction targets

<sup>12</sup> [http://cdm.unfccc.int/Reference/Procedures/methAR\\_proc03.pdf](http://cdm.unfccc.int/Reference/Procedures/methAR_proc03.pdf)

<sup>13</sup> [http://cdm.unfccc.int/Reference/Guidclarif/pdd/PDD\\_guid03.pdf](http://cdm.unfccc.int/Reference/Guidclarif/pdd/PDD_guid03.pdf)

<sup>14</sup> <http://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-01-v2.pdf>

- The projects must use rigorous baseline and monitoring methodologies that have been approved by the CDM Executive Board (EB). Any project can submit a methodology for consideration or rely on relevant methodologies that have already been approved.
- Project proponents have to estimate, minimise and account for leakage outside the project boundary attributable to project activities.
- The CDM AR Project Design Document (PDD)<sup>15</sup> also calls for delineation of project boundary, determination of legal title to the land and carbon credits, and consideration of environmental and socio-economic impacts within and outside the project area.

At present the CDM EB issues two kinds of CDM carbon credits to address the impermanent nature of forest carbon sinks: a) temporary certified emissions reductions (tCERs) which must be reissued every five years, and b) long-term certified emission reductions (lCERs). lCERs have a 20-year life-span but must be re-verified at five-year intervals to ensure that the carbon captured by the project has not been released.

Small-scale forestry projects that generate less than 16,000 tCO<sub>2</sub> worth of carbon credits per year and are developed or implemented by low-income communities or individuals can use simplified baseline and monitoring methodologies and receive fee and tax breaks.

The Designated National Authority (DNA) has to approve the CDM projects as meeting national CDM criteria. Independent approved auditors (Designated Operational Entities or DOEs) have to validate that the PDD meets UNFCCC CDM requirements prior to registration by the CDM EB. The PDD is open for stakeholder comments at the validation stage. Subsequently, DOEs have to verify the emissions reductions reported by the project for tCER or lCER issuance by the CDM EB. The CDM EB periodically reviews and renews the accreditation of DOEs for validating and verifying CDM projects in different sectors.

### 3.3 Brazil – National level

Nearly two thirds of Brazil is covered by forest including the Amazon rainforest and around 40% of Brazil's greenhouse gas (GHG) emissions are due to deforestation. There are already around 20 REDD-related programmes underway or being prepared, 75% of which are in the Amazon region<sup>16</sup>. Together, all initiatives cover some 46 million hectares of forest on public and private land. There is currently no national federal climate change law or legal framework for REDD<sup>17</sup>. Various federal and state policies, regulations and laws lay the legal foundation for initiating REDD projects in Brazil.

Brazil is renowned for its effective Amazon deforestation reduction program<sup>18</sup>. Brazil's Action Plan for Prevention and Control of the Legal Amazon Deforestation (PPCDAM), an inter-

<sup>15</sup> CDM-AR-PDD Version 4 and CDM-SSC-AR-PDD Version 2 [http://cdm.unfccc.int/Reference/PDDs\\_Forms/PDDs/index.html](http://cdm.unfccc.int/Reference/PDDs_Forms/PDDs/index.html)

<sup>16</sup> <http://www.inwent.org/ez/articles/178230/index.en.shtml>

<sup>17</sup> Legal Frameworks for REDD: Design and implementation at the national level. 2009. John Costenbader, editor. IUCN Environmental Policy and Law Paper No. 77. IUCN, Gland, Switzerland. <http://data.iucn.org/dbtw-wpd/edocs/EPLP-077.pdf>

<sup>18</sup> Brazil national and state REDD. November 2009. Environmental Defense Fund. [http://www.edf.org/documents/10438\\_Brazil\\_national\\_and\\_state\\_REDD\\_report.pdf](http://www.edf.org/documents/10438_Brazil_national_and_state_REDD_report.pdf)

ministerial effort directly coordinated by the President's Chief of Staff, contributed significantly to reducing deforestation rates by nearly 64% between 2004 and 2009. The Brazilian National Institute of Space Research (INPE) pioneered technologies and methods to monitor deforestation at different resolutions and frequencies that has helped reporting and policy development as well as real-time enforcement and control on the ground. To bring vast areas of public land under legal management and to control forest conversion to agriculture and pasture, Brazil created new protected areas on a large-scale in active frontier areas and effectively blocked government agricultural credit (the only source of agricultural credit) to landholders who failed to register their landholdings and land use.

Lessons for REDD+ from Brazil's deforestation reduction efforts include the need for:

- a) Accurate, transparent and timely deforestation monitoring,
- b) High-level political support,
- c) Understanding and addressing the drivers of deforestation, and
- d) Professional and politically neutral enforcement agencies.

Further details on Brazil's forest monitoring programs and achievements are in Section 7.1.

Brazil had only 150,000 hectares of official production areas but was one of the world's largest timber producers due to rampant illegal logging. To control illegal logging, the Brazilian Forest Service as well as various Brazilian States have begun issuing forest concessions<sup>19</sup> and plan to issue 11 million hectares of concessions in 4-5 years. Private companies, communities, NGOs and other groups can bid for concessions for timber, non-timber forest products (NTFPs), conservation and other purposes. The objective is to achieve sustainable timber production as per laws with effective monitoring and control systems including public auditing by NGOs.

Almost 40% of the Amazon and some of the Cerrado (tropical savannah) are public lands managed by national, state, or municipal governments; either as conservation units, granted forest concessions, or officially designated indigenous lands. Private landholdings include both use areas and a proportion that has to be maintained as reserves and protected areas. According to current Brazilian law, there is no restriction for a land owner (public or private) to sell forest carbon credits<sup>20</sup>. It is presumed (but not legally explicit) that whoever owns the rights to use the land above ground would also have rights to the carbon<sup>21</sup>.

On public lands (protected areas and concessions), carbon rights remain with the state<sup>22</sup>. Indigenous communities living on indigenous lands have the right to use the natural resources which may include the sale of forest carbon credits. Private land owners have the right to use the above-ground resources on their land including carbon subject to certain limitations imposed by the Brazilian Forestry Code. However land ownership is not yet regularized in

<sup>19</sup> Brazil to auction off large blocks of Amazon rainforest for logging. 12 Oct 2010. Rhett A. Butler.

[http://news.mongabay.com/2010/1012-brazil\\_privatization.html](http://news.mongabay.com/2010/1012-brazil_privatization.html); Brazil Amazon forest to be privately managed. Oct 11 2010. <http://www.reuters.com/article/idUSTRE69A4FI20101011?pageNumber=2>

<sup>20</sup> Legal Frameworks for REDD: Design and implementation at the national level. 2009. John Costenbader, editor. IUCN Environmental Policy and Law Paper No. 77. IUCN, Gland, Switzerland. <http://data.iucn.org/dbtw-wpd/edocs/EPLP-077.pdf>

<sup>21</sup> Takacs, D. 2009. Forest Carbon – Law and Property Rights. Conservation International, Arlington VA, USA. [http://www.conservation.org/Documents/CI\\_Climate\\_Forest-Carbon\\_Law-Property-Rights\\_Takacs\\_Nov09.pdf](http://www.conservation.org/Documents/CI_Climate_Forest-Carbon_Law-Property-Rights_Takacs_Nov09.pdf)

<sup>22</sup> Legal Frameworks for REDD: Design and implementation at the national level. 2009. John Costenbader, editor. IUCN Environmental Policy and Law Paper No. 77. IUCN, Gland, Switzerland. <http://data.iucn.org/dbtw-wpd/edocs/EPLP-077.pdf>

Brazil and only a minority of private land owners in forest regions have legal land titles and thus legal carbon rights.

### 3.3.1 Designing a national REDD+ scheme

In three years Brazil developed important components of a nationwide REDD+ framework including establishing an effective MRV system, setting up the Amazon Fund to receive payments for performance, building institutions and involving local communities through pilot projects. Brazil has committed itself to an emissions reduction target of 36 to 39 percent (compared with “business as usual”) by 2020<sup>23</sup>, much of which will come out of REDD+.

The Brazilian national government wants to present a workable national REDD scheme with consistent monitoring and control mechanisms at the UNFCCC summit in Cancún in December 2010<sup>24</sup>. A committee with representatives from the government, civil society and the private sector is tasked with defining a national REDD strategy and coordinating related work in a democratic and participatory way. The REDD rules are to cover all of Brazil’s major ecosystems: the Amazon, the Atlantic Rain Forest, the Cerrado savannahs and the Caatinga shrublands.

When framing REDD rules, Brazil will need to<sup>25</sup>:

- a) Reconcile national and sub-national forest carbon activities,
- b) Sort out complex layers of regulation and uncertainty over land ownership in the Amazon,
- c) Improve its track record of forest law enforcement, and
- d) Ensure fair and equitable benefit-sharing arrangements on the ground.

There is no national agreement on how to measure *additionality* for REDD<sup>26</sup>. Large variability in biomes and deforestation and forest degradation drivers makes national consensus difficult, and rules are more likely to be developed on the state level. In Brazil the risk of *leakage* is high because the size and remoteness of the Amazon makes it hard to track forest activities. Options for mitigating leakage are to provide incentives to landholders to participate in REDD and register their land with the project. Registering titles would facilitate monitoring and keep subsistence agriculture from creeping further into the forest.

Lately, there has been a move by the political opposition to reform the 75-year old Brazilian Forestry Code which demanded that farmers have some legal reserves and protected areas inside their own land<sup>27</sup>. In the last two decades, new policies strengthened and helped enforce the code, and thus helped reduce deforestation rates. The opposition now calls for decreased protection requirements and enforcement. If passed, Brazil could find it difficult to meet its stated goals of reducing deforestation and related emissions.

<sup>23</sup> <http://www.unep.org/climatepledges/Default.aspx?pid=42>

<sup>24</sup> Governance matters. Juliana Radler de Aquino. <http://www.inwent.org/ez/articles/178230/index.en.shtml>

<sup>25</sup> Legal Frameworks for REDD: Design and implementation at the national level. 2009. John Costenbader, editor. IUCN Environmental Policy and Law Paper No. 77. IUCN, Gland, Switzerland. <http://data.iucn.org/dbtw-wpd/edocs/EPLP-077.pdf>

<sup>26</sup> [Ibid](#)

<sup>27</sup> Will Brazil Change its Forest Code – and Kill the Amazon? 22 September 2010. Richard Blaustein and Chris Santiago. [http://www.ecosystemmarketplace.com/pages/dynamic/article.page.php?page\\_id=7718&section=news\\_articles&eod=1](http://www.ecosystemmarketplace.com/pages/dynamic/article.page.php?page_id=7718&section=news_articles&eod=1)

### 3.3.2 Amazon Fund

Brazil launched the Amazon Fund<sup>28</sup> in August 2008 to provide positive incentives for forest preservation in the Amazon, and to link domestic actors that could deliver forest carbon emission reductions to actors willing to fund those initiatives. The fund is structured to receive voluntary contributions from developed countries, multilateral institutions, NGOs, companies and individuals. The amount available each year depends on the reduction of deforestation below a rolling ten-year average. The funds are channeled through the Brazilian Development Bank (BNDES), the fund manager, to projects that address deforestation in the Amazon biome. Up to 20% of the Fund's disbursements may be used to support the development of monitoring and controlling systems for deforestation in other Brazilian biomes and in other tropical countries.

The Government of Norway has pledged up to USD one billion to the Amazon Fund for the period up until 2015<sup>29</sup>. Norway has already donated approximately US\$ 107 million for application in 2009 and will likely donate up to US\$ 150 million for 2010. Norway requires that activities supported by their funds be results-based, transparent and independently-monitored. The German Development Bank KfW is currently negotiating with BNDES and is likely to make substantial commitments from 2010. Contributions are based on bilateral agreements and donors can specify their own terms.

The Amazon Fund supports efforts to prevent, monitor and combat deforestation, besides promoting the preservation and sustainable use of the Amazon Biome. Eligible projects should clearly state how they will contribute directly or indirectly to reduce emissions from deforestation. The projects should be in congruence with and abide by the guidelines of the Sustainable Amazon Plan (PAS), the National Action Plan for Prevention and Control of Deforestation in the Legal Amazon (PPCDAM), and respective state plans to combat and control deforestation. At present five projects or programs are listed<sup>30</sup> as receiving support from the Amazon fund but more are in the pipeline.

The Amazon Fund limits its funding to 67% of a project's cost in the case of projects submitted by municipal, state and federal government agencies or by the private sector, or 90% of a project's cost in the case of projects submitted by NGOs or research institutions. A project applying to the Amazon Fund cannot request resources for activities that will replace existing government funds to those activities. Projects can apply for financial support through a Letter of Inquiry to the BNDES completed according to the prescribed guidelines. There is a detailed procedure for determining eligibility of the projects. Once approved, funds are disbursed as per the signed contract, the proponent implements project and the Fund monitors progress.

Projects supported in the Amazon are grouped under the following themes for operational purposes:

- To support the expansion and preservation of Protected Areas. Activities include creating new Conservation Units, consolidating and managing existing Units and public forests, monitoring and conserving biodiversity, and paying for environmental services.

<sup>28</sup> [http://www.amazonfund.gov.br/FundoAmazonia/fam/site\\_en/Esquerdo/Fundo/](http://www.amazonfund.gov.br/FundoAmazonia/fam/site_en/Esquerdo/Fundo/)

<sup>29</sup> <http://www.regjeringen.no/en/dep/md/Selected-topics/climate/the-government-of-norways-international-/norway-amazon-fund.html?id=593978>

<sup>30</sup> [http://www.fundoamazonia.gov.br/FundoAmazonia/fam/site\\_pt/Esquerdo/Projetos/Maiores\\_Informacoes/Contratados](http://www.fundoamazonia.gov.br/FundoAmazonia/fam/site_pt/Esquerdo/Projetos/Maiores_Informacoes/Contratados)



- To support sustainable production, trading and use of natural resources. Activities include reforestation; forest management; sustainable production chain of forest products; recovery of deforested areas; integrating forestry, farming and cattle-raising; forest certification; renewable energies; and ecotourism.
- To support the development of research, innovation and technology supporting sustainable production practices. These include science and technology infrastructure and programs, biotechnology, renewable energies, forestry, systems and methodologies for property registration, and information and communication networks.
- Institutional development and improvement of control mechanisms to support environmental management, agricultural regulation, licensing, inspection and monitoring of the Amazon Biome.

At the national level, the Fund receives and uses donor funds to compensate emission reductions already made and not emission reductions that will occur in the future. The amount of funds allowed to be contributed to the Amazon Fund is determined using the following information:

- a) The annual Amazon deforestation rate published by INPE. The results are verified by a group of experts and the underlying data are publicly available.
- b) The amount of forest carbon contained above ground in a hectare of Amazon Forest defined and periodically revised by the Brazilian Forest Service.
- c) The established baseline (defined in area deforested).

Based on the information above, BNDES issues a certificate to donors expressed in value of contribution and tons of CO<sub>2</sub>. These certificates are non-reimbursable, non-transferable, non-tradable. They do not generate rights or claims of any nature and cannot be used to offset emissions.

### **3.4 State of Amazonas, Brazil**

At the sub-national level, states in Brazil have implemented their own climate change policies linked to environmental conservation. The State of Amazonas has a land area of 1.5 million km<sup>2</sup> and 98% is covered by native forest. From 2003-2008, the state created 100,000 km<sup>2</sup> of Protected Areas to thwart deforestation pressures. Amazonas along with the other four Amazon forest states is part of the Governors' Climate and Forests Task Force<sup>31</sup> of 14 states and provinces from the US, Brazil, Indonesia, Nigeria and Mexico that seek to integrate forest carbon activities into emerging GHG compliance regimes in the United States and elsewhere.

The State of Amazonas adopted the "Law for the State Policy for Climate Change" in 2007 providing a legal framework and financial incentives for reducing environmental impacts<sup>32</sup>. The law supports the private sector and state government agencies to carry out project activities to reduce their GHG emissions. Unlike the national Amazon Fund, the state law allows international marketing of credits from reforestation or avoided deforestation projects and permits use of the credits for offsetting emissions. The law created a labelling system

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<sup>31</sup> <http://www.gcftaskforce.org/>

<sup>32</sup> Background Analysis of REDD Regulatory Frameworks. May 2009. Report prepared for the terrestrial carbon group and UN-REDD Programme. Covington and Burling LLP and Baker and McKenzie.  
<http://www.terrestrialcarbon.org/site/DefaultSite/filesystem/documents/TCG-2009-Background-Analysis-of-REDD-Regulatory-Frameworks.pdf>



recognizing and certifying (as the friends of the climate and of the Amazon forest) the companies that support the state's conservation programs.

### **3.4.1 The Bolsa Floresta Forest Conservation Grant Programme**

The State Law further established the Bolsa Floresta Forest Conservation Grant Programme to directly reward traditional and indigenous communities in State Conservation Units for their role in the conservation of forests and their environmental services including carbon storage. The Bolsa Floresta program is managed by a newly-created public-private independent non-governmental institution Fundação Amazonas Sustentável (FAS)<sup>33</sup> founded with State support. FAS has an endowment fund with substantial donations and commitments from the State of Amazonas, the private Bradesco Bank, Coca Cola company and other partners to support the Bolsa Floresta Program and other efforts. The Bolsa Floresta Program also receives support from the Amazon Fund.

Under the Program, participants are required to have lived on the State Conservation Unit for at least two years, not expand their crop and pasture areas, join a Community Association, participate in the development and management of the Conservation Units, and sign a Zero Deforestation Agreement. Until October 2010, 7614 families benefited from the Bolsa Floresta Program with ongoing actions in 15 Conservation Units, an area of 10 million hectares.

The Bolsa Floresta benefit-sharing mechanism has four components:

- A Family Forest Grant pays a monthly allowance of R\$5,043 to the wife of each family living inside the protected area that is willing to participate in the programme. The payment is designed to involve the local population in combating deforestation.
- A Forest Grant is granted to associations of people living in the PA to strengthen organizational and social control. The families discuss and approve how the funds are to be used.
- A Social Forest Grant of R\$4,000 per year is provided to each community to fund education, sanitation, health, communication and transportation initiatives as decided by them.
- An Income Forest Grant of an average value of R\$4,000 per year is provided to each community to support sustainable agriculture, forestry, cattle ranching and NTFP gathering. All legal activities that do not cause deforestation or smoke generation are eligible.

### **3.4.2 Juma Sustainable Development Reserve Project**

One project initiated under the the Bolsa Floresta programme is the Juma Sustainable Development Reserve Project set up to avoid rising deforestation pressures and generate funds through international marketing of carbon credits<sup>34</sup>. To avoid conversion to agriculture and cattle ranching, the area was established as a Protected Area for Sustainable Use. The Project is being implemented by the State Secretariat for the Environment and Sustainable Development of the Amazonas and the FAS. The Protected Area was created using participatory workshops and public consultations. The Project will set up a Reserve Management Council which will be

<sup>33</sup> <http://www.fas-amazonas.org/en/>

<sup>34</sup> Legal Frameworks for REDD: Design and implementation at the national level. 2009. John Costenbader, editor. IUCN Environmental Policy and Law Paper No. 77. IUCN, Gland, Switzerland. <http://data.iucn.org/dbtw-wpd/edocs/EPLP-077.pdf>

formed by community representatives, local stakeholders and governmental and non-governmental institutions.

The Juma Project uses the SimAmazonia I deforestation simulation model under “business as usual” as its baseline scenario, and subtracts from that projection the avoided deforestation of the Juma reserve area for each year up to 2050, when the project is supposed to end. The entire area surrounding the Juma Reserve is monitored by the State and Federal Government as part of the project’s monitoring plan and the 10 km “buffer zone” surrounding the Reserve’s perimeter is included in the Reserve’s management plan. Communities in the buffer zone receive the same benefits as those inside the Reserve in order to reduce incentives for Reserve inhabitants to move outside and to create incentives for outside communities to participate. The REDD project complies with the Climate, Community and Biodiversity Alliance (CCBA) Standard.

Of the revenues generated from the carbon markets, monitoring and law enforcement are to receive 30%, social investment 15%, community development and research 48%, and PES 7%. Of the PES, payments to families constitute 52%, community investment 35% and the association 5%. The project is funded by the State of Amazonas, Bradesco Bank and the Marriot International hotel chain which supports the project through annual investments of US\$500,000 per year for four years, combined with revenues from hotel guests to offset their carbon emissions.

Lessons from the State of Amazonas’ effective REDD+ activities:

- a) Need to provide a strong legal framework for activities on the ground
- b) Need for adequate sustainable funds from different sources (was provided here by the the State, a private bank and markets using innovative mechanisms)
- c) Need for independent but state-supported institutions to run and manage the activities in a transparent and effective manner (FAS here)
- d) Activities to directly benefit communities with clear and effective contracts.

### **3.5 Indonesia – National and sub-national developments**

Indonesia is a prime REDD+ country. The potential for reducing GHG emissions from deforestation and degradation is large in Indonesia given:

- Its large forest and peat carbon stores,
- High deforestation and forest degradation pressures for local livelihoods, commercial resource extraction, and land conversion to timber and oil palm plantations, and
- Land use activities that lead to large forestland and peat fires and make it one of the highest GHG emitters in the world.

REDD discussions have been ongoing since 2006. Indonesia proposes to reduce emissions (most of which arise from the forestry and land use sector) by 26% by 2020, or by 41% if supported by foreign funding support, and more than 41% if using market mechanisms as well.<sup>35</sup>

#### **3.5.1 Regulations and activities**

The Indonesian Ministry of Forestry issued three REDD/forest carbon-related decrees<sup>36</sup>.

<sup>35</sup> Draft National Strategy REDD+. November 2010. Minister for National Development Planning/Chairman of the National Development Planning Agency (BAPPENAS), Jakarta.

[http://www.un.or.id/sites/default/files/STRANAS%20REDD+%20DRAFT1\\_Eng.pdf](http://www.un.or.id/sites/default/files/STRANAS%20REDD+%20DRAFT1_Eng.pdf)

- a) P.68/Menhut-II/2008 outlined the procedures and the permitting process for implementing REDD demonstration activities.
- b) P.30/Menhut-II/2009 was on implementation procedures for REDD linked to the current Indonesian Forestry license and administration system. It outlines a process for obtaining government approval and refers to planned institutions that did not materialise on the ground.
- c) P.36/Menhut-II/2009 focused on facilitating forest carbon activities for the voluntary market in the interim stage till a UNFCCC REDD+ protocol was negotiated. It detailed out a proposed benefit sharing arrangement in its Annex, but this proposal was not agreed to by the Ministry of Finance.

All three regulations were issued to facilitate carbon project development in the country, both donor/NGO-funded demonstration projects and private sector projects for the voluntary carbon markets. However the regulations were not implemented due to unclear institutional roles for REDD and lack of a compliance market. Projects were initiated using bilateral and private arrangements. All the regulations are now up for revision. Another regulation was issued recently for monitoring carbon stocks on timber and ecosystem restoration concessions<sup>37</sup>.

There have been numerous bilateral, NGO and private sector forest carbon projects on the ground over the years. According to a Ministry of Forestry presentation at the UNFCCC, there were around 20-22 projects in May 2010<sup>38</sup>. The Ecosystem Restoration decree<sup>39</sup> in Indonesia gives out long-term concessions for restoration work on state production forests to the private sector and NGOs, and allows them to market the ecosystem services including carbon. Many private corporations and NGOs obtained such ecosystem restoration licenses from the government and invested in forest carbon projects in the hope that the government will allow them to sell the carbon credits generated in the voluntary carbon market and any forthcoming compliance markets. Much of the innovation in REDD implementation is taking place among this group, supported by private or donor financing. Shell Canada, Infinite Earth and Winrock International recently developed and registered a REDD methodology with the VCS for the Rimba Raya Biodiversity Reserve project in Borneo. So far the project has pre-sold 10% of its credits.

However, overall project activity is constrained by the high costs of methodology development and verification, and the long time frame involved in generating credits. Carbon prices are discounted at present and investors are waiting for clearer regulations and markets to commit funds<sup>40</sup>. There have also been serious concerns about dubious investors and brokers who try to mislead local decision-makers<sup>41</sup>.

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<sup>36</sup> <http://www.dephut.go.id/index.php?q=en>

<sup>37</sup> Guidelines of carbon stock inventory at working area of plantation forest (HTI), natural forest (HA) and ecosystem restoration (RE). 2010. Ministry of Forestry Directorate general of production forest management.

<sup>38</sup> The use of the IPCC guidelines in the estimation of emissions and removals, forest carbon stocks and forest area changes: Indonesia experience. May 2010. Presentation by Ari Wibowo, Ministry of Forestry, Indonesia. At the Informal meeting of experts, Bonn, Germany. [http://unfccc.int/files/methods\\_science/redd/application/pdf/wibowo\\_indonesia.pdf](http://unfccc.int/files/methods_science/redd/application/pdf/wibowo_indonesia.pdf)

<sup>39</sup> A guide to the concession licensing and management of ecosystem restoration. Oct 2008. Ministry of Forestry, Indonesia. [http://www.forestclimatecenter.org/files/Jambi%20\(A%20Guide%20to%20the%20Concession%20Licensing%20and%20Management%20of%20Ecosystem%20Restoration\)%20by%20BirdLife%20and%20Ministry%20of%20Forestry%202008-10.pdf](http://www.forestclimatecenter.org/files/Jambi%20(A%20Guide%20to%20the%20Concession%20Licensing%20and%20Management%20of%20Ecosystem%20Restoration)%20by%20BirdLife%20and%20Ministry%20of%20Forestry%202008-10.pdf)

<sup>40</sup> Special report: Money could grow on trees, depending on carbon price. By Sara Schonhardt. 3 October 2010. <http://www.eco-business.com/news/2010/oct/03/money-could-grow-trees-depending-carbon-price/>

Four Indonesian provinces of Aceh, Papua, East and West Kalimantan are part of the Governors' Climate and Forests Task Force (GCF)<sup>42</sup> of 14 states and provinces from the US, Brazil, Indonesia, Nigeria and Mexico that seek to integrate forest carbon activities into emerging GHG compliance regimes in the United States and elsewhere. The GCF attempts to build workable REDD frameworks and implementation capacity in large sub-national jurisdictions in key tropical forest countries, and to develop institutions and programs for linking sub-national activities with ongoing national and international efforts. It believes that action is required at multiple levels, and key states can be early movers building momentum and experience for framing higher-level policies and efforts.

### 3.5.2 Norway's recent pledge

Recently Norway made a one billion dollar pledge (Letter of Intent LOI<sup>43</sup>) contingent on Indonesia fulfilling a list of required policy measures. This pledge and its requirements and deadlines have led to a speeding up of national REDD readiness activities. The LOI calls for full and effective participation of all stakeholders; full transparency regarding financing, actions and results; and environmental, social, financial and governance safeguards.

The first phase: A national REDD+ strategy<sup>44</sup> was drafted for public consultation with support from the UN-REDD program. The strategy describes the foreseen policy reforms to address the key drivers of forest and peatland emissions. It still remains in draft form as of November 2010. Other aspects to be addressed by January 2011 are a) development of a REDD+ coordination agency, b) development of an MRV strategy and independent institution framework, c) establishment of a performance-based funding instrument managed by internationally-reputed financial institution with independent annual audits, and d) selection of province-wide REDD+ pilots to be set up with Norwegian funds.

The second phase from 2011-14 requires an established country-wide MRV system to Tier2 or better with an independent international verification mechanism, a two-year suspension on new forest and peat conversion concessions, creation of a degraded land database starting in 1-2 provinces, enforcement of existing timber logging and trade laws, measures to address tenure conflicts and implementation of two REDD+ province pilots. Agricultural and plantation expansion was to be directed to degraded areas instead of forests. The land conversion suspension does not address existing concessions which have forested areas that have not yet been converted, and more concessions may be issued before the end of 2010<sup>45</sup>. The government has suggested addressing the problem through voluntary "land swaps", however, no specific policies to promote this have been announced. In new developments, Indonesia made

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<sup>41</sup> Indonesia warns of REDD carbon cowboys. 26 Oct 2009. <http://www.carbonpositive.net/viewarticle.aspx?articleID=1700>

<sup>42</sup> <http://www.gcftaskforce.org/>

<sup>43</sup> Letter of Intent between the Government of Norway and the Government of Indonesia on Cooperation on REDD. 26 May 2010. [http://www.regjeringen.no/upload/SMK/Vedlegg/2010/Indonesia\\_avtale.pdf](http://www.regjeringen.no/upload/SMK/Vedlegg/2010/Indonesia_avtale.pdf)

<sup>44</sup> Draft National Strategy REDD+. November 2010. Minister for National Development Planning/Chairman of the National Development Planning Agency (BAPPENAS), Jakarta. [http://www.un.or.id/sites/default/files/STRANAS%20REDD+%20DRAFT1\\_Eng.pdf](http://www.un.or.id/sites/default/files/STRANAS%20REDD+%20DRAFT1_Eng.pdf)

<sup>45</sup> What's Next for Indonesia-Norway Cooperation on Forests? By Kemen Austin, Fred Stolle, and Beth Gingold on July 13, 2010. World Resources Institute. <http://www.wri.org/stories/2010/07/whats-next-indonesia-norway-cooperation-forests>

agreements with twelve major companies who have promised to set aside parts of their concessions as forest carbon conservation areas<sup>46</sup>.

In the third phase from 2014 onwards, there would be verified emissions reductions financed through an established fund. Payments will be based upon a reference level and Indonesia's pledges to reduce emissions below that level.

### 3.5.3 Likely scope of REDD+

Judging from stated emissions reduction targets for the forestry sector, the intent of the existing regulations and the draft strategy document, the scope of REDD+ in Indonesia will likely include:

- All possible REDD+ activities “Reducing emissions from deforestation and forest degradation, conservation of forest carbon stocks, sustainable management of forest and enhancement of forest carbon stocks”.
- National-level accounting with sub-national implementation (province, district, management unit) and cross-verification across levels to ensure consistency.
- Opportunity to undertake and benefit from forest carbon sequestration and/or storage activities for all forestry tenure-holders (licensees, administrative heads, managers and owners) in the entire range of forest types<sup>47</sup> and possibly peatland as linked to the Indonesian forestry administration and licensing system. Actors thus include the government, the private sector, NGOs, communities and individuals. Whether there will be mandatory actions in some areas for some actors and promotion of voluntary actions in other areas is unclear.
- Room for international entities (Governments, corporations, international organizations and foundations) to be involved in implementation.
- Type of management actions currently foreseen in the Ministry of Forestry decrees include a) planting, maintenance, enrichment and silviculture to increase productivity; and b) delayed harvesting, longer rotations, environmentally-friendly harvesting, reduced annual allowable cuts, effective protection, and more protection and conservation areas to enhance carbon storage in existing forests.
- Benefit-sharing arrangements based on forestry administration and licensing systems, with differentiated proportions going to government agencies, local communities and developers/managers based on the type of tenure regime.
- Financing from both fund and market-based approaches, and the credits can be used to offset emission reduction obligations. Open to compliance & voluntary markets at present. The twenty six percent emissions reduction target is to be financed through domestic funding sources (national and regional budgets, government loans and private sector investment), another 15% from foreign grants and loans, and further reductions using outside markets. Funds from domestic and foreign sources are to be channelled

<sup>46</sup> Sinar Mas hopes to show public it “cares” about environment. Dicky Christanto, The Jakarta Post. 25 Sept 2010.

<http://www.thejakartapost.com/news/2010/09/25/sinar-mas-hopes-show-public-it-%E2%80%9Ccares%E2%80%9D-about-environment.html>

<sup>47</sup> Licensed timber concessions (natural and plantation), Licensed community forests (natural and plantation), Ecosystem Restoration licensed areas, Production Forest Management Units, Protected Forest Management Units, Conservation Forest Management Units, Conservation Forest, Customary Forest, Rights Forest, Village Forest

through a REDD+ Trust fund as one window under the Indonesia Climate Change Trust Fund.

- Environmental, social, financial and governance safeguards

Larger policy reform activities to address REDD+ drivers foreseen in draft strategy include:

- Land use planning reform – Participatory development of integrated transparent spatially-explicit land use planning and decision-making from village to national levels and across sectors. Establishment of a responsible institution. High conservation value areas to be protected.
- Forest area stabilization and Forest administration reform – Moratorium on forest area allocation and/or conversion until forest boundary structuring has been completed. Establish a nationwide government-run Forest Management Unit system for area-based management to reduce emissions, enhance carbon stores and sinks and enforce laws.
- Governance reform - Harmonization of regulations related to forest resources and enhanced enforcement of timber logging and trade laws
- Stakeholder involvement using the concept of Free Prior and Informed Consent (FPIC). Transparent & participatory mechanisms.
- Agricultural sector reform – curtail agricultural and plantation expansion into good forest areas and peatlands, direct expansion to degraded areas, improve peat management
- Mining sector reform – curtail mining development in good forest areas and deep peats, enforce reclamation.

### 3.6 Forestry in the New Zealand ETS

New Zealand, an Annex 1 country to the Kyoto Protocol has obligations to account for its GHG emissions from deforestation of forests established before 1 January 1990 and to account for any net carbon sequestration change as a result of afforestation or reforestation that has occurred since 31 December 1989. The assessment will be concluded after the first commitment period at which time it would stand to receive removal units (RMUs<sup>48</sup>) for any net emissions reductions. Annex 1 countries also had the option to account for emission reductions from management of forest that existed on 31 December 1989, but New Zealand chose not to account for that component.

Since land use is a major sector of the economy and a significant source and sink of greenhouse gases, New Zealand chose to include forestry as the first sector starting from 1 January 2008 in its economy-wide, internationally-linked Emissions Trading Scheme<sup>49</sup>. The Kyoto Protocol obligations and benefits were passed on to land and forest owners and some exceptions were made to avoid unreasonable compliance costs to forest owners. Two types of forest areas are included in the New Zealand Emissions Trading Scheme (NZ ETS), pre-1990 forest lands with exotic species and post-1989 forests. As per UNFCCC REDD+ terminology, the scope would be equivalent to 'Reducing emissions from deforestation' and 'Enhancement of forest carbon stocks'.

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<sup>48</sup> Removal Units are carbon credits equal to 1 tCO<sub>2</sub>e issued under the Kyoto Protocol to developed countries for net removals by sinks from LULUCF (land use, land use change and forestry sector) activities

<sup>49</sup> Forestry in the New Zealand Emissions Trading Scheme: Design and prospects for success. 2008. Peter B. Lough and Alastair D. Cameron. CCLR 3: 281-291.



Native forest covers about 8.2 million hectares or 23 per cent of New Zealand's land area<sup>50</sup>. Most of it is under State control in national forest parks and reserves, is considered to be in a steady state and therefore excluded from the NZ ETS. Plantations cover just over two million hectares and most plantations are of commercial non-native species. Following privatization in the early 1990s, most of these plantations are now owned, leased or otherwise held by domestic and overseas private land owners with clear rights. The targeted participants in the forestry scheme of the ETS are these private forest owners, and the aim is to restrain further forest land conversion to agriculture and to support the ongoing expansion of private forestation activities. Net removals from LULUCF can fluctuate greatly due to the planting, harvesting and deforestation of New Zealand's planted forests.

### 3.6.1 Reducing emissions from deforestation<sup>51</sup>

Owners of pre-1990 exotic forest land (land that was forested as at 31 December 1989 and remained forested with exotic species on 31 December 2007) are mandatory participants of the scheme. They will have to surrender carbon units if they deforest, i.e. convert more than two hectares in any five-year period starting January 2008 to non-forestry land use. Landowners have the option to pay \$25 for every New Zealand Unit (NZU<sup>52</sup>) they are liable for as a result of deforestation instead of surrendering credits in the first commitment period from 2008 to 2012. The landowners can still harvest and replant or regenerate trees without incurring liabilities because it does not result in land use change. Wood flows from these forests will thus be largely unaffected by the NZ ETS.

Pre-1990 forest land owners receive a one-off allocation of 55 million NZUs to at least partially compensate for reduced land values due to decreased land-use flexibility. This is roughly equivalent to the historical rate of deforestation. Those holding less than 50 hectares of pre-1990 forest land on 1 September 2007 or holding land with specified tree weeds can apply for exemption from deforestation obligations. The government assumes the liability for deforestation where exemptions have been granted. Since New Zealand does not account for improved forest management practices, pre-1990 forest owners cannot gain credit from increased carbon sequestration through alternative forest management practices.

### 3.6.2 Enhancement of forest carbon stocks<sup>53</sup>

'Post-1989 forests' are forests established on land (need to provide proof) that:

- was not forest land as at 31 December 1989, or
- was forest land on 31 December 1989 but was deforested between 1 January 1990 and 31 December 2007.

Owners of post-1989 forests can choose to enter the scheme, register their land and earn credits for increases in carbon stocks from 1 January 2008 on a voluntary basis. They will receive NZUs for increases in the forest carbon stock as a result of growth, but will be required to surrender

<sup>50</sup> A Forestry Sector Study 2009. Ministry of Agriculture and Forestry, New Zealand.

<http://www.maf.govt.nz/forestry/publications/forestry-sector-study-2009/>

<sup>51</sup> Introduction to Forestry in the Emissions Trading Scheme. April 2010. Ministry of Agriculture and Forestry, New Zealand Government. <http://www.maf.govt.nz/sustainable-forestry/2010-introduction-to-forestry-in-ets.pdf>

<sup>52</sup> Domestic carbon credit equal to 1 tCO<sub>2</sub> equivalent issued under the NZ ETS

<sup>53</sup> Introduction to Forestry in the Emissions Trading Scheme. April 2010. Ministry of Agriculture and Forestry, New Zealand Government. <http://www.maf.govt.nz/sustainable-forestry/2010-introduction-to-forestry-in-ets.pdf>

NZUs to the Government if carbon stocks fall, as may occur when a forest is harvested or burns down. The obligation to surrender credits for a fall in carbon stocks currently exists in perpetuity. Surrendered units could also be Assigned Amount Units (AAUs)<sup>54</sup>, and do not need to be sourced from the same location or activity. Any liability is capped at the amount of NZUs previously claimed for that area of forest land. Areas can be added, removed, sold or transferred. If areas are removed, units are to be surrendered. If sold or transferred, the buyer takes on the liabilities. For unregistered post-1989 forests, the change in carbon stocks (both increases and decreases) defaults to the Government.

### 3.6.3 Ownership, crediting and benefits

Land and forest ownership may be divorced. Land or forest owner to have rights and obligations depending on who is responsible for the avoided emissions or sequestration, and who has the authority<sup>55</sup>. All relevant parties have to consent and negotiate the terms of participation and benefit sharing.

To encourage private reforestation activities, the ETS issues bankable domestic credits (NZUs) that can be converted into internationally-tradable Kyoto-compliant credits (AAUs), rather than wait for its national emissions accounting from the land use sector and any available RMUs that can be issued under the Kyoto Protocol after the first commitment period<sup>56</sup>. The NZUs earned or allocated can be retained or traded in the domestic and international markets. Not all forestry NZUs will be traded since landowners may want to harvest or retain some as insurance against fire and other risks.

At prices of US\$19/tCO<sub>2</sub>e (NZ\$25), the net present value of the carbon revenue from a permanent forest is less than the net present value of the timber assuming current timber prices<sup>57</sup>. However for private post-1989 forest-holders who choose to enter the scheme, there are cash-flow benefits to getting carbon payments immediately rather than having to wait until timber harvest time, particularly for owners of young forests who can defer harvesting<sup>58</sup>. Also new forests can earn a certain level of carbon credits that they will never be required to repay provided they continue to be replanted. This is because a certain level of carbon remains on the land after harvest and only degrades slowly over time, and there is a permanent gain in soil carbon as well. Landholders can sell these credits without taking on risks even if they intend to harvest their forest in the future. Further, those who own larger forest areas of different age classes can sell significantly more carbon units risk free as the increase in sequestration from the forests which are growing will offset the emissions liability from those that are harvested. So these landholders can get both timber and carbon benefits by harvesting some of the area on a rotational basis, still having net carbon gain on a continuous basis.

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<sup>54</sup> An Assigned Amount Unit (AAU) is a tradable 'Kyoto unit' or 'carbon credit' representing an allowance to emit greenhouse gases comprising one tCO<sub>2</sub>e. It is issued to Annex B countries under the Kyoto Protocol.

<sup>55</sup> A Guide to Forestry in the Emissions Trading Scheme. October 2010. Ministry of Agriculture and Forestry, New Zealand Government. <http://www.maf.govt.nz/sustainable-forestry/2010-ets-guide.pdf>

<sup>56</sup> Forestry in the New Zealand Emissions Trading Scheme: Design and prospects for success. 2008. Peter B. Lough and Alastair D. Cameron. CCLR 3: 281-291.

<sup>57</sup> Personal communication. Lucas Kengmana, Ministry of Agriculture and Forestry, New Zealand.

<sup>58</sup> Personal communications. Lucas Kengmana, MAF, New Zealand and Peter Weir, Ernslaw Co., New Zealand.



Piers Maclaren et al. (2008)<sup>59</sup> found that the additional revenue from annual sales of carbon units greatly increased the profitability of all timber species and management regimes on all site types. With increasing carbon prices, higher-volume species, high final stocking and long optimal rotation ages are favoured.

### 3.7 Climate Action Reserve, North America

The Climate Action Reserve (Reserve)<sup>60</sup> was launched in 2008 as a private, non-profit organization that establishes regulatory-quality standards for the development, quantification and verification of GHG emissions reduction projects in North America; issues carbon offset credits known as Climate Reserve Tonnes (CRT) generated from such projects; and tracks the transaction of credits over time in a transparent, publicly-accessible system. The Reserve's protocols seek to ensure that emissions reductions associated with projects are real, permanent and additional. Only projects that have been independently verified as adhering to these project protocols are registered. The CRTs can be traded in the voluntary carbon market or transferred into the Voluntary Carbon Standard's unit of measurement, the Voluntary Carbon Unit (VCU).

The Reserve has a detailed Forest Project Protocol (v. 3.2 August 2010<sup>61</sup>) for determining project eligibility and sequestration reversal risk, as well as monitoring, calculating, reporting and verifying project GHG emission reductions and removals. The protocol is posted on the website for public use and seeks to ensure that the net GHG reductions and removals caused by a project are accounted for in a clear, complete, consistent, transparent, accurate, cost-effective and conservative manner and used to issue carbon offset credits.

#### 3.7.1 Types of activities, lands and management strategies

Reforestation, Improved Forest Management (IFM) and Avoided Conversion projects in the USA. Reforestation and IFM projects can be located on private land, or on state or municipal public land. Avoided Conversion projects must be implemented on private land, unless the land is transferred to public ownership as part of the project. Forest Projects on federal lands may be eligible if and when their eligibility is approved through a federal legislative or regulatory/rulemaking process. Forest Projects in tribal areas must demonstrate that the land within the Project Area is owned by a tribe or private entities.

Eligible management strategies are:

- Reforestation via planting or promoting natural regeneration. No rotational harvesting during the first 30 years with some exceptions and no broadcast fertilization.
- IFM on commercial forests by modifying management to maintain or increase carbon stocks above background management. To employ natural forest management practices and not use employ broadcast fertilization. Some possible options include a) increasing rotation ages, b) increasing forest productivity by thinning diseased and suppressed trees, c) managing competing brush and short-lived forest species, and d) increasing tree stocking on understocked areas.

<sup>59</sup> Impact of the ETS on Forest Management. June 2008. Piers Maclaren, Bruce Manley and Final Year School of Forestry students. Report produced for MAF Policy under CC MAF POL\_2008-10 (110-1) Objective 1.

<sup>60</sup> <http://www.climateactionreserve.org/>

<sup>61</sup> <http://www.climateactionreserve.org/how/protocols/adopted/forest/current/>

- Avoided Conversion projects could have tree planting and harvesting as part of the activities, but not to use broadcast fertilization.
- Avoided Conversion to a non-forest land use means dedicating the land to continuous forest cover through a Qualified Conservation Easement or transfer to public ownership. Qualified Conservation Easements or Qualified Deed Restrictions may be voluntarily employed with Reforestation Projects and Improved Forest Management Projects and these forest owners have reduced obligations to the Reserve's CRT Buffer Pool.
- Forest owners must demonstrate sustainable long-term harvesting practices on all of their forest landholdings including the project area through certification, government agency-approved long-term management plan or selection management.
- Forest owners must demonstrate natural forest management, which is promote and maintain a diversity of native species and native forests of multiple ages and mixed native species at multiple landscape scales. Projects must maintain or increase standing live carbon stocks over the project life, show verified progress towards native tree species and native forests.

### **3.7.2 Additionality**

The following additionality requirements have to be met.

- Projects must yield surplus GHG emission reductions and removals above that which would have occurred under "Business As Usual" activities (prescribed baseline assessments for different project types).
- Forest owner attests that there are no federal, state or local laws or legally binding mandates for the forest project activities in each reporting period. Modelling of the project's baseline carbon stocks must reflect all legal constraints.
- An avoided conversion project must provide a qualified real estate appraisal for the entire project area indicating the highest value alternative land use, that the physical characteristics of the area are suitable for this alternative land use, and that the alternative land use has a 40% higher market value than forestland. Forest owner has to demonstrate that there is a significant threat of conversion using baseline requirements of the protocol. They must also provide documentation demonstrating that the anticipated land use conversion is legally permissible.

### **3.7.3 Forest ownership and legal compliance**

The forest owner could be a corporation or other legally constituted entity, city, county, state agency, individual, or a combination thereof. The forest owners must demonstrate clear ownership of the GHG reductions and removals achieved by the project. The Forest Owner is usually the landowner but if another entity holds rights to the trees or the timber on the property, both entities may be collectively considered the Forest Owner.

In some cases, an entity with complete and perpetual interest in the trees on the property that allows for complete management and access rights to the property, may be defined as the Forest Owner, if they make additional CRT contributions to the Reserve's Buffer Pool. The Forest Owner is ultimately responsible for all Forest Project reporting and attestations, but could engage an independent third-party project developer to assist in implementing the Forest Project.

The project must be in compliance with all applicable laws related to forest project activities. The forest owner must sign the Attestation of Regulatory Compliance at the end of each reporting period.

#### **3.7.4 Accounting for leakage and ensuring permanence**

Leakage is estimated and accounted for in the different project types.

Projects are eligible to receive credits for 100 years from start date. The Reserve requires that credited GHG reductions and removals for forestry projects be effectively “permanent”, that is remain stored for at least 100 years. Three mechanisms are applied to ensure this.

- Forest Owners must monitor and verify a Forest Project for a minimum period of 100 years following the date of issuance of any CRT for quantified GHG reductions or removals achieved.
- All Forest Owners must sign a Project Implementation Agreement with the Reserve which obligates them to adhere to the protocols and retire CRTs from their account to compensate for avoidable reversals of GHG reductions and removals.
- The Reserve maintains a Buffer Pool as insurance against reversals of GHG reductions and removals due to unavoidable causes including natural disturbances. Other insurance options may be available later. Forest Owners are required to contribute CRTs to the Reserve Buffer Pool based on a risk rating, identifying and quantifying reversals risks from different agents. If there was an unavoidable reversal, the Reserve will retire CRTs from the Buffer Pool on behalf of the Forest Owner.

A Forest Project automatically terminates prior to the 100 years time commitment if a Significant Disturbance occurs, leading to reduction of standing live tree carbon stocks below the project’s baseline stocks. A Forest Project may be voluntarily terminated or automatically terminated if there is a breach of certain terms and the Forest Owner has to retire the CRTs issued to the project over the preceding 100 years (multiplied by a compensation rate for IFM projects). The retired CRTs must be those that were issued to the Forest Project or to other Forest Projects registered with the Reserve.

**State of California: Regulatory Design Options for Sub-national REDD Mechanisms.**  
Expert Meeting, California. February 2010.

Based on a paper discussing regulatory design options for sub-national REDD mechanisms for developing countries and the acceptance of these REDD offsets into the emerging GHG compliance system in California. Eleven tropical country states in Brazil, Indonesia, Nigeria and Mexico that are part of the Governors' Climate and Forests Task Force seek to develop wall-to-wall REDD+ programs to provide compliance grade credits.

**ENSURING PERMANENCE:** Any entity that issues an international offset credit for compliance should be liable for any reversals. Identify specific instruments and mechanisms such as insurance, credit reserve and buffers that could enhance permanence. The approved programs and projects should adopt certain practices to account for and address reversals, and residual liability for reversals could be imposed on the covered entities.

**ENVIRONMENTAL AND SOCIAL SAFEGUARDS:**

Local regulations or third-party standards organization defines safeguards. Third-party verification is required against approved standards.

**POSSIBLE ENVIRONMENTAL SAFEGUARDS:**

- Maintain and restore native forest species and ecosystems where practicable
- Avoid introduction of invasive nonnative species.
- Not result in conversion of natural forests.
- Increases in carbon stocks associated with certain defined forestry activities (plantations?) shall not be used to meet ER target.

**POSSIBLE SOCIAL SAFEGUARDS:**

- Due regard to rights and interests of local and indigenous communities and other vulnerable groups. No involuntary relocation.
- Full and effective participation of local and indigenous communities – information, participation, grievance procedures, legal advice, FPIC
- Direct benefits for affected local and indigenous people –portion of offset credits; effective distribution mechanism; objective, transparent and auditable process.

## 4. Options for Laos

Lao PDR's overarching goals for the forestry sector are to better protect the forests and environmental services they provide, ensure sustainable production of timber and NTFPs, and contribute to sustainable livelihoods and socio-economic development. REDD+ provides a potential way to achieve these multiple goals through financing (to set up and implement plans, make up for lost opportunity costs, and provide incentives for different actors), and external pressure and oversight. REDD+ also demands other fundamentals such as public participation, transparency, and clear laws and enforcement; and aims to provide performance-based rewards rather than pure traditional aid. These pre-requisites could contribute significantly towards equitable sustainable socio-economic development in Lao PDR.

### 4.1 Review of forest land types, status, and tenure rights

The information below is a summary based on review of Lao legislation and updates from personal interviews of legislative intent and implementation on the ground.

#### 4.1.1 State Production, Protection and Conservation Forest Areas

Laos has three main state forest land categories – Production, Protection and Conservation Forest Areas established and regulated by Prime Ministerial decrees and associated national legislation (see Annex 2), as well as further supportive provincial and district regulations. These areas include forests, degraded and barren land, and village agricultural and settlement areas within their boundaries. There are 4.7+ million hectares of national, provincial, district and village-level Conservation Forest Areas dedicated to conserving nature, species, ecosystems and other sites of importance. There are 6.2+ million hectares of national (21 NBCAs), provincial (55), district (143) and village-level Protection Forest Areas with another 2 million hectares to be identified by 2011. There are 3.08 million ha in 51 Production Forest Areas (mainly natural forest) in 17 provinces and another 600,000 hectares to be identified. These state forest land areas together comprise 16+ million hectares or about 70% of the national land area.

A Production Forest Area is currently divided into sub-Forest Management Areas (sub-FMA) along kumban (a cluster of villages) lines. Each sub-FMA has its own management plan. A Production Forest Area can include commercial harvestable zones, conservation and protection forest zones, and non-commercial production zones. A Conservation Forest Area includes a total protection zone, controlled use zone, and possibly corridors and a buffer zone. A Protection Forest Area includes a total protection zone and a controlled use zone. These areas are (or are to be) administered by the Production, Protection and Conservation forest divisions of the Department of Forestry respectively and their line agencies at the provincial and district levels, with the participation of the village forest organisations (at village and village cluster level). Organisational structure and roles are as yet undefined for Protection Forest Areas.

Production Forest Areas have been delineated and established from 2003 onwards through support from the Sustainable Forestry and Rural Development (SUFORD) project<sup>62</sup> and from the government's Forest Resource Development Fund (FRDF). Delineation and setup of the Conservation and Protection Forest Areas are still in early stages and limited by resource and

<sup>62</sup> SUFORD, a multilateral project between the government of Laos, the World Bank and the government of Finland started in 2003. <http://www.laoex.org/SUFORD.htm>

staffing constraints. This includes boundary demarcation, zoning, forest and socio-economic assessments, participatory village territory and land use mapping, village agreements, livelihood and infrastructure support, management plans and training. There is a double-layer classification process with delineation of Conservation, Production and Protection Forest Areas, and then delineation of village territories within these areas. Village territories including village agricultural, grazing, settlement, forest and potential plantation areas are yet undefined within bulk of the three state forest categories and outside. The limited funds have also made it difficult to undertake effective protection and management activities, and to offer a clear role and incentives for communities to participate and benefit. Funding is mainly from the annual government budget and the FRDF. The FRDF's focus is now shifting from Production Forest Areas to Protection and Conservation Forest Areas.

It is unclear whether all land should be divided into villages or whether there could be "white land". Both models seem possible when viewing existing village territory delineation within the three state forest categories. In Conservation Forest Areas, there are areas that do not fall within any village boundary which could include all or most of the total protection zone and parts of the controlled use zone. In the Nam Et Phou Louey National Protected Area, the total protection zone has been negotiated and delineated to exclude villages and village territories. Village territories stop at the controlled use zone boundary. In contrast to Conservation Forest Areas, all land within Production Forest Areas falls within the territory of villages and there is no "white land".

Production Forest Areas are to be managed for timber and NTFPs in accordance with FSC principles for Sustainable Forest Management. About 14% of the area of production forest is already being managed in this manner and the same principles are to be extended to the rest of the 3.1 million hectares in the coming years<sup>63</sup>. Customary use of timber and NTFPs by local villagers are allowed in the controlled use zones of Protection and Conservation Forest Areas, as well as in the buffer zones surrounding conservation units according to the management plans. In Production Forest Areas, customary use of NTFPs is permitted throughout the area while customary use of timber is permitted in designated village use forests (that is the non-commercial production zones).

Planting or regeneration in state Production, Conservation and Protection Forest Areas is mainly aimed at restoration of degraded lands to natural forests. Article 4, MAF Regulation 380 allows for tree planting in buffer zones of Conservation Forest Areas for household use. Tourism and recreation are allowed in controlled use zones of production, protection and conservation forests (Article 43 of the Forestry Law) and buffer zones of conservation forest units (MAF regulation No. 0360/AF.2003). There are no "controlled use zones" in Production Forest Areas, and it is unclear whether the law is referring to commercial harvestable zones and non-commercial production zones as being the area permitted for tourism activities in Production Forest Areas.

The participatory management approach has been endorsed by the government to involve villagers in management decisions and actions in the government-administered Production, Protection and Conservation Forest Areas. This is in order to address the degradation pressures

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<sup>63</sup> Forest Carbon Partnership Facility Readiness Preparation Proposal (R-PP) for Lao P.D.R. 11 October 2010.

such as shifting cultivation and related fires, grazing, and illegal logging; to help develop village infrastructure; and provide new income sources for the communities through employment and other activities. Ideally all stakeholders within, adjacent and around the three state forest land categories are to be involved. However, to date there has been only minor implementation of this approach and income derived has been low. In Production Forest Areas, local villagers are employed and paid wages to conduct forest inventories. Also a proportion (17.5%) of the additional timber revenue over the floor price enters the village development funds, and this is further allocated to village members based on the agreement of the village management committee and approval of District Governors.

Significant deforestation threats are potential forest land conversion to mining, hydropower, infrastructure and agriculture projects<sup>64</sup>. As per the regulations, only degraded and barren forest lands can be converted into non-forest land use and to plantations (Tables 1 and 2), but non-degraded forests are frequently converted as well. Terms such as “degraded and barren land” are not clearly defined at present and there is poor coordination and enforcement of laws across land use sectors. Whether conversion of natural forests to plantations constitutes deforestation or forest degradation is an open question to be resolved at the international level.

Future conversion decisions are to be based on a spatially-explicit national land master plan which is to be finalized by year end by NLMA. The master plan is to include existing and planned developments for each sector. Thus for the forestry sector it is to include existing and proposed production, protection and conservation forest areas at different levels and possibly also the targeted plantation development of 500,000 hectares, totalling roughly 70.2% of the national territory. As per the forestry sector strategy 2020, 70% forest cover is to be achieved via all forested areas inside and outside the planned forestry estate. In principle, there is to be no conversion or plantation development within the delineated Production, Protection and Conservation Forest Areas, except for small-scale plantations by villagers in permitted areas within village boundaries. This is also the understanding at the provincial level in Luang Namtha.

Table 1. Permitting institutions and process for conversion of forest lands to other land use.

Permitting Institution/ Process	Conversion of degraded land	Conversion of barren land
PLMA proposes, PAFO agrees, Provincial Administrative office approves	≤ 100 ha	≤ 200 ha
NLMA proposes, MAF agrees, National Government approves	100-1,000 ha	200-10,000 ha
National Government proposes, National Assembly approves	> 1000 ha	> 10,000 ha

Source: Law on Forestry (amended) No. 06/NA, December 2007.

PLMA-Provincial Land Management Authority, PAFO-Provincial Agriculture and Forestry Office, NLMA-National Land Management Authority, MAF – Ministry of Forest and Agriculture.

<sup>64</sup> Analysis of land use and forest changes and related driving forces in the Lao PDR. February 2010. Mekong Maps Co Ltd. Vientiane; Faculty of forestry and social sciences, National University of Laos and NCCR North-South, University of Bern, Switzerland.

According to the NLMA, the master plan would aim to ensure no overlapping land zoning in a given area other than that allowed as in temporary mining permits where the land would revert to other use once the mining contract is completed. Inappropriate past land allocations will have to be phased out once the contracts expire or be otherwise resolved. The plan is to be reviewed and revised if needed every 3-4 years depending on the pace of development and new policy decisions. Relevant agencies are to go down to the ground to implement, monitor and enforce the plans. However it is most likely that the national plan will only be indicative, and not so accurate that it can be used on the ground for all land-related activities.

#### **4.1.2 Village Forest Areas**

Natural forests within a village boundary are to be delineated and classified through participatory land use planning processes, and designated village forests are to be handed to the village administration offices for sustainable management, preservation, development and use as per approved plans. Village/community forests include village protection forests (water sources, river and road sides), village conservation forests (spirit and cemetery forests) and village production/use forests. Village use forests can be used for timber harvesting for village infrastructure construction and household use, and for NTFP collection for household use and for sale as per approved management plans and village regulations.

The Village Forestry Unit is the managing agency at the village level and reports to DAFO (Forestry Law). It proposes regulations on customary use of the village use forest to be issued by the village administration office. Timber use for village infrastructure is to be authorized by the District Administration Office following an application from DAFO (District Agriculture and Forestry Office) in accordance with the Provincial annual logging plan. Timber use for house construction requires certification from village administration offices and the approval of DAFO.

The village forests are to be retained in natural forest. Village use forests are to be sustainably managed for extraction of required forest products for mainly local use. Common degradation and deforestation pressures in village forests are shifting cultivation-related fires, grazing, illegal logging, and conversion to industrial tree plantations and cash crops. Little funding is available for management of village forest areas.

Village boundaries, forest and agricultural areas are not yet satisfactorily defined in much of Laos. From 1997 to 2006, participatory land use planning and land allocation for agriculture, forestry, grazing and other purposes was conducted in many villages in Laos using the LUP-LA manual<sup>65</sup> produced by the Lao Swedish Forestry Program. LUP-LA implementation had its problems such as:

- Lack of funding, staff, resources, and training to complete LUP-LA in all villages.
- Focus on arresting shifting cultivation and inadequate consideration of local livelihood needs. Little area was allocated for agriculture and valuable timber areas were likely classified as state forest land rather than village use forests.
- Low sensitivity to local customs and diversity of land use. Local land use was more of a mixed mosaic pattern as different from the sharp demarcation between agricultural, forest and other lands attempted by LUP-LA.

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<sup>65</sup> Participatory Land Use Planning and Land Allocation Manual. October 1997. Lao Swedish Forestry Program.



- Traditional rules continued to operate and powerful informal tenure arrangements could trump LUP-LA tenure allocation. Communal forest areas could be logged by outside interests in the absence of strong community leadership.

As a result many villages have reverted back to traditional boundaries and management.

Higher-level directives were issued from 2006-2007 to improve and complete land use planning and allocation in villages where activities were already undertaken in the past, and to implement it in villages where it was not previously undertaken. The National Land Management Authority (NLMA) was created in 2007 and given overall responsibility for land use planning and land allocation, responsibilities that were formerly under the Ministry of Finance and MAF. NLMA and MAF were to coordinate with local agencies for effective implementation and to provide sufficient land for local livelihood needs while conserving natural resources.

MAF in collaboration with NLMA published the PLUP manual<sup>66</sup> for participatory agriculture and forest land use planning at the village and village cluster level in March 2010. The manual seeks to provide a standard framework while allowing for flexibility on the ground to reconcile local land use patterns and agricultural needs with legal requirements. The manual allows for classifying and allocating all customary shifting cultivation lands for rotational fallow agriculture while restricting agricultural expansion into new forest areas. It uses more accurate mapping tools, provides for increased participation and provides several PLUP options for different landscapes and situations. DLMA (District Land Management Authority) and DAFO were to work together on the ground to implement the PLUP process based on clearly-differentiated roles and responsibilities and have been doing so in some pilot areas with a) the Lao-German Land Management and Registration project (LMRP), and b) the Center for International Forestry Research (CIFOR) and the National Agriculture and Forestry Research Institute (NAFRI). NGO and donor projects are interested and have started using the approach for participatory land use planning in their project areas.

The PLUP process (boundary delineation, land use zoning, digital mapping and registration of titles) takes time to implement diligently on the ground, perhaps 12 days for a village<sup>67</sup>. Test cases indicate that official land use category definitions as related to local land use practices are still unclear and need to be resolved to streamline and speed up land use classification. Villagers may underreport agricultural use areas to avoid paying land taxes and this issue needs to be addressed. It is unclear whether any rapid large-scale implementation of PLUP is ongoing or planned. Villages within and overlapping with Production Forest Areas established with SUFORD support have already been mapped and zoned, but without using the PLUP process. Production Forest Area staff indicated that they use or would use the PLUP manual for areas currently being established and perhaps the same is true for the Conservation and Protection Forest Areas to be delineated and established in the future.

In the meantime, NLMA is under immense pressure to prepare the national land master plan, and complete land use categorization and zoning across the country as rapidly as possible. It received substantial funding through the National Assembly for land use planning and

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<sup>66</sup> Manual for Participatory agriculture and forest land use planning at village and village cluster level. March 2010. Ministry of Agriculture and Forestry and National Land Management Authority.

<sup>67</sup> Personal communication from Peter Jones, Land Use Advisor, PLUP Manual.

allocation in the poverty districts. NLMA drafted a manual for delineating and classifying land types across sectors, mapped land cover using aerial photos and completed land use planning and allocation in the 1000 villages of the 16 poorest districts of Laos since about March 2010. This appears to include agricultural and forestry land classification and allocation at the village level, the same work intended to be carried out using the PLUP manual.

NLMA plans to complete the land use planning process in a similar manner across the country. The quality and participatory nature of the process may be compromised given the speed and scale at which the planning is being implemented. Also the role of MAF in this zoning and land allocation process is unclear despite its mandate over forest and agricultural lands. The PLUP manual, an advanced protocol and tool developed in a participatory manner by MAF and NLMA with inputs from other agencies and drawing on lessons from past efforts, has been sidelined in the process. Land cover mapping should ideally be done through scientifically documented and tested methods using expertise from the agricultural and forestry sector. Unclear uncoordinated efforts could result in further land tenure confusion on the ground.

In general, clear and coordinated land use planning to support forest conservation and rural livelihoods using sound scientific and participatory processes would be a pre-requisite to actually make REDD+ work on the ground. Thus championing and implementing the PLUP process optimally would go a long way to stabilising land and forest tenure and use.

#### **4.1.3 Household and individual lands**

The socio-economic development strategy includes stabilizing shifting cultivation and promoting tree planting by all actors including small farmers for increasing forest cover and meeting livelihood needs. Households or individual villagers can:

- Be allocated degraded and barren forest land (considered state property) within village boundaries for natural regeneration or planting trees and NTFPs,
- Grow trees and NTFPs on degraded and barren forest land that they purchase or inherit from other individuals, and
- Apply for lease and concession of degraded or barren forest land from the State if more area is needed (this component is dealt with more extensively in Section 4.1.4).

The process of allocation of land to individual villagers for growing trees and NTFPs is linked to the village land use planning processes outlined in Section 4.1.2 above and faces the same hurdles. The State can allocate a maximum of three hectares of degraded or barren forest land per labour (per adult) in the household based on funds they have for development. Households in all villages, even those within production, protection and conservation forest areas can be allocated land for tree planting or regeneration. The allocation is endorsed by the District Governor based on the proposal by DLMA in coordination with DAFO and the village administration office. Temporary land use certificates issued on allocation can be converted into permanent land titles after three years of successful implementation based on agreed objectives. Individuals have the rights to transfer and inherit the allocated land.

Incentives for establishing tree plantations are to include:

- Land lease availability,
- Property rights on planted trees,
- Exemption of land taxes and fees for registered plantations,

- Free seedling distribution to farmers and technical services,
- Credit availability, and
- Contract farming options such as the 1+4 or 2+3 models.

At present there is no clear formal process and institution in place to support and encourage smallholder and domestic tree growers and not all of the above incentives have been actively provided to them. Land lease has been used mostly by foreign companies and credit is not easily available for domestic tree growers. However individuals can contract out their allocated plantation land to companies for plantation development through models such as the 1+4 or 2+3 approaches where farmers would provide land and/or labour; and companies would provide the knowhow, capital and resources. Benefits would be shared as agreed. As to whether contract farming options are permitted in villagers' lands within state Protection, Production and Conservation Forest Areas is unclear.

Trees planted with their own labour and capital become the property of the individuals and organisations and they have use and transfer rights to the timber and NTFPs. If used for commercial purposes, the plantations have to be registered (with DAFO or PAFO depending on whether below or above five hectares). Annual production plans and harvesting applications are monitored by DAFO and approved by PAFO and the provincial commerce office. This includes the use of protected and special species planted. PAFO and the provincial commerce office are also responsible for granting transport and export permits.

Though natural regeneration is mentioned as a possibility, the regulations do not provide any further details. Discussions with the Department of Forestry (DOF) revealed that clarification of the natural regeneration option awaits detailed reviews of how it could be implemented, what households could get out of it and what incentives could be offered.

Customary use of any timber and NTFPs present on individual non-forest lands such as paddy fields, orchards and stabilized slash and burn areas is allowed. Timber extraction and protected species extraction from these areas require similar village forestry unit and district-level checking and authorization as do the plantations on forest lands. Recent laws are not explicit on whether households can grow trees and NTFPs for use or sale on agricultural land but farmers have been planting teak, rubber, agarwood, rattan, bamboo and mulberry for sale in and around their fields and orchards<sup>68</sup>. An earlier 1996 MAF guideline<sup>69</sup> indicates that agricultural land cannot be afforested. However there is no clear line between agriculture and forestry in the upland agricultural landscape, and agroforestry systems to stabilise agriculture appear to be promoted<sup>70</sup>.

#### **4.1.4 Lease and concession for plantation business**

The forestry and land laws<sup>71</sup> indicate that lease and concession for regeneration, and planting trees and NTFPs can be allocated on degraded and barren lands that cannot naturally regenerate. The concept of "degraded and barren lands that cannot naturally regenerate"

<sup>68</sup> Status of community based forest management in Lao PDR. 2007. Khampay Manivong and Phouthone Sophathilath. NAFRI and MAF, Vientiane. Status report submitted to RECOFTC, Bangkok.

<sup>69</sup> MAF recommendations on land-forest allocation for management and use No. 0822/AF. August 1996.

<sup>70</sup> Forest Carbon Partnership Facility Readiness Preparation Proposal (R-PP) for Lao P.D.R. 11 October 2010.

<sup>71</sup> Law on Forestry (amended) No. 06/NA, December 2007. Law on Land (amended) No. 04/NA, October 2003. PM decree on state land lease or concession No 135/PM, May 2009.

requires clear definition including the biophysical parameters (such as canopy cover, seedling density, soil condition), social criteria (perceived degraded land may actually be villagers' fallow lands), and spatial signature (in aerial or remotely sensed images) for practical delineation and enforcement in the field. Further surveys and specifications of parameters are required.

The Laws are silent on the exact administrative area in which such concessions can be allocated. Degraded and barren areas exist on state Production, Protection and Conservation Forest Areas; in village territories within and outside these state forest land categories; and in other lands outside of the above four types. The Department of Planning in DOF clarified that as per current policy, concessions are not to be allocated in Protection, Conservation and Production Forest Areas which are to be retained in a natural forest state for protection and/or limited production purposes. Concession is allowed only in degraded and barren forest lands outside of the three state forest categories. Individuals (farmers and others) and organizations (associations, private corporations) can apply for lease/concessions on these areas and they have use and transfer rights to the planted trees and forest lands. Overall land lease and concession has been mainly issued to foreign or joint venture companies so far.

The concessionaires have to prepare or undertake:

- A review of the socio-economic and site conditions and the resources
- A technical and economic feasibility report endorsed by the organization managing the forest land and other sectors
- Social and environmental impact assessment including mitigation proposals to be endorsed by concerned sectors
- A work plan including land preparation and technology, environmental protection, village development, participation and benefit-sharing
- Implementation of relevant laws.

Concession/lease of degraded and barren lands for plantations can be granted by provincial or national authorities based on size and duration as listed in Table 2. Zoning, and village-level land use planning and allocation should be completed prior to granting lease or concessions, and the concessionaires have to enter into contracts with the state or private land owners. Concessions in the past were granted without adequate consideration of land cover and land use planning, and existing local usage and rights. Information flow to the national level has been limited and irregularities in issuance of concessions and implementation of contracts are commonplace<sup>72</sup>. NLMA and its line agencies are currently compiling an inventory of existing state land lease and concessions to be completed by year end, to provide a record and make transparent existing contracts. According to NLMA's Centre for Research and Information on Land and Natural Resources, more than 1000 concession applications are pending approval at present.

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<sup>72</sup> A) Results and recommendations: State land lease and inventory. Land Management and Registration Project – GTZ. Land Conference Turning Land into Capital, 6-7 October 2010, Vientiane. B) Report on appraisal, approval, monitoring and evaluation of tree plantation investment, FSIP, DOF, December 2009.

Table 2. Concession/lease allocation rules.

Permitting Institution/ Process	Concession/lease of degraded land	Concession/lease of barren land
PLMA proposes, PAFO agrees, Provincial Administration office approves	≤ 150 ha, 30 yrs max	≤ 500 ha, 40 yrs max
NLMA proposes, MAF agrees, National Government approves	150-15,000 ha, 30-40 yrs max + extension possible	500-30,000 ha, 40-60 yrs max + extension possible
National Government proposes, National Assembly approves	> 15,000 ha	> 30,000 ha

Source: PM decree on state land lease or concession No 135/PM, May 2009.

Numerous institutions and regulations across sectors are involved in the large-scale plantation allocation and implementation process. The Ministry of Planning and Investment is responsible for the investment component. The DOF Planning Division is responsible for reviewing and assessing the feasibility of the concession proposals. The Water Resources and Environment Administration (WREA) is to review the environmental and social impact assessment. Land management authorities at different levels are responsible for land allocation and implementation of concession agreements. The plantation section of the Production Forest Division is responsible for monitoring the plantations, the timber production and review of extension requests. The Ministry of Commerce is responsible for sales and the Ministry of Finance for taxes. Regulations, relative roles and responsibilities need to be streamlined, clarified and enforced.

Private plantations on lease/concession lands have so far mostly focused on exotic species such as eucalyptus for pulp and paper and rubber for latex production. Area in plantation concessions to date is unclear pending completion of the field inventory on past concessions by NLMA. Total planned plantation development outside state and village natural forest areas is 500,000 hectares.

#### 4.2 Potential REDD+ activities on which lands by which actors

Laos has decided to follow the nested approach where sub-national level implementation activities (province, district, village, forest management areas and sub-areas, projects) could be nested within a national level accounting framework<sup>73</sup>. It is open to both private and public sector participation in implementation. Laos is open to the whole range of REDD+ activities on its forest lands which includes REDD, conservation and enhancement of forest carbon stocks, and sustainable management of forest. However none of the international cases investigated in Section 3 have designed or implemented a scheme to comprehensively monitor forest degradation or forest management yet. The focus has been mainly on reforestation and avoided deforestation with the Climate Action Reserve also including IFM at the project level. Till appropriate methodologies are developed for national-level accounting of IFM and forest degradation, Laos could focus on reducing deforestation, and on conservation and enhancement

<sup>73</sup> Forest Carbon Partnership Facility (FCPF) Readiness Preparation Proposal (R-PP) for Lao P.D.R. Revised Draft October 2010.

of forest carbon stocks. However, actors on the ground could possibly use available voluntary market standards to implement IFM and avoided degradation projects outside of the national accounting system.

Degradation in Laos includes major canopy changes, as well as small-scale selective harvesting, fuelwood collection and sub-canopy disturbances that are not visible on Landsat and other coarse-resolution satellite imagery. If feasible, canopy density changes in different forest types which indicate substantial degradation could already be included at the national level. Laos has to also explore and define how to deal with a rotational agricultural landscape that has fallows, i.e. temporarily unstocked and restocked forest plots in a shifting mosaic. One possibility could be titling of rotational agriculture and future agricultural reserve areas with communal titles to better delineate and monitor them.

Current legislation does not appear to impose any restraints on generation and marketing of forest carbon credits by the owners/managers on any forest areas. The PM/WREA regulation on CDM approval procedures grants ownership of CERs to project proponents with fees and service charges to be paid to government agencies. Carbon gets a mention in Article 5 of the Forestry Law and in the 2010 PM decree on Protection Forest, “The State encourages indirect utilization of forest such as tourism sites, recreation sites, research sites, carbon market and so on according to laws and regulations”. It can be expected to be included in upcoming Production and Conservation forest area regulations.

Actual REDD+ implementation will likely work on discrete units on the ground that can have

- Clear spatial delineation,
- Secure tenure,
- Clearly-defined owner/manager with responsibility for REDD+,
- Baseline scenarios,
- Management plans to overcome threats and save carbon,
- Carbon assessments, and
- Effective stakeholder agreements to protect and monitor the resources, and report on and verify the outcomes.

The units need not necessarily be small projects as exist now on the ground as pilots or geared towards the voluntary markets, but could be large units managed by a clear authority – a state production forest area, a conservation area, a protection area – either the whole unit or a sub-area within with a clear REL, manager and plan.

#### **4.2.1 State Production, Protection and Conservation Forest Areas**

Lao PDR could undertake REDD+ in all state Production, Protection and Conservation Forest Areas, at least the national-level ones that make up the bulk. Reasons for including all major forest lands:

- REDD+ could provide financial support for undertaking planned forest administration reforms; delineating and setting up the Protection, Conservation, Production and village areas; developing and executing management plans and benefit-sharing schemes. As in Brazil’s Amazon region, the REDD strategy could be to place areas under clear officially-recognised ownership and specified management practices, thereby halting deforestation and degradation. Just delineating boundaries and involving local

communities resulted in reduced deforestation and substantial emissions reductions in SUFORD-supported production forest areas in Laos. REDD funds could help resolve the budget and resource crisis faced at present and support implementation of the existing forest area strategy and sustainable development goals.

- Designated and planned Production, Protection and Conservation forest lands cover vast areas (about 16.6 million hectares or 70% of the land area of the country). For national-level accounting to work, it is important that all major forest lands are included and contributing to avoid the risk of significant leakage of emissions from REDD+ implementation areas to forest areas not included. Further as apparent from the Brazilian and New Zealand examples, activities and enforcement on all key forest lands should probably be mandatory for the country to reduce emissions at the national scale.

State forest land categories can be managed by existing government agencies or as in Indonesia, some of the areas could be given out on special licenses to responsible private and NGO sector actors with environmental, social and governance safeguards in place. Alternatively independent state-recognized NGOs (as in the State of Amazonas, Brazil), private-public partnerships, or NGO-public partnerships could be established to run the program. Current legislation does not allow for the transfer, inheritance, lease or concession of natural forest even outside the three state forest land categories except perhaps to scientific research institutes and forestry training and skill development centres for preservation and development (Article 85 of the Forestry Law). Under such a scenario, private-public or NGO-public partnerships would be the most viable options and partnership models already exist in Laos. The NGO Wildlife Conservation Society (WCS) has been working to set up and implement management plans in two National Protected Areas (NPAs) in Laos. They are now looking to include REDD+ activities and investments into the management plans.

The following would be critical for improving local livelihoods and addressing degradation drivers:

- Clear delineation and titling of village and household use areas;
- Effective local participation in land-use planning, management and benefit-sharing in state-administered areas;
- Provision of alternative livelihoods; and
- Increased agricultural productivity.

REDD+ efforts that ensure such participation and provide strong social co-benefits are likely to be sought after in the markets. Participatory land-use planning, management and benefit-sharing; land titling and providing alternative livelihoods are in line with current Laotian regulations and in the evolving plans for management of Conservation, Protection and Production Forest Areas.

The SUFORD project is testing REDD (mainly avoided deforestation at present) in some production areas at present and looking at carbon monitoring and management<sup>74</sup>. The forest management plans are already conserving much carbon given low sustainable harvest rates (2 trees/hectare/15 years) and environmental protection measures undertaken. However funding is very limited and little of the surplus goes to area management, restoration (most of the areas are degraded forest) and community incentives. Setting up the areas helped reduce

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<sup>74</sup> Personal communication Esa Puustjärvi, CTA, SUFORD project.

deforestation but illegal logging and degradation continues unabated. REDD+ financing in addition to the minimal timber revenues could provide funds for area management, restoration and law enforcement; and provide alternative livelihoods and incentives to communities for forest protection.

REDD+ management actions on Conservation, Protection and Production Forest Areas could include effective protection of forests; natural regeneration and restoration of degraded areas and forests; remote sensing and participatory field monitoring of activities, outcomes and safeguards; and law enforcement. Natural Production Forest Areas are to be managed in accordance with FSC principles for sustainable forest management which already conserves substantial carbon<sup>75</sup>. In addition, studies are ongoing on implementing reduced impact logging techniques which could reduce emissions by around 30%.

#### **4.2.2 Communal forest areas, individual lands and plantation concessions**

On other forest lands under individual, community or private sector management, voluntary REDD+ activities by the owners, managers or lessees could be promoted and supported as in New Zealand. Voluntary efforts by actors on the ground could help reduce degradation and conversion pressures and contribute to local livelihoods. The efforts could be either stand-alone projects or aggregated (as allowed in the Climate Action Reserve) at a higher administrative level (such as the village cluster or kumban being developed now in Laos) to reach an optimal size for cost-effectiveness.

There appears to be scope for implementing REDD+ on communal and individual lands, but the exact magnitude and potential is unclear since village land use planning is still in its early stages and only a limited number of land parcels have been allocated and titled so far across the country. REDD+ readiness funds could help delineate identified REDD+ villages and clusters (for example in a Conservation Forest Area), provide clear and secure tenure arrangements, and set up the forest and potential forest areas for delivering carbon as well as other benefits. REDD+ activities could first be promoted in villages in and around state forest land categories since larger forestry management structures will be in place and village activities and monitoring are part of the larger area management plans. REDD+ in village lands in these areas could contribute to the state forest goals and help reduce degradation pressures while providing alternative income sources.

In private sector, community or household-owned plantation forests with long-rotation mixed-native species (or in naturally regenerated areas if permitted), potential REDD+ options are to:

- a) Conserve the areas and derive income from carbon credits and perhaps NTFPs. If the plant and conserve option was chosen, landholders could earn early and sustained long-term income from carbon benefits from the growing plantations. The tradeoff between carbon and timber benefits and risks will have to be evaluated based on current and future anticipated markets and market prices.
- b) Combine carbon benefits with timber benefits through selective or rotational harvesting practices (as is permitted in voluntary market standards and in the New Zealand ETS). Only net carbon stock benefits averaged across the harvesting cycles and project crediting period would be credited. Management could include sustainable

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<sup>75</sup> Forest Carbon Partnership Facility Readiness Preparation Proposal (R-PP) for Lao P.D.R. 11 October 2010.



environmentally-friendly planting and harvesting practices; reduced harvest levels; long rotations; more natural management methods and implementation of relevant safeguards. Rotational harvesting would require larger or pooled landholdings with different age classes. For newly established forests on degraded lands, there will be a certain long-term retention and gain in biomass and soil carbon that is not lost with harvesting and replanting the whole area. These credits will not have to be repaid on future harvesting.

- c) Carbon benefits over a long project crediting period much greater than a business-as-usual scenario, with timber harvesting allowed after the crediting period.

The economics of the different options and management implications will have to be explored.

*REDD+ options for community or village forestry* include:

- a) Avoided degradation, conservation and enhancement of carbon stocks in village protection and conservation forests,
- b) Sustainable forest management and enhancement of carbon stocks in village use forests, and
- c) Potential enhancement of carbon stocks in lease/concession communal plantations (registered as an association) of native species such as teak and other on long rotations.

The first two options would require effective monitoring and protection of village forests, natural regeneration and restoration of degraded areas, and sustainable management for conserving and enhancing carbon stocks. The third option would require communal titling of land and so far little land has been allocated to communities. Besides it is unclear whether lease/concession to even local households and communal associations is allowed in villages within the three state forest categories or only in areas outside. If the natural regeneration option is clarified in the future and allowed to communal associations, they could restore degraded areas to natural forest and manage the same for permitted multiple benefits including carbon.

Effective models of village/community-managed forests that meet village needs and provide additional revenue through carbon and other PES have to be established. The Tropical Forest Trust has some experience with developing community plantations and working towards certified wood production in Laos and elsewhere in the region. Management of NTFPs on a community basis and certification was/is being explored by WCS, FSIP and the World Wide Fund for Nature (WWF). REDD+ could be an additional item inserted into such assessments and models.

*REDD+ options for private smallholders:* Given that natural forest is not to be allocated to individuals and the natural regeneration option is still unclear, the only REDD+ option for household or individual forest landholders (on inherited, purchased, allocated or leased forest and/or agricultural land) at present is enhancement of carbon stocks via plantations and improved/sustainable forest management of plantations. Example: villagers within and around state forest land categories growing teak and other indigenous species for carbon and/or timber and other benefits. Lessons could be drawn from the smallholder teak plantations in Northern Laos and attempts to certify their timber production. REDD+ activities and benefits could again be inserted into such models.

Teak and other native species can be grown in small quantities in available areas with minimal management requirements, and high-value markets exist for the timber. Increased rotation lengths and project periods could be required for long-term storage of the carbon sequestered, for example 50-60 years at least. More natural forest management practices could also be considered for enhanced market value. Farmers and communities could obtain carbon credits from the growing plantations over the years and timber benefits after the project period. Alternatively selective or rotational harvesting is possible on an annual basis with net reversals accounted for through the carbon calculations. Rotational harvesting will require large or pooled landholdings in different age classes. If there are extensive reversals due to wholesale harvesting prior to project termination, the owner would have to pay back the carbon credits received. Another option open to smallholders and communities is reforestation purely for early and long-term sustained carbon benefits. The financial viability and market potential for these different options will have to be explored.

To implement REDD+ through enhancement of forest carbon stocks, smallholders and communities will likely need all of the same incentives that were to be provided for promoting smallholder plantation development such as seedlings, technical and financial assistance, land allocation and lease possibilities, land tenure security, and property rights on the planted/regenerated trees and carbon. Communities, households and individuals could conduct aggregated REDD+ activities when initiated and supported by government extension agencies, NGOs and the private sector. Such support is critical. Partnership models such as the 2+3 contract farming model could also be used after resolving the problems identified through prior implementation. However, it is unclear whether the contract farming option would be available to villagers situated within the three state forest land categories if outside investors are not encouraged in these areas.

An FPIC guidebook for REDD+<sup>76</sup> under preparation outlines a way to disseminate REDD+ information and allow communities and households to decide on whether they wish to participate in a proposed REDD+ project or not. This could be incorporated into the PLUP process in REDD+ target areas to make communities aware up front of REDD+ opportunities and individuals and communities could apply for land allocation for timber and carbon generation. Or FPIC could be conducted as a separate activity after basic land use planning and allocation of agricultural and village forest lands. A full PLUP procedure itself could take about 12 days to accomplish in one village, so there are practical time and financial considerations to be taken into account for implementing an FPIC process for REDD+. However, these need to be weighed against the value of having communities understand and accept their involvement in REDD+ which, will increase overall acceptance and success.

Any REDD+ activity in household or communal lands and related income cannot be viewed as a way to replace agricultural land or food production requirements, but as income on the side for enhancing livelihoods. In order to limit agricultural expansion and maintain more area in forest, REDD+ readiness programs and projects could look at existing research and trials on possible ways (biochar, incorporating nitrogen-fixing species, agroforestry models and other) to enhance agricultural potential on limited areas without compromising the soils and environmental quality. The programs would also need to look into reasons for lack of widespread adoption of

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<sup>76</sup> FPIC guidebook for REDD+ being developed by a Consortium led by RECOFTC.

promising methods and the feasibility of overcoming these. Stora Enso, a multi-national company, has developed a plantation model using participatory land use planning to identify suitable land and then developed a rotational agroforestry system that allows farmers to cultivate between the trees planted in rows at 10m spacing<sup>77</sup>. All families in one village had completely given up shifting cultivation since they had access to sufficient land for cultivation through intercropping and yields improved. Progress will have to be monitored as the plantations mature. While supporting communities to manage their lands for agriculture, timber, carbon and other benefits; binding contracts could be signed to stop expansion of agricultural areas.

*REDD+ options for larger scale private sector investors:* Laos has so far mostly had investments in fast-growing exotic species plantations for pulp and paper and rubber which are not likely to qualify for REDD+ credits on a large scale. Native species or mixed species plantations or natural regeneration with long rotations and substantial carbon and other environmental and social co-benefits have a better chance of finding markets and being included in future compliance regimes. Within the targeted plantation development area, native species plantations can be included and promoted on degraded and barren lands for high-quality long-rotation timber as well as carbon and other benefits. This is in keeping with recent FLEGT (Forest Law Enforcement, Governance and Trade legislation) developments that require timber marketed into the European Union to come from legal sources, which in Laos will mean more wood products to come from managed plantations and less from native forests<sup>78</sup>.

Legitimate investors would need to be identified, a favourable investment climate established, and environmental and social safeguards put in place and enforced. The domestic private sector in Laos is nascent and could be supported and encouraged to undertake plantation activities for multiple benefits. One domestic tree grower has been planting a range of long-rotation native species for timber and such experiences could be explored for how to possibly combine REDD+ activities with timber production in native species plantations. In the future if the natural regeneration option is clarified and allowed by the private sector, they could restore degraded areas to natural forest and manage the same for permitted multiple benefits including carbon.

Larger-scale private plantations may have better access to financial and technical resources, could practice rotational harvesting and be located anywhere on degraded and barren lands outside the forestry estate. They would need to fulfill all current legal requirements such as environmental and social impact assessments (ESIAs) and more to undertake REDD+ on concession/lease lands. Allocation of forest lands to plantation and other projects should ideally be done after village land use planning for ensuring community rights and benefits, and reducing potential tenure conflicts. Participatory processes, social and environmental co-benefits, and compliance with management plans and agreements should be ensured on such plantations. Minimal benefit-sharing proportions could be regulated. The regulations also need to specify clearly where and to whom such lease/concession (land cover and jurisdiction) can be allocated for plantation development.

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<sup>77</sup> Personal communication, Peter Fogde, Stora Enso; and Forest Carbon Partnership Facility Readiness Preparation Proposal (R-PP) for Lao P.D.R. 11 October 2010.

<sup>78</sup> Lao backs new EU timber legislation. Somsack Pongkhao. Vientiane Times, 15 September 2010.

### 4.3. Additionality and other eligibility requirements

As per current REDD+ discussions, Laos would need to reduce emissions below an identified national forest reference emission level or forest reference level, or if appropriate, subnational forest reference emission levels or forest reference levels. The RELs have to be developed transparently based on historic data adjusted for national circumstances. To ensure that subnational activities and emissions reductions total up to national level monitoring and emissions reductions, RELs could be set for each major state forest area using the same methods, and cumulated up to form a national-level REL. This allows for direct crediting/financing of emission reductions below the REL achieved by each major forest administration area and directly rewarding actors on the ground.

In addition to setting up a REL, private native species plantations, community and household forests implemented as voluntary projects could be required to meet the “no legal requirements test” and “barriers tests” such as those posed by the CDM for AR projects with modifications. These areas are not legally required to conduct the activities as per stringent REDD+ guidelines. They likely face investment (low capital), financial (long waiting periods for returns from native species) or technological (costs of methodology development, monitoring and verification systems) barriers; and significant livelihood pressures (high forest and forest land dependence for livelihoods).

Other standard eligibility requirements include:

- a) Reforestation activities only on non-forested areas as on a particular baseline date. Improved forest management, and avoided deforestation and degradation activities on forested areas. Clear forest definition and guidelines for identification of forest/non-forest areas, and demonstration of proof. Also consider identifying and disallowing reforestation on native grasslands and other naturally unforested areas to conserve native biodiversity.
- b) Delineation of boundary of REDD+ activity, demonstration of ownership and/or management authority in area.
- c) Prove conformance with other forestry, environmental and social laws.
- d) Demonstrate how the activity will contribute to REDD+ removals or reductions.
- e) Negotiated stakeholder agreement regarding roles and responsibilities (management and monitoring), benefit-sharing, not to expand agricultural areas beyond that delineated and to protect the remaining forest area.

### 4.4 Permanence and leakage

Long-term storage and monitoring of the carbon generated and credited is required, much longer than in the baseline plantation scenario. The Climate Action Reserve requires a 100 years of storage. Laos needs to determine the number of years required for permanence and how to address the risk of reversal of the carbon captured and stored in forests. Temporary crediting CDM style was a failure. More relevant options being used in New Zealand and the Climate Action Reserve, and proposed for the California compliance regime, are to have reserves and buffers and pay back credits from these reserves and buffers for reversals.

For example on the ground, the REDD+ program or project area would be liable for reversals, and keep a reserve of credits for avoidable reversals (such as harvesting or conversion to some

other land use) and contribute some credits into a national buffer for unavoidable reversals (such as that caused by landslides). Emerging insurance schemes<sup>79</sup> are also an option. Any residual liability for reversals would rest with the country which could keep a reserve of credits that it does not receive payment for or it could purchase credits internationally to make up for the reversals.

Leakage would be addressed through national-level accounting. Projects and activities on the ground could also take measures to reduce leakage in the vicinity by including the surrounding areas into the project activities.

#### 4.5 Environmental, social and governance aspects and safeguards

To resolve the underlying causes of deforestation and degradation (conversion pressures, agricultural expansion and illegal logging) and support REDD+ activities on different lands by different actors, policy reform and enforcement such as that planned or implemented in Indonesia and Brazil could be included as part of the REDD+ strategy. In Laos, the following environmental, social and governance issues need to be addressed for facilitating REDD+ investments and activities. Environmental, social and governance safeguards should be developed in a participatory and transparent manner, and monitored, implemented and enforced in an optimal manner. Development and monitoring could either be done in-country or in partnership with third-party standards organisations.

a) Environmental: General international trends in this area are:

- REDD+ activities that qualify will likely exclude natural forest conversion to plantations, industrial-scale logging, and fast-growing exotic plantations.

Laos already aims for natural forest conservation and sustainable management and use on all state-administered forest areas, with environmentally-friendly management and harvesting practices where allowed. Restoration of degraded areas (exclude native grasslands and other naturally unforested areas) would be through natural regeneration and native species as already regulated. So current and anticipated management activities are in line with what forest carbon rules and markets are likely to require. On the planned 500,000 hectares of plantations, Laos could explore the scope for and support private sector, community or household plantations that favour long-rotation native species and natural management for forest carbon benefits and/or timber and NTFPs.

- High-conservation forest areas to be protected and conversion activities directed to degraded lands as determined through transparent spatial databases and participatory decision-making systems across levels and sectors.

Laos is currently working on an inventory of existing concessions and a national land master plan to clarify and stabilize land use and development plans across sectors. The land use planning and allocation regulations could potentially incorporate and seek

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<sup>79</sup> Forest carbon insurance available <http://www.nzcarboninsurance.co.nz/> Carbon Monitor Volume 15, Issue 9. October 2010, Auckland, New Zealand. [http://www.eitg.co.nz/images/Carbon\\_Monitor/eitgcm1509.pdf](http://www.eitg.co.nz/images/Carbon_Monitor/eitgcm1509.pdf)

compensation for carbon, biodiversity and other environmental costs of forest land conversion; redirect conversion activities to low-carbon and low-biodiversity lands and protect high conservation value lands<sup>80</sup>. Public bidding procedures for concessions are recommended<sup>81</sup>. Spatially-explicit high-quality data on relevant parameters are needed along with integrated data management and analysis systems to facilitate accurate and transparent decision-making and verification in accordance with the laws.

In order to bring bulk of the forest areas under protection and sustainable management, Laos has to complete its ongoing forestry administration reform. This includes delineating existing and planned state, communal and private forest areas; building management institutions and capacity; and developing plans and strategies for managing the areas while including REDD+ and other PES activities.

- Laos has to assess and address environmental impacts of proposed and actual REDD+ activities within and outside implementation areas.

The role could potentially be taken up by WREA who is already tasked with reviewing ESIA's for land concession activities. It is likely WREA would need additional capacity in doing ESIA's that are specific to REDD+. Clear guidelines and procedures need to be developed for conducting the assessments, ideally in a participatory manner.

b) Social: General requirements and/or trends in this area are:

- Conduct participatory land use planning and resolve tenure issues for households and communities.

Large-scale REDD+ implementation anytime soon is difficult because village-level land use planning and allocation should be completed to bring all land under clear and stable ownership and management for forest protection and sustainable use. There is urgent need for high-level dialogue and agreement on the relative roles and mandates of different institutions in Laos, a streamlined coordinated land use planning and allocation process at the village level involving all relevant sectors, use of accurate approved protocols including participatory approaches, funding for capacity-building and scaled-up implementation, and a more realistic time frame for effective implementation.

Development, agreement on and institutionalisation of a consolidated protocol that also incorporates land use planning and allocation for other sectors at the village level using similar standards and rigor as the PLUP manual would help NLMA coordinate and implement cross-sectoral land use planning more effectively. Till the land use planning process is completed satisfactorily, REDD+ can possibly be implemented only at sub-national scales (individual Production and Conservation Forest Areas, individual villages and village clusters) where land allocation can be effectively implemented and institutionalized.

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<sup>80</sup> Forest Carbon Partnership Facility Readiness Preparation Proposal (R-PP) for Lao P.D.R. 11 October 2010.

<sup>81</sup> Results and recommendations: State land lease and inventory. Land Management and Registration Project – GTZ. Land Conference Turning Land into Capital, 6-7 October 2010, Vientiane.

- Communities to participate in management and monitoring of state-administered areas, and receive payment for their services.

The participatory management approach has already been endorsed by the Laotian government for state production, protection and conservation forest areas. The approach needs to be developed and implemented on the ground.

- Alternative livelihood and community development projects to reduce deforestation and degradation pressures, and alleviate poverty.

Lao laws allow for tourism and recreation development in controlled use and buffer zones of state forest categories, NTFP gathering for sale in village use forests and smallholder plantations on individual and communal lands. Livelihood development should ideally be linked to natural resource management actions and performance-based outcomes to help meet REDD+ and other forestry sector goals. Ecotourism benefits linked to biodiversity conservation already flow to households in WCS-supported conservation area. Work is being done on certification of village NTFP production and smallholder teak production. These are all promising options that could be promoted as part of the REDD strategy. Creating stable alternative livelihoods will likely take substantial effort and time but is critical for successful REDD implementation.

- Equitable benefit-sharing arrangements from forest carbon and other production payments.

Such arrangements need to be developed to reduce degradation and deforestation pressures and reward communities for protecting the forests. See Section 4.6 on financing and distribution for some preliminary suggestions.

- Implement FPIC process<sup>82</sup> in village areas including
  - participatory mapping and ESIA;
  - access to information on land, rights-holders, impacts, benefits, finances, risks and legal implications;
  - REDD+ negotiation on land use, benefit sharing, compensation, protection, financial and legal arrangements, dispute resolution, monitoring process;
  - Final written agreement endorsed by government;
  - Implementation
  - Participatory monitoring
  - Resolution of emerging grievances and disputes

REDD+ information and negotiation using FPIC procedures could be incorporated into or be conducted alongside planned and ongoing village level land use planning processes in villages in Laos where REDD+ is to be implemented. At the start, the focus could be on villages in and around the three state forest categories where MAF has a clear mandate and management system in place, and prior to clarification on institutional arrangements between MAF and NLMA. Understanding and recognition of

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<sup>82</sup> FPIC guidebook for REDD+ being developed by a Consortium led by RECOFTC.

the FPIC process especially the background and origins will need to be built at all levels of government.

c) Governance requirements that Laos needs to fulfil include:

- Refined and harmonised forest and forestland-related regulations across sectors and levels. Ensure REDD+ legal consistency with national forest program and sustainable development goals.

Laos is already undertaking legal reform in all sectors. MAF will issue detailed regulations supporting the management and protection of its state forest land categories, and looks to iron out inconsistencies and gaps in forestry laws after careful consideration of the options and consequences. Examples of gaps include practical definitions of different land types (such as degraded and barren lands) and clarification on where plantation concessions can be allocated. Scope, rules, guidelines and incentives for carrying out REDD+ and other forestry activities by different actors in different forest categories and tenure types needs to be clarified, along with rights to carbon and other PES. Forestry sector laws have to be harmonized with other laws such as the land law, and the processes and roles of different institutions clarified. REDD+ readiness funding could contribute to this process.

- Clear guidelines and enforcement of logging, trade, land use and REDD+ laws, management plans and agreements. Community involvement in monitoring.

Effective enforcement needs strong, timely and independent monitoring and enforcement mechanisms, and adequate resources and empowered institutions to carry out the same. New institutions have been created for independent enforcement of forestry laws (Department of Forestry Inspection, DOFI) and land laws and contracts (NLMA inspection division). These institutions have to be supported, capacitated and empowered to carry out their tasks in coordination with the managing agencies on the ground. Further guidelines and enforcement could be part of the REDD readiness preparation process.

- Transparent and participatory processes throughout from planning to design, implementation, MRV, and financial transfers and distribution. All documents, data and decision-making publicly accessible online for transparency, verification and credibility.

#### **4.6 Financing and distribution**

National, sub-national and international compliance schemes as well as the voluntary markets for forest carbon are nascent and evolving at present, so it is best to allow for all possible options to ensure adequate and sustainable financing, and have the flexibility to respond to upcoming developments. Brazil has set up a fund for voluntary contributions from various types of donors (domestic and international, public and private) and Indonesia is required to do so to receive REDD monies, so this is a likely requirement for Laos as well. Such a fund would need to be transparent, run by a credible institution, and open to international verification and auditing.



To promote actions and make them cost-effective, Laos could also allow for sub-national activities to directly comply with and tap into available international compliance and voluntary markets, and use of these credits by developed country parties for offsetting emissions wherever possible. The opportunity to directly sell into the market and take advantage of any available higher prices may motivate sub-national actors, and the national government does not have to raise all the funds.

A possible model combining Brazil's fund-based approach with New Zealand's market-based approach, while allowing for sub-national activities within a national accounting framework and not double counting emission reductions, is presented in Section 5.4. Prices received have to be sufficient to make the REDD+ activities financially viable in the long run, and Laos could determine minimum viability in different forest land types. Based on the forest land type and tenure regime (as in Indonesia), Laos could establish minimum guidelines for benefit-sharing arrangements on the ground and differentiated proportions going to government agencies, local communities and developers/managers. Beyond that, detailed arrangements could be negotiated by sub-national actors on a case by case basis depending on stakeholder roles, contributions and other benefits received.

However, the REDD+ benefits in combination with other new income sources have to be adequate and sustainable, and shared transparently and equitably to change behavior and incentivize people to protect, manage and use the state forest land categories as per plan. Distribution of carbon benefits to communities could be based on household contribution to larger area management and protection– for example, those who actively participate in patrols, those who follow the regulations, and those who violate the regulations. Lessons could be drawn from WCS experience on the ground with distributing ecotourism benefits. IUCN has undertaken a review of PES benefit-sharing schemes and is working on a potential REDD benefit-sharing model. In Laos such models should also consider factors that have impacted local communities such as resettlement in new areas, concession development, UXO concerns and others. All of these will impact on how communities cooperate, who becomes involved and how benefits are distributed.

## 5. LINKING SUB-NATIONAL ACTIVITIES TO NATIONAL-LEVEL ACCOUNTING

Effectively linking sub-national REDD+ activities to national-level accounting is an important issue for two reasons:

- a) A project activity on the ground protecting the forests in that area can lead to leakage or displacement of emissions through increased deforestation and degradation in the surrounding area given continued subsistence needs, market demand or other deforestation and degradation pressures. Thus in net a country can continue to emit the same level of carbon while claiming credits for emission reductions in one sub-area.
- b) If there are both national and sub-national activities which receive performance-based rewards for emission reductions, it may give rise to the issue of double counting. The country accounts and claims rewards for emissions reductions over its entire territory based on national monitoring and accounting systems, while a sub-national activity again claims rewards for emissions reduced within its area of operation. In such instances, there is only one set of real emissions reductions taking place but it is counted and rewarded twice.

Up to the present most forest carbon activities in developing countries have been projects on the ground. This includes offset projects under the CDM; various voluntary standards such as Plan Vivo, VCS and the Climate Action Reserve; and pilots implemented through bilateral and multilateral donor and NGO support. Most standards require leakage to be accounted and compensated for just beyond the project boundaries.

### 5.1 UNFCCC REDD-plus proposal and submissions

The need for scaling up to higher-level accountability (the country and/or the state) is recognized and required under ongoing UNFCCC REDD+ discussions and thus considered in the REDD readiness plan proposals of various countries and states. Current decisions and negotiating text call for setting up of national forest reference emission levels and national-level forest monitoring systems to monitor and report the REDD+ actions and safeguards. Emission reduction outcomes are to be assessed and accounted for at the national level. Allowance is made for establishment of subnational forest reference emission levels, monitoring and reporting approaches where appropriate as in the case of demonstration activities or as an optional interim measure till national approaches are developed. Where sub-national activities are allowed, they are to be assessed for leakage or displacement of emissions.

A submission<sup>83</sup> to the UNFCCC's Subsidiary Body for Scientific and Technological Advice (SBSTA) in 2007 and a subsequent related paper<sup>84</sup> had proposed the "nested approach" combining national level-accounting with sub-national and project-based activities. The

<sup>83</sup> Submission to the UNFCCC by the Tropical Agricultural Research and Higher Education Center (CATIE) and the German Emissions Trading Association (BVEK) regarding Reducing Emissions from Deforestation in Developing Countries (FCCC/SBSTA/2006/L.25). [http://unfccc.int/essential\\_background/library/items/3599.php?rec=j&preref=500004142#beg](http://unfccc.int/essential_background/library/items/3599.php?rec=j&preref=500004142#beg)

<sup>84</sup> The "Nested Approach" A Flexible Mechanism to Reduce Emissions from Deforestation. A proposal. Lucio Pedroni (CATIE), Charlotte Streck, (Climate Focus), Manuel Estrada (Mexico) and Michael Dutschke (BioCarbon). <http://www-personal.umich.edu/~thoumi/Research/Carbon/Forests/Forests,%20AD%20Critiques/Nested%20Approach%20to%20REDD.pdf>

approach could promote more activities at multiple scales and help mobilize sufficient resources for implementing REDD+ by attracting direct private sector investment. The private sector would be unlikely to invest in government programs at a large scale and tend to favor smaller controllable projects with lower investment risks. The nested approach proposes integrating sub-national REDD activities into national programmes, but de-linking performance-based rewards of such sub-national activities from the risk of broader programme failure to encourage participation. The project activities could be implemented with direct crediting of verified emissions reductions by an independent international mechanism and not wait for crediting from the national system. The proposal stops short of providing accounting rules that could integrate country-level and project-based activities to avoid double counting of emissions reductions.

Parties to SBSTA discussions so far have expressed broad support for use of national approaches and accounting systems in the long run to facilitate reporting, address leakage concerns and avoid double-counting of emission reductions or removals<sup>85</sup>. There were calls for further analysis and assessment of the implications of both national and subnational approaches but it was noted that this would be more of a policy-related discussion than a methodological one.

I explore below two instances where sub-national forest carbon activities coexist with higher level monitoring and accounting (New Zealand and Brazil). I then present a possible nested REDD+ model for Laos that covers the basic requirements, and includes many of the pluses of the New Zealand, Brazilian and the Climate Action Reserve (see Section 3.7) models while attempting to overcome the minuses and gaps.

## 5.2 Forestry in the New Zealand ETS

The NZ ETS combines a system of national accounting for Kyoto compliance with sub-national implementation by land and forest owners. The following key features make this nested approach feasible and result in delivery of real, measurable, permanent credits that have been traded at relatively high prices in the international Kyoto market.

- a) New Zealand has in place a Land Use and Carbon Analysis System (LUCAS) which uses a combination of remote sensing, field verification and a plot-based national forest inventory system to monitor land use changes and carbon removals and sinks nationwide. This system provides information for national-level reporting on LULUCF (afforestation, reforestation and deforestation) removals and emissions, and simultaneously supports the ETS by providing high level land use data for targeted and comparative monitoring of individual participant landholdings to ensure
  - they meet their obligations,
  - they do not overstate their entitlements, and
  - that any Post-1989 forests entered into the NZ ETS are in fact Post-1989 forests.

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<sup>85</sup> Report on the workshop on methodological issues relating to REDD in developing countries. SBSTA twenty-ninth session, Poznan, 1–10 Dec 2008. FCCC/SBSTA/2008/11. <http://unfccc.int/resource/docs/2008/sbsta/eng/11.pdf>

- b) New Zealand has passed on its Kyoto Protocol obligations and benefits under the LULUCF sector to private landowners (tenure is clear and secure here) on the ground actually responsible for the deforestation, afforestation and reforestation activities. It compensates and rewards the landowners for keeping the land in forest or growing new forests by providing them with
- Permanent bankable domestic credits (NZUs) that are backed by Kyoto units (AAUs<sup>86</sup>) and can be converted and traded at potentially high prices in the international Kyoto market,
  - Early award of domestic credits (NZUs) prior to and irrespective of the award of Kyoto LULUCF credits (RMUs<sup>87</sup>) to the country following the national inventory report submitted to the UNFCCC after the first Kyoto Protocol commitment period (after 2013),
  - Voluntary participation possibility for post-1989 forests rather than mandatory participation to encourage more afforestation and reforestation activities (Some landowners who wish to grow trees say for timber may stop doing so if mandated to join the ETS and follow its accounting and harvesting rules. If they choose to grow trees but not join the scheme, the government can still gain from net emissions reductions on their sites), and
  - Continued timber harvesting possibilities and allocation of NZUs as compensation for unreasonable compliance costs on pre-1990 forests. Deforestation is said to occur only if the land is converted to alternative use or cannot support any regrowth.
- c) The NZ ETS has made provision for ensuring permanence of emission removals and sinks at the landholder level as well by requiring surrender of NZUs or Kyoto units for deforestation of pre-1990 forests and reversals in post-1989 forests due to harvesting or other disturbance. The obligation to surrender currently exists in perpetuity. Landowners will likely retain some NZUs if they want to harvest or as insurance against fire and other risks.
- d) No matter what happens to the forests after the credits are allocated or issued, even if the landholders fail to meet their deforestation or reversal obligations, the government will still account for emissions at the national level and take liability for any net emissions overall. The government also accepts liability for the pre-1990 forests it exempts from deforestation obligations and net decreases in carbon stocks from unregistered post-1989 forests.

This last point in particular, the backing of the New Zealand Government's national accounting and responsibility system for its sub-national efforts ensures the delivery of real and permanent credits with high integrity.

### 5.3 Deforestation Accounting in the Brazilian Amazon

Brazil is currently on a two-track system, with the national government advocating a fund-based approach for REDD activities at the international level and via its Amazon Fund, but

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<sup>86</sup> AAUs or Assigned Amount Units (equal to 1 metric tonne of CO<sub>2</sub> equivalent) are assigned to each developed country in Annex 1 of the Kyoto Protocol based on their Kyoto commitments. AAUs may be exchanged through emissions trading and are convertible to other Kyoto units such as tCERs, ICERs and RMUs. Every domestic NZU New Zealand issues is backed by an AAU it has already been assigned under the Kyoto Protocol.

<sup>87</sup> RMUs or Removal Units (equal to 1 metric tonne of CO<sub>2</sub> equivalent) are issued under the Kyoto Protocol for emissions reductions or removals under the Land Use and Land Use Change and Forestry (LULUCF) Sector.

states pursuing carbon market funding for the numerous projects in their territories. Thus there are varied independent overlapping legislations at the national and state levels allowing different activities and financing mechanisms. Lack of a truly nested or linked approach increases transaction costs and adds legal uncertainty for project proponents<sup>88</sup>.

Brazil's Amazon fund combines Amazon-level forest carbon accounting with project activities on the ground. The Amazon fund receives voluntary donations for post-verified emissions reductions achieved based on annual wall-to-wall Amazon deforestation monitoring and issues nominal<sup>89</sup> credit certificates to the donors. The positive aspects of this system are that the emission reductions are real and verified with leakage taken care of at the Amazon level, and donors are willing to pay for it. Real-time monitoring and enforcement systems allow for immediate and effective control on the ground.

The fund-based approach does not link emissions reduction activities and actors to direct rewards and incentives, and depends more on law enforcement to achieve its goals. More specifically:

- a) The funds received are distributed down to sub-national project applicants by paying a percentage of the project costs. Project-level activities are supported on a general basis as long as they demonstrate that they will contribute to emission reductions, and they do not have to go through emissions reduction calculations and verification. The fund therefore supports a whole range of early phase readiness activities rather than paying for verified emissions reductions.
- b) The system does not compensate or reward actors and activities on the ground that actually achieved emission reductions or avoided deforestation. Besides some policy reforms such as the wholesale creation of protected areas and altering the terms of agricultural credit, success is mainly achieved through strict deforestation monitoring and law enforcement, rather than encouraging voluntary emissions reduction initiatives on the large areas of private landholdings. The strong enforcement basis with little reward or compensation to actors on the ground recently ran into political problems and the 75-year old forestry code that supports forest protection is under fire<sup>90</sup>. If the code is altered, the system may not deliver further emissions reductions and there could also be a reversal of reductions already achieved.
- c) Credits issued to donors are not transferrable or tradable, and cannot be used to offset emissions. Thus the fund will not attract donors who would like to achieve mandated emissions reductions in a cost-effective manner.

State laws such as in the State of Amazonas also provide a legal framework for carrying out forest carbon projects in the State.

- a) Unlike the Amazon fund, the Amazonas state programs and projects directly reward communities on the ground for stopping deforestation.

<sup>88</sup> Legal Frameworks for REDD: Design and implementation at the national level. 2009. John Costenbader, editor. IUCN Environmental Policy and Law Paper No. 77. IUCN, Gland, Switzerland. <http://data.iucn.org/dbtw-wpd/edocs/EPLP-077.pdf>

<sup>89</sup> The credits are not tradable, transferable or capable of being used for offsetting.

<sup>90</sup> Will Brazil Change its Forest Code – and Kill the Amazon? 22 September 2010. Richard Blaustein and Chris Santiago. [http://www.ecosystemmarketplace.com/pages/dynamic/article.page.php?page\\_id=7718&section=news\\_articles&eod=1](http://www.ecosystemmarketplace.com/pages/dynamic/article.page.php?page_id=7718&section=news_articles&eod=1)

- b) The state allows for a range of financing sources to achieve adequate sustainable financing. Funding support is received from the state, the private sector and the Amazon fund; and direct financing from voluntary carbon markets for actual emissions reductions achieved is also permitted.

A major problem given the independent overlapping national and state initiatives is double counting of emissions reductions. Donors pay into the Amazon fund for wall-to-wall Amazon emissions reductions, and then there are direct payments for emission reductions from the state and voluntary markets to Fundação Amazonas Sustentável-supported project sites within the Amazon.

Unlike in New Zealand, the national and state programs in Brazil do not issue domestic credits for emission reductions to actors on the ground, and so there is not much opportunity to avail of carbon markets unless landholders separately qualify for international voluntary or compliance standards.

#### 5.4 Options for Laos

In its R-PP<sup>91</sup>, Laos has indicated preference for the nested approach where sub-national REDD+ activities on the ground are to be nested within a national-level carbon accounting framework to promote action at multiple levels and mobilize sufficient resources for REDD+ implementation. Multiple sources of funding (funds, compliance and voluntary markets) and actions by multiple stakeholders (government, donors, NGOs and private sector) are contemplated.

Figure 1 presents a plausible national-level monitoring, accounting, financing and crediting framework design that builds on the existing models presented above and tries to effectively integrate multiple types of crediting and financing mechanisms that may be sought. The following nested REDD+ model allows for:

- Different types of REDD+ financing mechanisms, i.e. fund and market-based approaches (voluntary markets, emerging national or state compliance markets).
- And seeks to promote REDD+ investments and activities by multiple actors, i.e. communities, farmers, government agencies, private sector, philanthropists, NGOs, international donors and development agencies.
- A range of large to small sub-national project activities that actually carry out REDD+ on the ground, i.e. state Production/ Protection/ Conservation Forest areas, sub-Forest Management Areas, village forests, community and private sector plantation/reforestation areas, aggregated individual plantations, and others. Criteria: A sub-national project activity has clear boundaries, ownership and management plans; REDD action plans and implementation; RELs; and monitoring and verification of emission reduction results. Geographic administrative units such as districts or provinces are not included as sub-national project activities since there are many landholders and uses within with no single dominant objective.
- Choice in carbon crediting, i.e. through a) the national REDD+ agency and corresponding regulatory framework, or b) through external compliance and voluntary standards.

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<sup>91</sup> Forest Carbon Partnership Facility Readiness Preparation Proposal (R-PP) for Lao P.D.R. 11 October 2010.

#### 5.4.1 Features of this model:

- a) A national REDD+ monitoring and accounting agency would calculate, have verified, and report on net emission reductions via deforestation (RED) and reforestation (AR) at the national level in either:

Option 1: Wall-to-wall national lands within and outside the forestry administration system (Production, Protection and Conservation Forest Areas) as is done in Brazil's Amazon region. *Plus – Full accounting for emissions from all forest lands with reduced scope for leakage. Minus – Expensive and difficult to create RELs for small scattered areas outside consolidated forest management units and to execute and enforce REDD+ actions on the ground in these areas.*

Option 2: Wall-to-wall accounting only within and around (in pre-defined buffer zones) the forestry administration system (Production, Protection and Conservation Forest Areas at national to district levels). Include village, household and private forests within and around the forestry administration areas. This option to account only for managed forest areas is parallel to that of the reporting requirements of Annex 1 countries to the Kyoto Protocol. *Plus – Easier and less expensive to implement and monitor. Minus – If there are substantial forest areas outside the forestry administration system, degrading activities and emissions may be transferred to those sites and not be accounted for.*

Option 3: Wall-to-wall accounting only within and around (in pre-defined buffer zones) the forestry administration system (Production, Protection and Conservation Forest Areas at national to district levels). Exclude village, household and private forests within and around the forestry administration areas. *Plus – accounting for large segments of land under single homogenous management is easier. Accounting for small fragments of village and private lands under different ownership and management regimes significantly raises the required effort and cost. Minus – There could be leakage of degrading activities to the communal and private areas, as well as the forest areas outside the forestry administration system.*

The chosen option for national-level accounting will ultimately have to be in line with any internationally-negotiated REDD+ agreement.

- b) At present, only deforestation and reforestation (land use change from and to forest) have been monitored and reported on consistently and cost-effectively at a large scale in different countries, and Laos could opt for the same at the national level. National-level accounting and reporting on degradation and sustainable management of forest could be deferred till methodologies are developed for effectively implementing the same at a large scale. Smaller sub-national projects could independently account for avoided degradation and improved forest management through external voluntary and compliance standards, and earn credits for these activities outside of the national accounting and reporting system.
- c) The proposed model combines three different crediting and financing pathways to sub-national project activities on the ground, allowing for flexible and multiple marketing and financing options.

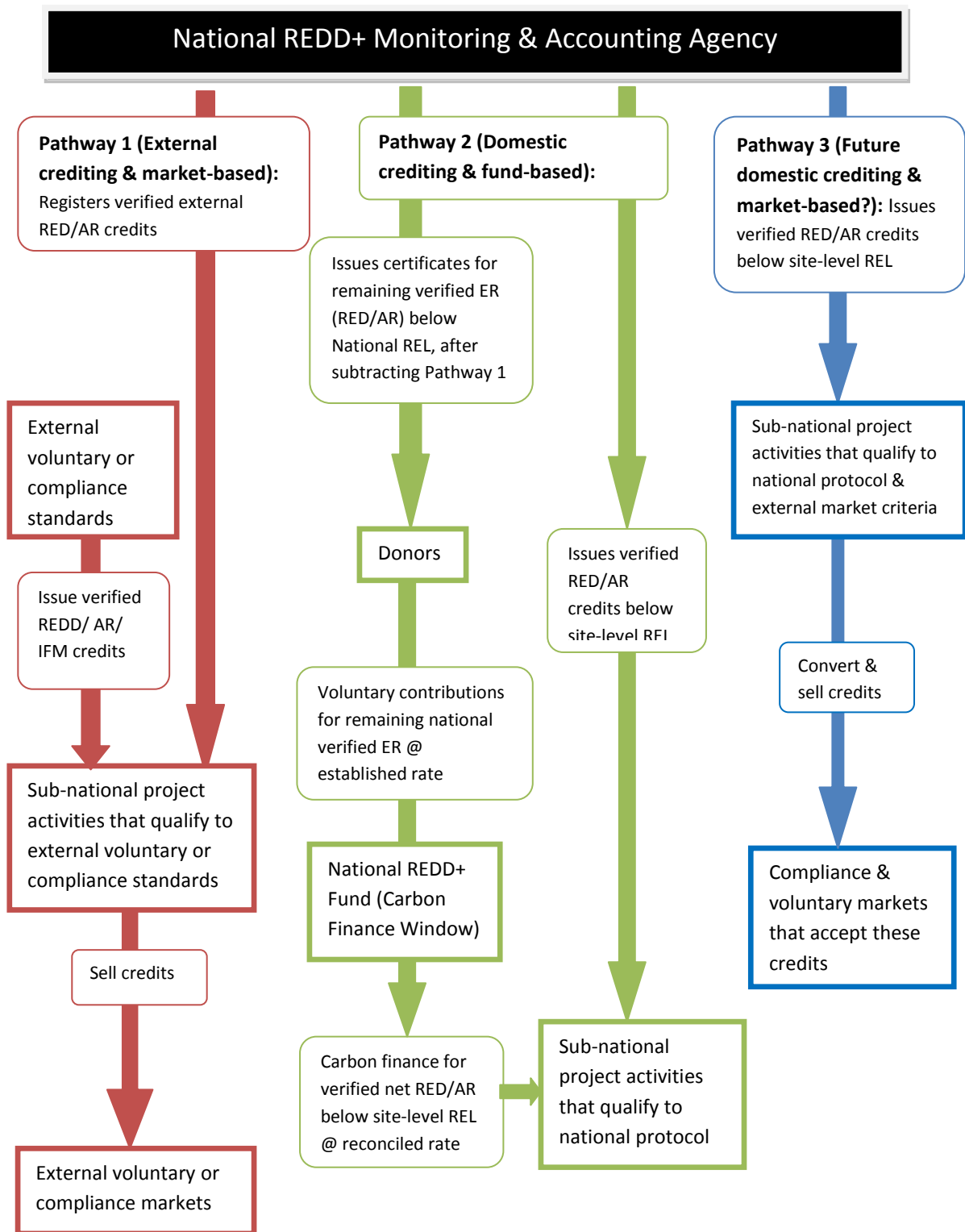


Figure 1. Nested REDD+ model with multiple crediting and financing pathways.



Pathway 1 (External crediting and market-based): Sub-national project activities can choose to directly qualify to existing external voluntary standards or emerging compliance regimes (state, national, international UNFCCC)<sup>92</sup> while complying with the national REDD regulation/protocol. They receive credits for verified emissions reductions (ER) below the site-specific REL from the external standards agencies and are allowed to sell the credits in external compliance or voluntary markets. The country gives the final approval on the project and the "release" of sale of Laos' ecosystem services.

Fungibility of the credits and permitted use for offsetting will depend on provisions in the external voluntary and compliance standards used. Besides reforestation (AR) and avoided deforestation (RED), immediate crediting may also be possible for avoided degradation and sustainable forest management activities for small-scale projects if methodologies exist or are newly approved. The national REDD+ monitoring and accounting agency registers and includes the verified external reforestation and avoided deforestation credits in the national accounting, and does not issue any domestic credits for the same. A proportion of the carbon revenue could go to government agencies as taxes and the communities as per pre-defined national benefit-sharing guidelines and/or further site-level arrangements.

The national REDD regulation/protocol should be rigorous and developed participatorily with national and international stakeholders (local communities and administration, NGOs, national/international experts, UNFCCC representatives, project developers, credit buyers) to be consistent with national circumstances, provide required safeguards and lead to commercially viable transactions. To minimize risk and promote investments, the national regulation should clearly specify the project requirements and approval process for developing and selling credits to an external voluntary or compliance market regime. To avoid complicated multiple permitting procedures, there should be a streamlined process for a project to meet both the domestic and international protocol and requirements efficiently, fully validated by the international auditor as meeting all requirements. Where external standard conflicts with national regulations, national regulation trumps.

Numerous voluntary standards have rigorous protocols for baseline setting and MRV. The measurements and methodologies will have to be reconciled with the national accounting system to ensure consistent estimates at sub-national and national levels (see point h below for more details). If emerging compliance markets recognise and accept any voluntary standards, projects qualified to those standards could potentially convert their credits and trade them in that compliance market.

Pathway 2 (Domestic crediting and fund-based): Alternatively, sub-national project activities can choose to follow only the national regulations/protocol, and qualify for domestic credits (for verified emissions reductions below the site-specific REL) from the National REDD+ Monitoring and Accounting Agency. Crediting may be restricted to avoided deforestation and reforestation projects at the start. Projects would receive money from the National REDD+ Fund (Carbon Finance Window) for verified emission reductions/credits

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<sup>92</sup> For example, the State of California's evolving emissions trading and offsetting scheme is considering directly crediting foreign REDD project activities as a possible option.

below site-specific REL. Since the domestic credits receive carbon finance from the national REDD+ fund, the problem of international acceptance of domestically-issued credits is avoided.

*How the fund could receive and disburse payments:* The national REDD+ monitoring and accounting agency conducts national-level monitoring (see MRV Section 7) and reports on remaining verified ER below the national-level REL (after subtracting the credits from areas that chose Pathway 1). Donors (government agencies, private, other) can make voluntary contributions into the National REDD+ Fund (Carbon Finance Window) for these remaining verified national ER at an established rate. Thus contributions into the fund are based on performance at the national level and mitigate leakage at that level. The incoming funds are used to reward Pathway 2 sub-national project activities for their verified emissions reductions below site-specific REL. The funds are distributed down to the owners/managers, government agencies and the communities as per pre-defined benefit-sharing guidelines and/or further site-level arrangements. A proportion of the carbon revenue on each sub-national project activity would probably go to government agencies as taxes and the communities as per pre-defined benefit-sharing guidelines and/or further site-level arrangements.

The donors can be issued certificates (as in the Brazilian Amazon) unless there are international developments regarding acceptance of such national-level ER as fungible and marketable. Alternatively, the sub-project activity credits arising from the ground in Pathway 2 could be passed on to the donors, though the risks are that there will never be a perfect match of ERs from the national and sub-national accounting. The domestic credits are also unlikely to be fungible and marketable at present.

Reconciliation between national-level REL and ER and sub-national level RELS and ERs takes place in Pathway 2.

- If the sum of verified sub-national ER is greater than the verified ER calculated at the national level, then Pathway 2 activities would receive lower rates per sub-national credit than the rate paid by the donors for each verified national ER. Thus sub-national activities compensated through the fund-based pathway may receive lower returns than those compensated through the external market pathway 1. However, having the option of Pathway 1 and Pathway 2 for sub-national activities opens up crediting and financing options, reduces market risks and allows for more widespread REDD+ activities on the ground.
- If the sum of verified ER calculated at the national level is higher than the sum of verified sub-national project ER, the rest could accrue to the government. Some of it should be put into buffers without payment from donors to compensate for potential credit shortfalls or reversals in future years. The use of the rest is open to discussion (see point e below about ideally separating out carbon payments and REDD-readiness money).

Pathway 3 (Domestic crediting and market-based): In the future it is possible that the domestic credits can also be converted and sold to any emerging compliance and voluntary

markets that accept them. For example, the State of California's<sup>93</sup> evolving emissions trading and offsetting scheme is considering recognizing REDD credits issued by an approved external state REDD program as one possible option. An eventual UNFCCC REDD+ agreement may accept crediting of sub-national project activities reconciled with national-level accounting. In such a scenario, any domestic credits sold to external markets in Pathway 3 would also be deducted from the national-level ER for fund payment to avoid double counting.

Laos should ideally establish its domestic regulations and protocol through consultation and collaboration with the possible compliance and voluntary markets it seeks to link to, and it should be equal to and built on credible international standards and requirements. The protocol could also be developed in collaboration with international standard agencies and verified through international auditing agencies to enhance quality and acceptability. Again it is important that the protocol be built with participation from national and international stakeholders (local communities and administration, NGOs, national/international experts, UNFCCC representatives, project developers, credit buyers). It is also important that the protocol be capable of continuous refinement to incorporate important new national and international developments.

- d) The multiple pathways and choices presented above allow for possibly-mandated large-scale emission reductions in government-administered forest areas, while encouraging and supporting voluntary REDD+ actions in village and private landholdings. Most importantly, while allowing for alternative crediting and financing pathways to co-exist, this model simultaneously seeks to avoid double counting of emissions reductions by effectively integrating national-level accounting with different possible sub-national activities. There should be a clear and streamlined approval and registration process for all sub-national project activities to ensure they meet the required standards, have safeguards, and are included in the national REDD+ accounting system. A national carbon registry would be used to track the credits and payments issued, reconcile the same with national-level ER and avoid double counting.
- e) The national REDD+ fund could have two funding windows<sup>94</sup>, one for REDD readiness activities and the other for carbon financing to clearly distinguish the types of activities being funded, the eligibility criteria and financial transfer mechanisms. Policy and administrative reform, forest area establishment and capacity building could be part of the REDD readiness activities rather than funded through carbon financing as is done in Brazil at present. Another key area that could use REDD-readiness funds is starting up pilot project activities on the ground to establish, models, methods, viability and benefit-sharing arrangements. Such sub-national activity development from scratch tends to be quite cost-prohibitive and the government could specifically invite donor contributions for supporting pilots in different forest types. Carbon finance could be used to directly compensate/reward actors on the ground for their emissions reduction achievements. The fund could receive

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<sup>93</sup> State of California: Regulatory Design Options for Sub-national REDD Mechanisms. Expert Meeting, California. February 2010.

<sup>94</sup> A similar suggestion was made by Pedroni et al. in The "Nested Approach" A Flexible Mechanism to Reduce Emissions from Deforestation.

inflows from the state budget, and voluntary contributions from government agencies, the private sector and others.

There are two options for regulation of fund receipt and disbursement – through bilateral arrangements between Laos and each donor as in Brazil’s Amazon Fund, or as per common criteria across donors. A strong multilateral protocol for performance criteria, monitoring and verification that allow for contributions from multiple donors of all types and scales (governments, private sector, individuals and other organizations) would be ideal for the carbon finance window. The protocol could be developed in partnership with donors, national experts/representatives from different groups, international standards organizations and the UNFCCC. It could potentially be governed by a committee of national experts and representatives from different groups, as well as representatives from donors and other international organisations. Composition could change on a periodic basis to reflect changes in the stakeholders such as donors. National performance verification could be conducted by i) appointed experts – national and international representatives from the different groups, or ii) DOE type verifiers, or iii) a combination.

- f) Why include a national accounting and funding approach:
- Helps scale up activities and financing for substantial emissions reductions and climate change mitigation.
  - Takes care of national-level leakage.
  - Convenient for donors who wish to make large contributions and leave finance/ credit distribution to the country.
  - Accepted at the international level – is already being implemented at the UNFCCC for Annex 1 countries under the Kyoto Protocol and is being seriously considered for REDD countries following Brazil’s example.
  - Helps smallholders, government agencies and others get rewarded when required without further investment (effort, skill, time and cost) to find and negotiate with market buyers.
  - Provides an avenue for individuals and small groups to contribute to Laos’ forest protection without personally searching for such projects/credits.

However, a criticism levied against national-level ER performance that is based largely on remote sensing techniques is that the ER could be driven by a) real REDD actions because of national REDD policies and initiatives, and/or b) other factors (political, economic, social, market, climatic). The reasons are too difficult to distinguish on the large scale. A possible way to strengthen and rationalize the national accounting and fund-based approach is to require performance not only on emissions reductions below national REL but also concrete verifiable actions as per plan and documentation of effects. In the UNFCCC REDD discussions, there has been some reference to also monitoring and verifying the REDD actions implemented.

- g) The proposed model aims to compensate and/or reward the landowners, managers and communities on the ground for their REDD+ activities and performance through direct, transparent and flexible mechanisms. They can opt to:
- Get funding through the national fund or external market mechanisms,

- Receive credits/funds based on project-level performance irrespective of national-level emission reduction outcomes,
- Convert and trade the credits issued wherever possible, and
- Combine the carbon revenue with other benefits (timber, non-timber products, biodiversity, watershed and other services) depending on the type of forest area.

Options for communities to participate and earn/share REDD rewards on their own lands and on government-administered lands could help control local deforestation and degradation pressures, and provide alternative livelihood options.

- h) To ensure that sub-national activities and emissions reductions total up to national level monitoring and emissions reductions, RELs could be set for each major state forest area (and aggregated small forest clusters outside) using the same methods, and cumulated up to form a provincial and then national-level REL. This allows for direct crediting/financing of emission reductions below the REL achieved by each major forest administration area and directly rewarding actors on the ground unlike the Brazilian system where there is a disconnect between actions and incentives. District-level RELs may not be required in Laos given the small size of the districts.

Also important is that the same standardized measurement and monitoring methodologies are used at the national and sub-national levels (for different forest types and scenarios) as in the New Zealand system (also Canadian and Australian systems – see Section 7), to arrive at consistent outcomes and reduce financial risks to the country (see more detail in Section 7.6g). This includes remote sensing methods, field inventories, growth models and carbon calculations.

- This is easier done where domestic credits are issued (Pathway 2) where the national protocol would ensure that the methods used are consistent with national-level REL and MRV systems.
- This is more difficult where the sub-national project activities follow external standards (Pathway 1), particularly the voluntary market standards that have their own often very rigorous protocol for REL and MRV. REL and MRV may have to be conducted both ways for these areas and any differences absorbed by the project itself.
- National regulations, RELs and MRV systems can be developed to be in tune with emerging compliance market standards and there should be less of a problem there with reconciliation in Pathway 3.

In order to receive national-level funding for ER performance and for future compliance regime acceptance, Laos should ideally develop a rigorous tier 3 system and use the same for national and sub-national accounting. The system should be accurate, yet cost-effective and allow for scaling up REDD+ activities nationwide. The IPCC provides Good Practice Guidelines in this regard (see Section 7 on MRV systems).

- i) Sub-national activities could be required to assure permanence of emissions reductions through creation of project credit reserves, contribution to national credit buffers (either a fixed percentage or based on their risk rating), and through insurance schemes. They would be required to pay back credits from their reserves for any emission reversals. Beyond that, the country as a whole would be responsible for remaining reversals and could compensate

from the national credit buffers and if required, by purchasing credits from the external markets.

Similarly sub-national activities would be required to minimize leakage at their level by including buffer zones into the REDD activity scheme and including and compensating the actors in the buffer zones for their emission reduction activities. As in CDM and other project level standards, leakage could be calculated and deducted from the project emission reductions. Beyond that, national level accounting is to take care of leakage at the national level.

- j) Ideally, sub-national performance-based rewards should be delinked from the risk of broader national program failure to encourage and sustain sub-national level actors and investments<sup>95</sup>. And whatever happens on the ground at the sub-national level, the government has to take responsibility and liability for overall net emissions reductions at the national level. The inherent risk in this is that national net emissions may be for some reason equal to or above the national REL despite all the policy and implementation measures and safeguards in place, and credits may have already been issued to effective sub-national activities. The country would then have to use its buffers, or postpone payback to the next verification period, and/or purchase credits from external markets to compensate. Such assurance will raise the integrity of the system and the market value of Laos' ER. The country would then focus attention on the problem areas that neutralized its REDD+ efforts, build up larger buffers with higher risk ratings for identified problem areas, and could request a review of its REL if it is justified by force majeure<sup>96</sup>.

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<sup>95</sup> The "Nested Approach" A Flexible Mechanism to Reduce Emissions from Deforestation. <http://www-personal.umich.edu/~thoumi/Research/Carbon/Forests/Forests,%20AD%20Critiques/Nested%20Approach%20to%20REDD.pdf>

<sup>96</sup> [Ibid](#)

## 6. INSTITUTIONAL ARRANGEMENTS

### 6.1 Brazil

A committee with representatives from the government, civil society and the private sector is tasked with defining a national REDD strategy and coordinating related work. With the exception of the Amazon fund managed by the Brazilian Development Bank (BNDES), it is expected that any future REDD mechanism would be managed by the Environment Ministry<sup>97</sup>. Within the Environment Ministry, specific designated staff and an inter-ministerial commission may be created (parallel to the Designated National Authority within Brazil's Ministry of Science and Technology that approves projects under the Clean Development Mechanism) with the role of evaluating, verifying and approving REDD-related projects and authorizing such projects to receive REDD-related payments.

The Environment Ministry currently implements Brazil's Action Plan for Prevention and Control of the Legal Amazon Deforestation (PPCDAM) and created the Amazon Fund. The Brazilian Forest Service (SFB) was created under the Environment Ministry in 2006 to sustainably manage Brazil's forest production through forest management in public forests and promoting forest development at the national level<sup>98</sup>. The Brazilian Forest Service has since created large areas of public forests, overseen the bidding for forest concessions, manages the National Fund for Forestry Development used for funding sustainable forestry projects, and supports the implementation of the Amazon Fund and development of REDD strategy. SFB also heads the National System of Forest Information which includes the development and implementation of the National Forest Inventory (NFI)<sup>99</sup>.

#### 6.1.1 Amazon Fund

The Amazon Fund is managed by BNDES with a multi-stakeholder steering committee which includes representatives from local government, national ministries, BNDES, indigenous peoples and civil society. BNDES also has a mandate to raise funds, facilitate contracts, and monitor and support projects. The Fund has a Board Committee composed of 24 members: one representative for each of the nine Amazon states, nine representatives from the federal government, three from civil society, two from the private sector and one from the scientific sector. The Board is responsible for defining the fund's guidelines and criteria in which the fund will apply its resources, to follow up on the results attained, and to endeavour to achieve the goals of Brazil's deforestation action plans (PPCDAM and the Sustainable Amazon Plan PAS).

The 24 members make up a three-block committee comprising the federal government, state governments and civil society. Each block holds one vote on committee decisions, and each member holds one vote inside his block. The nine Amazon states hold seats on the Committee, but only those that have prepared their deforestation prevention and control plans have voting rights.

<sup>97</sup> REDD rules in Brazil. February 2009. J.P. Capobianco. WWF.

<sup>98</sup> National Forest Inventories: Pathways for common reporting. Erkki Tomppo, Thomas Gschwantner, Mark Lawrence, Ronald McRoberts (Editors). V. 2010. Springer.

<sup>99</sup> [http://www.dsr.inpe.br/Brazil\\_Norway\\_Workshop/JOBERTO\\_FREITAS\\_The\\_National\\_Forest\\_Service\\_Inventory\\_and\\_Monitoring\\_Program.pdf](http://www.dsr.inpe.br/Brazil_Norway_Workshop/JOBERTO_FREITAS_The_National_Forest_Service_Inventory_and_Monitoring_Program.pdf)

The Amazon Fund also has a technical committee composed of six authoritative scientists to verify the methodologies and calculations of deforested areas and carbon emission reductions. The Brazilian National Institute of Space Research (INPE) develops and implements the Amazon forest cover monitoring and reporting systems through satellite image analysis, and publishes the annual Amazon deforestation rate. The Brazilian Forest Service is responsible for carrying out the National Forest Inventory that provides the reference biomass and carbon information in different forest types. The Ministry of Environment prepares the carbon calculations and appoints (in consultation with the Brazilian Climate Change Forum) the technical committee for a term of three years, extendable for another three-year period.

Deforestation law enforcement on the basis of the real-time data provided by the national monitoring system is carried out by IBAMA (Brazilian Institute of Environment and Renewable Natural Resources) and the Brazilian Federal Police. They work with public prosecutors to impose fines on violators.

### **6.1.2. State of Amazonas**

The State Center for Climate Change CECLIMA/SDS<sup>100</sup> is responsible for implementing policies and programs related to climate change in the State of Amazonas. Its focal areas include forests, energy and education for climate change.

The State's Bolsa Floresta program is managed by a newly-created public-private independent non-governmental institution Fundação Amazonas Sustentável (FAS)<sup>101</sup> founded with State support. FAS' activities and financial transactions are reviewed and audited by the State Public Ministry, PricewaterhouseCoopers Brazil and the independent Fiscal Council. Reports are published to ensure transparency. After the Council's approval, the accounting report is forwarded to the State Attorney for analysis in accordance with valid legislation.

## **6.2 Indonesia**

The institutional setup in Indonesia is complex and complicated. Early on the Ministry of Environment was responsible for climate change issues and was the Designated National Authority (DNA) for CDM and UNFCCC reporting. With donor funds streaming in, the President created a National Climate Change Council (DNPI) directly under his supervision to ease institutional competition and enable cross-sectoral coordination. Climate change staff from the Ministry of Environment moved to this new institution. REDD tasks were negotiated between the DNPI, the Ministry of Forestry and the National Development Planning Agency (BAPPENAS). Recently a new Work Unit for Development Monitoring and Control (UKP4) was instituted directly under the President and tasked with setting up a REDD coordinating agency and MRV strategy and independent institutional framework. BAPPENAS still appears to be in the picture and was tasked with coordinating the drafting of the national REDD+ strategy.

The Ministry of Forestry with its line agencies still has the mandate of managing Forest Land and its REDD responsibilities and mandate are unclear. Further complexities arise with

<sup>100</sup> <http://www.ceclima.sds.am.gov.br/>

<sup>101</sup> <http://www.fas-amazonas.org/en/>



widespread decentralization down to the district level where district authorities have the mandate to issue licenses. Lack of coordination between districts and national strategies could jeopardize REDD+ implementation.

The LOI with Norway requires the setting up of two new institutions, a REDD coordination agency directly reporting to the president and an independent MRV institution. The Government recently added another agency, a new REDD task force<sup>102</sup> in September 2010 to ensure the formulation of a national strategy and establish the required agencies under the LOI. The roles and responsibilities of these new institutions relative to those of already existing institutions DNPI, BAPPENAS, UPK4 and Ministry of Forestry require clarification. The new institutions will need to be coordinated with the horizontal (between ministries) and vertical (national, provincial and district government) decision-making structures in Indonesia<sup>103</sup>.

Dr. Kuntoro Mangkusubroto who heads the UPK4 was also appointed head of the latest REDD task force. He is known for being able to cut through red tape and get policy reform implemented<sup>104</sup>. He has helped turn around firms, clean up Ministries, and led Aceh's rebuilding efforts following the 2004 tsunami. The choice is said to be indicative of the seriousness of the Indonesian government on the issue.

### 6.3 New Zealand

New Zealand's Land Use and Carbon Analysis System<sup>105</sup> (LUCAS) is led by the Ministry of Environment in partnership with the Ministry of Agriculture and Forestry. It also receives inputs from the Treasury and the Department of Conservation.

The Ministry for the Environment has overall responsibility for the Climate Change Response Act 2002, climate change programmes and policy development in New Zealand<sup>106</sup>. It compiles the National Inventory Report to the UNFCCC with contributions from the Ministry of Economic Development and the Ministry of Agriculture and Forestry.

The Ministry of Economic Development<sup>107</sup> manages the day-to-day running of the emissions trading scheme (with specific responsibility administering the Liquid Fossil Fuels, Stationary Energy, Industrial Processes, Other Removal Activities, Waste and Agriculture sectors in the New Zealand Emissions Trading Scheme). It is the main enforcement agency responsible for verifying that participants are complying with the scheme. It also runs the New Zealand Emission Unit Register<sup>108</sup>.

The Ministry of Agriculture and Forestry<sup>109</sup> is responsible for forestry and agriculture in the New Zealand Emissions Trading Scheme, as well as other forest carbon programs such as the

<sup>102</sup> Presidential Decree No. 19/2010. [http://www.norway.or.id/Norway\\_in\\_Indonesia/Environment/Indonesia-Norway-extends-their-climate-and-forest-partnership-to-other-governments/](http://www.norway.or.id/Norway_in_Indonesia/Environment/Indonesia-Norway-extends-their-climate-and-forest-partnership-to-other-governments/)

<sup>103</sup> <http://www.wri.org/stories/2010/07/whats-next-indonesia-norway-cooperation-forests>

<sup>104</sup> <http://www.reuters.com/article/idUSTRE59J1FT20091020>

<sup>105</sup> <http://www.mfe.govt.nz/issues/climate/lucas/>

<sup>106</sup> <http://www.mfe.govt.nz/issues/climate/policies-initiatives/>

<sup>107</sup> <http://www.med.govt.nz/>

<sup>108</sup> <http://www.eur.govt.nz/>

<sup>109</sup> <http://www.maf.govt.nz/sustainable-forestry/>

Permanent Forest Sink Initiative. It publishes the rules and guidelines, processes the applications, receives the emissions returns, verifies the emissions reductions, encourages and monitors ETS compliance, and imposes penalties for non-compliance.

The above mentioned are the core central government agencies providing national policies and measures. At the operational level, specific programmes such as LUCAS are being implemented in partnership with recognised science institutions and private sector business. This is viewed as an imported component in capability building and providing a guarantee of programme continuity. For example, the Ministry for the Environment has long term institutional agreements and partnerships with Crown Research Institutes such as Landcare Research<sup>110</sup> and Scion Research<sup>111</sup>. In the private sector there are recognised domestic and international partners providing specialised expertise in system design, remote sensing and geospatial technology.

#### 6.4 Options for Laos

I present below the likely requirements and options for REDD+ institutional arrangements in Laos, drawing from

- the existing and planned institutional arrangements in Brazil and Indonesia, and in one Annex 1 country New Zealand implementing forest carbon activities under the Kyoto Protocol;
  - Laos' existing forest-related legal and institutional frameworks; and
  - Laos' REDD Readiness Preparation Proposal (R-PP)<sup>112</sup>.
- a) In Indonesia, a **high-level cross-sectoral task force** with direct mandate from the President has been appointed to develop and implement a national REDD policy and institutional framework. The task force has the authority to bring the different groups together to forge consensus, work out the fine details and take strong action. The institutional arrangements demonstrate political will and attract international support.

The existing multi-sectoral REDD task force in Laos established by MAF is chaired by the Director General of the Department of Forestry (DOF). The members include high-level staff from DOF, NAFRI, the National Agriculture and Forestry Extension Service (NAFES), NLMA, WREA, the Ministry of Industry and Commerce (MOIC) and the National University of Laos (NUOL), plus international advisors. Laos' REDD R-PP indicates that the Task force will operate as the consultation/coordination agency with decision-making to be conducted by the higher-level cross-sectoral National Environment Committee (NEC). The government could evaluate whether current Task Force arrangements are adequate to forge consensus and table policy reform propositions on cross-cutting land use policies, governance and other issues outside DOF/MAF's mandate, or whether the task force should operate at a higher level (directly under the NEC or Prime Minister's office).

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<sup>110</sup> <http://www.landcaresearch.co.nz/>

<sup>111</sup> <http://www.scionresearch.com>

<sup>112</sup> Forest Carbon Partnership Facility (FCPF) Readiness Preparation Proposal (R-PP) for Lao PDR. October 2010.

As mentioned in the R-PP, the task force could be expanded to include all REDD-relevant sectors such as the Ministry of Finance, Planning and Investment, Mines and Energy, DOFI, and perhaps the judicial sector for follow-through on law enforcement. Also as suggested by the Lao R-PP and as conducted in Brazil, representatives from the civil society and private sector could form part of the Task Force. Stakeholder participation at all levels, and external monitoring of the progress and outcomes of the task force's activities will likely be required.

- b) A **cross-sectoral coordinating institution** for REDD+ as is currently being identified in Indonesia. In Brazil, the BNDES with a multi-stakeholder steering committee manages the Amazon Fund though the Ministry of Environment is likely to fill the role of future REDD+ coordinator. In Brazil, a different institution, the Ministry of Science and Technology is the registered DNA under the UNFCCC and responsible for overall GHG emissions reporting and CDM projects across all sectors.

The National Environmental Committee (NEC) composed of Ministerial-level members from different sectors and chaired by the Deputy Prime Minister is proposed as the REDD+ cross-sectoral decision-making and coordinating agency in Laos' R-PP. The R-PP further suggests that the NEC be expanded to include NLMA and other REDD-relevant agencies that are missing in the current setup. Clarification would be needed on the relative roles and relationship between NEC and:

- The REDD task force,
- MAF, and
- The WREA Climate Change Office which is the appointed DNA for CDM projects and GHG reporting to the UNFCCC. WREA's mandate covers environmental protection, sustainable natural resource management, biodiversity conservation and community development<sup>113</sup>. It is responsible for the ESIA's of investment projects.

- c) A key cross-sectoral REDD+ issue requiring coordination is **forest land use zoning, allocation and enforcement** to meet REDD+ and other goals. The recently-established NLMA (in 2007) in Laos is already working on a national land master plan developed with spatially-explicit data and inputs from different sectors such as forestry, agriculture, mining, energy and infrastructure. Besides facilitating development of the master plan, NLMA gathers together the land data and integrates and manages the same. It implements village land use planning and allocation, and enforces land use plans in coordination with different sectors and through its line agencies down to the village level. NLMA therefore appears to be the suitable agency to facilitate, verify and enforce land zoning and allocation decisions across sectors and levels also in line with new regulations that incorporate REDD+ concerns (example, the R-PP suggests incorporating carbon and other environmental costs into the land valuation and allocation process and requiring compensation payments for loss of biodiversity and carbon).

The relative roles, responsibilities and coordination between NLMA and MAF with regard to agriculture and forest land use planning and allocation needs to be harmonised and institutionalised from national to local levels. Also NLMA needs close support from the

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<sup>113</sup> Forestry Strategy Implementation Promotion (FSIP) Project: Terminal Evaluation Study Report. May 2010. Paula J. Williams. DOF, JICA, Sida. Vientiane, Lao PDR.

judicial system for effectively enforcing the land laws and contracts, and resolving land conflicts.

- d) A permanent **REDD+ office on Division level** within the Department of Forestry (DOF) is proposed in the R-PP to support the REDD task force and NEC. Identified tasks are to implement REDD readiness activities, register projects, link to international negotiations, prepare draft legal framework and financing proposals, and develop and maintain a carbon registry. Working groups would be established to work on key issues such as RELs, MRV systems (see Section f below for possible requirements), land use planning process (here or outside DOF? See Section c above), stakeholder consultation plans and benefit-sharing arrangements.

Critical would be that this office not take over REDD+ implementation within the different forest areas which fall under the responsibility of the three state forest area divisions (Production, Protection and Conservation), causing overlap and confusion. Its role and responsibilities vis-à-vis those of the forest area divisions should be clearly identified.

- e) The **existing forest area divisions (Production, Protection and Conservation)** in DOF and their line agencies could be responsible for planning, implementing and monitoring REDD+ within their areas in Laos with guidance from the REDD+ office. REDD+ could be effectively inserted into existing strategies and regulations for these areas. Delineating and setting up these areas, building the management structures and capacity required, and making arrangements with local communities are all severely constrained by the limited government budget available. REDD+ readiness funds could potentially be used to set up the areas and build management structures and plans; while REDD+ carbon finance could be used to fund management and control activities, and reward the communities and managers for emissions reductions achieved.

Responsibility for large-scale **private plantation** oversight and reporting is currently fragmented across many institutions that handle different parts of the allocation and monitoring process<sup>114</sup>. The Ministry of Planning and Investment is responsible for the investment component. The DOF Planning Division is responsible for reviewing and assessing the feasibility of the concession proposals. WREA is to review the environmental and social impact assessment. Land management authorities at different levels are responsible for land allocation and concession agreements. The plantation section of the Production Forest Division is responsible for monitoring the plantations, the timber production and review of extension requests. The Ministry of Commerce and the Ministry of Finance are responsible for the sales and tax components. The Committee for Promotion and Management of Investment (CPMI) provides a one-stop service for foreign investors and is to coordinate with the different sectors and local agencies to provide a response<sup>115</sup>. There is no process for domestic investors.

<sup>114</sup> Sustainable development in the plantation industry in Laos: An Examination of the Role of the Ministry of Planning and Investment. 2009. Saykham Voladet. International Institute for Sustainable Development (IISD), Canada.

<sup>115</sup> Report on appraisal, approval, monitoring and evaluation of tree plantation investment, FSIP, DOF, December 2009.

If REDD+ activities are to be allowed on private plantations, coordination and oversight could be strengthened through a transparent online workflow and registry system through the cycle from application to assessment, allocation, investment, establishment, monitoring, production, sale, benefit sharing, enforcement and periodic public reporting. The system would need to be maintained by a single division/agency. Applicants, authorized representatives from the different institutions and verifiers could be provided secured access. Clear transparent rules and permitting processes using spatial data including REDD+ and other concerns should be formulated.

There is also no single clear authority that deals with **community and household/farmer forestry** on tenured (purchased, inherited, leased, allocated) land, an important potential component of REDD+ once clear tenure and incentive processes are established as per current and revised regulations and village-level land use planning. Little information exists on current and potential community or household/farmer forestry at the moment because setup has not been completed and also because no authority exists. A separate division would be useful, particularly given that REDD+ requires explicit social benefits and safeguards, and to provide effective alternative livelihoods to local people and curtail widespread small-scale forest degradation pressures.

- f) Independent **MRV institutions** have or are being set up to monitor forest cover change in Brazil and Indonesia (see Section 7 for MRV discussion). In Brazil, the INPE, an independent agency that does not directly manage and benefit from the forests, conducts the deforestation monitoring and reporting giving it credibility. Indonesia is currently identifying an independent institution to conduct its forest monitoring activities. Both countries are supported by large Norwegian pledges and financing tied to independently monitored and verified emissions from their forest activities.

The new MRV systems put in place in New Zealand and Australia are led by multi-sectoral agencies that work in partnership with and draw on expertise and data from multiple agencies including forestry agencies, research institutes and the private sector. However in Canada and India, the forestry agencies are directly responsible for their ongoing long-established forest monitoring and inventory systems.

Whether independent or not, the MRV institution in Laos would require technical inputs from DOF, its line agencies and forestry research institutions who would need to work on the methodologies, national forest inventories and modeling for base parameters. The MRV system would also need information feeds on land tenure and use from land management authorities, and other information from elsewhere. Community involvement in monitoring and enforcement to achieve the objectives is recommended, particularly given the remote forest areas of Laos and to stop widespread small-scale deforestation and degradation pressures. The national MRV institution could work with any regional MRV institutions to reduce efforts and costs.

The Forest Inventory and Planning Division (FIPD) in DOF is foreseen as the REDD+ MRV agency. It has been involved in past mapping and forest inventory efforts. It has received financial, technical and training support from SUFORD in the past and will receive support for developing monitoring and integrated forest information systems and capacity building

under the new JICA Forest Information Management Program (FIMP). The FIMP will construct a Forest Resource Information Centre with the necessary hardware and databases. NAFRI and NUOL links and expected contributions to FIPD's MRV system could be clearly identified and planned for. Two other agencies in Laos are also involved in remote sensing work, the Science and Technology Agency (STEA) and the Research wing of the NLMA. Where necessary, STEA is to conduct independent monitoring of production forest areas through satellite imagery and field surveys in coordination with MAF. The Research wing of NLMA also does land cover mapping to carry out land use planning, allocation and monitoring. It is preferable that a single agency with the required expertise carry out land cover mapping with high credibility and quality standards and that the data is made available to other agencies that require the same. The roles of FIPD and STEA also need to be clarified and duplication of effort avoided.

Laos should also identify an agency (preferably multi-sectoral with civil society participation) to develop and implement MRV of the safeguards for governance, social, environmental and financial aspects of REDD+.

- g) **Enforcement and Control** activities are carried out by independent agencies in Brazil – IBAMA (Brazilian Institute of Environment and Renewable Natural Resources) and the Brazilian Federal Police – using real-time deforestation data provided by INPE.

In Laos, the new independent Department of Forest Inspection (DOFI, established) is proposed as the REDD+ regulator. Timely information would need to flow from the MRV agency to DOFI to take effective action. DOFI capacity and activities are severely constrained by limited funding available from annual government budgets. Funds from REDD-readiness windows and elsewhere would be required to build and strengthen DOFI capacity to fulfil the expanded role of REDD+ regulator. DOFI would need to work hand in hand with judicial agencies for prosecution of law offenders.

REDD+ implementation also requires the effective implementation of land use plans and contracts which is the responsibility of the inspection division of the new NLMA. Clarification is required on the relative roles and responsibilities of DOFI and the enforcement wing of NLMA regarding REDD and forestry-related enforcement.

- h) Laos needs to decide on where the **national carbon registry** (see Section 8 for more details on Registry systems) will be housed and who will administer the same. There are no standard requirements in this regard and it could be managed by the government, an NGO or commercial agency. The registry should ideally serve as a recording and tracking system for all carbon credits arising from Laos (REDD, CDM and any other mechanism), thus integrating overall climate change activities in the country.

In New Zealand, the Ministry of Economic Development is responsible for managing the NZ ETS and the New Zealand Emissions Unit Register (NZEUR), while the Ministry of Environment is responsible for climate change policy development, monitoring and reporting. If it is to be a government agency, WREA that serves as the DNA for Laos could possibly house and manage the overall carbon registry.

- i) **Provincial REDD+ institutional arrangements** proposed in the R-PP replicate those at the national level, and include Provincial Environmental Committees, REDD+ task forces (with relevant government agencies, NGO“ s, private sector and civil society representatives chaired by the governor’s office) and REDD+ offices.

As far as possible, Laos could use and strengthen existing institutions and coordination structures rather than build new institutions for REDD+ that overlap with existing ones. It would be important to spell out clearly relative roles and responsibilities of each institution, and the decision-making rules and process. Transparent information and decision-making processes would help enhance credibility.

## 7. NATIONAL MONITORING, REPORTING AND VERIFICATION (MRV) SYSTEM

UNFCCC REDD+ negotiations<sup>116</sup> so far call for countries to establish, according to national circumstances and capabilities, a robust and transparent national forest monitoring system and, if appropriate, sub-national systems as part of national monitoring systems. The national monitoring system would be used to monitor, report and verify:

- a) The implementation of the REDD+ activities and actions to reduce leakage and reversals,
- b) GHG emissions and removals and forest carbon stock changes resulting from the implemented activities, and net emission reductions achieved with reference to the national REL,
- c) The implementation of the environmental, social and governance safeguards, and
- d) The financial support provided by developed countries for implementation.

General principles: Estimates of emissions and removals should be demonstrable, transparent, as far as possible accurate, complete, comparable, verifiable, and estimated consistently over time. Independent expert review is encouraged and so also is monitoring and reporting with the full and effective engagement of indigenous people and local communities. Adherence to these quality standards enhances carbon values in the market. The system itself should be transparent and the results available and suitable for review as agreed by the Conference of the Parties. From a national point of view, it is also important that the system be cost-effective and capable of accepting gradual improvement over time.

In this section, I focus on MRV for GHG emissions and removals and forest carbon stock changes resulting from the implemented activities. Items to be monitored could include:

- GHG emissions and removals from forest cover changes (deforestation, reforestation) and also forest quality changes (forest degradation, improved forest management),
- Some or all terrestrial carbon pools (aboveground and belowground biomass, litter, deadwood, soil organic carbon), and
- Incidence of fire and natural disturbances and their effects on carbon stocks.

I explore below the features of some existing national forest carbon monitoring and reporting systems across the globe to extract options and lessons for designing a REDD+ MRV system for Laos. I assess the scope of monitoring (items monitored, level/scale and frequency), the methodologies and systems used, guidelines and principles followed, verification and reporting requirements, and any links between sub-national activities and national-level MRV. Institutional arrangements and roles including for MRV are covered in Section 6 of this report.

New Zealand, Canada and Australia have all developed national forest carbon monitoring systems for mandatory reporting to the UNFCCC under Article 3.3 of the Kyoto Protocol, and to meet other national requirements. Brazil has had an operational deforestation monitoring and reporting system for the Amazon for the last 20 years, and has recently started monitoring and reporting on visible forest degradation as well. India has a long-running national forest cover monitoring system and field inventories (since 1987) to which it is adding forest type mapping and reporting of forest-based carbon emissions.

<sup>116</sup> [AWGLCA 11<sup>th</sup> session. Text to facilitate negotiations.](#) Bonn, July 2010



## 7.1 Brazil's PRODES, DETER, DEGRAD and DETEX

The Amazon rainforest covers 40 percent of Brazil's territory of 8.5 million square km and the key deforestation pressure is conversion of forest land to pasture. Brazil's INPE (National Institute for Space Research) operates three independent but complementary remote sensing-based systems (PRODES, DETER and DEGRAD) to monitor wall-to-wall deforestation and forest degradation in the Brazilian Amazon<sup>117</sup>.

PRODES, the Legal Amazon Deforestation Monitoring Program, has been monitoring and reporting<sup>118</sup> on deforestation in the Brazilian Amazon on an annual basis since 1988. PRODES uses relatively high resolution (20 to 30 meters) Landsat TM, Brazilian-Chinese CBERS and DMC satellite data to map deforestation areas larger than 6.25 hectares. PRODES only maps the area where the native forest has been totally cleared. Using multi-sensor data helps to minimize cloud cover and obtain complete coverage. TerraAmazon<sup>119</sup>, the monitoring system of PRODES, is a unified operational and dissemination database that manages all data work flow, gathering around 600 satellite images, pre-processing, segmenting and classifying these images automatically for further human interpretation and editing on a concurrent multi-user environment. It provides seamless visualization and analysis of full resolution data through a website. The interpretations are audited and then disseminated via the website.

DETER, the Real Time Deforestation Detection System was launched in 2004 to give a faster response. DETER uses 250 m-resolution images from NASA's MODIS and CBERS' WFI sensors and maps both forest removal and progressive degradation on areas larger than 25 ha on a fortnightly basis. However, due to persistent cloud coverage, not all deforestation larger than 25 hectares is detected in a given month. While lower in spatial resolution compared to the images used for PRODES, the more frequent DETER images are an important tool for surveillance and deforestation control.

Deforestation in the Brazilian Amazon is not an event but a process that takes place over months and years. DEGRAD<sup>120</sup> was launched in 2008 to map degradation or areas in the process of deforestation at a higher resolution than DETER. DEGRAD uses the same Landsat and CBERS images that PRODES uses, and registers the partial removal of trees through burning and logging in areas larger than 6.25 ha. It does not register small-scale degradation. Reporting is done on an annual basis similar to PRODES.

The DETEX system is now being developed by INPE and the Forest Service to monitor and control selective logging in public forest concessions based on the same images as PRODES uses<sup>121</sup>. It will be used to check whether the logging intensity and frequency matches that in the Sustainable Management Plan and whether there is illegal logging. For DETEX to go into

<sup>117</sup> <http://unfccc.int/resource/docs/2009/sbsta/eng/misc02a01.pdf>

<sup>118</sup> [http://www.inpe.br/noticias/arquivos/pdf/grafico1\\_prodes2009.pdf](http://www.inpe.br/noticias/arquivos/pdf/grafico1_prodes2009.pdf),  
[http://www.inpe.br/noticias/arquivos/pdf/grafico2\\_prodes2009.pdf](http://www.inpe.br/noticias/arquivos/pdf/grafico2_prodes2009.pdf)

<sup>119</sup> <http://www.dpi.inpe.br/terraamazon/>

<sup>120</sup> [http://www.inpe.br/ingles/news/news\\_dest48.php](http://www.inpe.br/ingles/news/news_dest48.php)

<sup>121</sup> INPE along with the Forestall Service establish a partnership to monitor the concessionary corporations. July 2010.  
[http://www.inpe.br/ingles/news/news\\_dest133.php](http://www.inpe.br/ingles/news/news_dest133.php)

operation, a complete inventory of public forests is required and ongoing along with highlighting the distinctive features of selective logging in the satellite imagery.

Fires are regularly used to clear areas after deforestation and to renew pastures. Based on meteorological satellites, INPE monitors forest fires in Brazil daily since 1998<sup>122</sup>. Based on this information, IBAMA (Brazilian Institute of Environment and Renewable Natural Resources) and INPE implement the Program for the Prevention and Control of Burnings and Forest Fires<sup>123</sup>.

The data from PRODES, DETER and DEGRAD are used by IBAMA and the Brazilian Federal Police to detect degradation and deforestation areas for operational purposes and law enforcement<sup>124</sup>. DETER is useful for immediate action and the data is organized by city council, state, IBAMA operative base and environmental departments to facilitate surveillance. IBAMA has about 15,000 officers equipped with cars, helicopters and boats to help in their operations. They also work closely with public prosecutors to impose fines on violators. PRODES, DETER and DEGRAD image classifications and data are made available directly to the public via the internet systems. Annual PRODES reports are widely used by both the government and NGOs and have become the foundation for public policy on the environment. The deforestation reports include not only how much land was deforested, but also where and who caused it.

The Brazilian Forest Service created in 2006 under the Ministry of Environment developed and carried out the National Forest Inventory<sup>125</sup> as part of the National Forest Information System. It combines:

- Vegetation mapping,
- Field sampling in all forest types on a 20 x 20 km systematic grid of sample points for tree species and dimensions, deadwood, soils, logging and other disturbances,
- Interviews at the sample points to determine land ownership and use,
- Landscape sample plots based on higher resolution satellite imagery, and
- Associated programs – such as developing biomass equations, permanent sample plots to determine growth and yield.

The NFI provides the reference biomass and carbon information in all forest types, and is to be updated every five years.

INPE presented the first results of greenhouse gas emissions related to the Amazon deforestation in November 2009<sup>126</sup>. It used the annual Amazon deforestation rate from PRODES multiplied by the amount of forest carbon contained above ground in a hectare of Amazon Forest as defined by the Brazilian Forest Service. They also presented results for each of the nine Amazon states separately and the varied emissions figures reflect the different biomass types and deforestation processes. The results are verified by a group of experts and the

<sup>122</sup> [http://www.dpi.inpe.br/arquivos\\_pime/AMaral\\_Dalge\\_DOI.pdf](http://www.dpi.inpe.br/arquivos_pime/AMaral_Dalge_DOI.pdf)

<sup>123</sup> Second National Communication of Brazil to the United Nations Framework Convention on Climate Change. Brasilia 2010. General-Coordination on Global Climate Change Ministry of Science and Technology, Brasília. [http://www.mct.gov.br/upd\\_blob/0214/214070.pdf](http://www.mct.gov.br/upd_blob/0214/214070.pdf)

<sup>124</sup> [http://www.isprs.org/proceedings/XXXVII/congress/8\\_pdf/11\\_WG-VIII-11/09.pdf](http://www.isprs.org/proceedings/XXXVII/congress/8_pdf/11_WG-VIII-11/09.pdf)

<sup>125</sup> Forest Monitoring: The National Forest Inventory – Brazil. Dr. Joberto Veloso de Freitas, Brazilian Forest Service. Brazilian Norwegian Workshop on Forest and Marine Monitoring.

[http://www.dsr.inpe.br/Brazil\\_Norway\\_Workshop/JOBERTO\\_FREITAS\\_The\\_National\\_Forest\\_Service\\_Inventory\\_and\\_Monitoring\\_Program.pdf](http://www.dsr.inpe.br/Brazil_Norway_Workshop/JOBERTO_FREITAS_The_National_Forest_Service_Inventory_and_Monitoring_Program.pdf)

<sup>126</sup> INPE estimates CO<sub>2</sub> emission by deforestation in Amazon [http://www.inpe.br/ingles/news/news\\_not71.php](http://www.inpe.br/ingles/news/news_not71.php)

underlying data are publicly available. The established baseline is defined in area deforested. The amount of funds allowed to be contributed to the Amazon Fund by donors each year depends on the reduction of deforestation below a rolling ten-year average.

INPE's Amazon forest MRV systems have sought to be transparent, accurate, comparable, verifiable, consistent and credible. They have contributed to real action on the ground (law enforcement, policy development, and results-based carbon financing). New systems are being added to complement and support existing systems. The systems do not account for reforestation and improved forest management at present, but they provide wall-to-wall monitoring for deforestation and larger-scale degradation.

Brazil has offered to make these data and monitoring systems (TerraAmazon, PRODES, DETER, DEGRAD) available to other countries to help them advance their own forest monitoring. The INPE general coordinator Carlos Nobre has been quoted as saying that establishing such a monitoring system was not hard and if a country cooperated with Brazil, it could be done in 6-12 months.<sup>127</sup>

## 7.2 New Zealand's LUCAS and Sub-National MRV requirements

### 7.2.1 LUCAS and the National Forest Inventory

New Zealand established a Land Use and Carbon Analysis System (LUCAS)<sup>128</sup> in 2005 to help it meet its international reporting requirements under Article 3.3 of the Kyoto Protocol, i.e. account for carbon stock changes from afforestation, reforestation and deforestation activities nationwide during the first commitment period 2008-2012. Apart from enabling New Zealand compliance with Kyoto, LUCAS data will also be used for verifying land that can be planted under the Permanent Forest Sinks Initiative and the Forest Emissions Trading Scheme (ETS). LUCAS is a cross-government programme led by the Ministry for the Environment in partnership with the Ministry of Agriculture and Forestry (MAF). Several other government departments including the Treasury and the Department of Conservation provide input.

LUCAS maps and quantifies changes in New Zealand land use (areal extent and location), particularly since 1990 (the reference year) to 2008, and subsequently 2012 using 10m resolution SPOT 5 imagery, aerial photography and field verification. LUCAS has established protocols for spatial data standardisation and calibration, data processing and interpretation, and associated quality control procedures. Details are published in a New Zealand LULUCF Mapping Manual<sup>129</sup>. Land-use maps derived from the SPOT 5 imagery are available to all the government partners and land-use classification maps are available on the website for public downloading.

LUCAS (Figure 2) uses information from the national forest inventory and modelling to calculate the amount of carbon stored in forests and soils and how these carbon stocks change with land use. Carbon values are calculated in each of five terrestrial carbon pools: Above-ground

<sup>127</sup> <http://www.thejakartapost.com/news/2009/12/08/starting-with-monitoring.html>

<sup>128</sup> <http://www.mfe.govt.nz/issues/climate/lucas/>; <http://www.mfe.govt.nz/publications/climate/carbon-emissions-land-use/index.html>

<sup>129</sup> <http://www.mfe.govt.nz/issues/climate/lucas/data/guide-to-mapping-land-use-classes-using-satellite-imagery.pdf>

biomass, Below-ground biomass, Dead wood, Litter and Soil organic matter. The IPCC default approach is used for cropland, grassland, wetland, settlements and other land-use categories. Techniques and methodologies developed are published in independent peer-reviewed journals to provide transparency and ensure that New Zealand's approaches are widely understood. LUCAS follows the Intergovernmental Panel on Climate Change's (IPCC) Good Practice Guidance for LULUCF activities<sup>130</sup>.

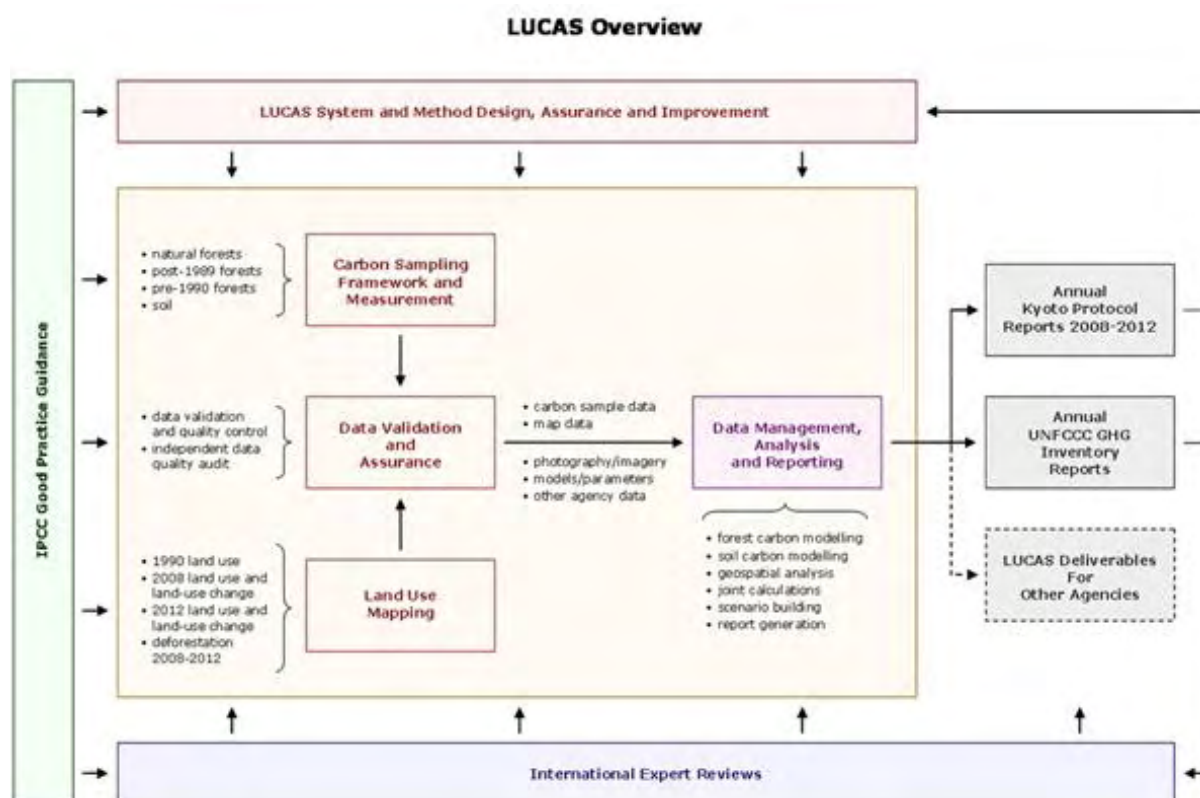


Figure 2. LUCAS Overview. Source:

<http://www.mfe.govt.nz/issues/climate/lucas/international-agreements.html>

The LUCAS Data Management System stores and manages the land-use spatial databases and the plot and reference data, and combines the two sets of data to calculate the numbers required. The key objectives of the system are to:

- provide a transparent system for data storage and carbon calculations
- provide a repository for the versioning and validation of plot measurements and land-use data
- calculate carbon stocks, emissions and removals per hectare for land uses and carbon pools based on the plot and spatial data collected
- calculate biomass burning and liming emissions by land use based on spatial and emission factors stored in the system
- produce the outputs required for the LULUCF sector reporting under the UNFCCC and the Kyoto Protocol.

<sup>130</sup> <http://www.ipcc-nggip.iges.or.jp/public/gpplulucf/gpplulucf.html>

New Zealand's National Forest Inventory System uses permanent sample plots established systematically on a 4 or 8-km grid as follows in natural forest, planted forest and soils:

- a) Natural, native or indigenous forest inventory – Data is collected from a network of 20 m x 20 m permanent plots (1257) established on a regular 8-km grid system. Carbon stocks in live biomass and woody debris are estimated by collecting data related to the volumes of trees, shrubs and woody debris and converting them to carbon stocks per hectare using allometric functions and regression equations.
- b) Exotic planted forest inventory – Site-specific data on post 1989 forests is collected from permanent plots (300) where a randomly allocated 4-km grid coincides with mapped post-1989 forest. established on a regular 8-km grid system. Pre-1990 forests are sampled on an 8 km grid. LUCAS uses LiDAR data to determine above-ground biomass as an alternative to exotic forest plot measurements to avoid the problem of access to forestry land where owners are uncooperative, or where access is limited or restricted.
- c) Soil carbon monitoring - The Soil Carbon Monitoring System estimates the steady state soil carbon stocks for each land use. For example, low-producing grassland has 117 t soil carbon per hectare; whereas under planted forest the carbon stock is 104 tonnes carbon per hectare. By multiplying the differences in soil carbon stocks for each land-use change by the area of that land-use change, the soil carbon stock change over a period of 20 years is obtained. This is the time required for the soil carbon to reach equilibrium under a new land use. 1235 plots exist in New Zealand's Historic Soils dataset.

### 7.2.2 Sub-national MRV under the NZ ETS<sup>131</sup>

At the sub-national level, forest stand-level carbon accounting methodologies are required for the NZ ETS regulator (MAF for the forestry and agriculture components) to detect and enforce compliance and manage permanence. Forest landholders who participate in the NZ ETS are required to monitor and report their emissions and removals using methodologies prescribed in the regulations. Forest owners can look up a series of simple look-up tables for carbon stocks by forest age and type to submit their returns, and in the future, forests > 100 hectares in size may be required to use the field measurement approach<sup>132</sup> once finalised. The latter approach will be based on a random grid of sample plots and will follow industry-standard approaches to forest inventory. The idea is to use the same basic method of forest carbon stock assessment as the national inventory under the Kyoto Protocol to reduce divergence between national and forest-specific estimates and avoid fiscal risks for the government<sup>133</sup>.

Post-1989 forest owners have to submit mandatory emissions returns every 5 years (first due in 2013) reconciling units received and surrendered. They can also submit a voluntary return annually. Pre-1990 forest owners have to submit emissions returns in the year following deforestation. ETS Participants are required to keep records of transactions, measurements, calculations and other relevant information for 20 years. MAF is entitled to undertake audits and checks of these records and information to ensure legal compliance. The regulator may also require that the reports be independently verified.

<sup>131</sup> <http://www.maf.govt.nz/sustainable-forestry/2010-ets-guide.pdf>

<sup>132</sup> <http://www.maf.govt.nz/sustainable-forestry/ets/field-measurement-approach/field-measurement-approach-consultation.pdf>

<sup>133</sup> <http://www.maf.govt.nz/sustainable-forestry/ets/field-measurement-approach/technical-guide.pdf>

Participants are required to electronically map their forest land as per the standards to facilitate determination of the carbon units they are legally entitled to or are liable for. They will be required to supply evidence attesting to the status of their forest as Post-1989 or Pre-1990 forest and the extent of their activities. Eligibility of the land (that the land is in fact Post-1989 forests) is cross-checked against the 1990-baseline information held within LUCAS<sup>134</sup>. In addition, information from LUCAS will be shared with the NZ ETS regulator to assist in the detection of forest harvesting and deforestation, and participants who are not meeting their obligations or may have overstated their entitlements. MAF has a program of spot checks and detailed site audits. MAF maintains a database of all forest land to be part of the ETS and this is linked to LUCAS.

### 7.2.3 Overview

New Zealand's LUCAS and forestry in the NZ ETS have sought to provide transparent, accurate, comparable, consistent and credible accounting based on IPCC Good Practice Guidance for LULUCF activities, best practice mapping procedures, cross-government collaboration, detailed investigations on methodologies and publishing of the approaches in independent peer-reviewed journals. The system does not account for forest degradation and improved forest management related emissions or removals, but it provides wall-to-wall accounting for deforestation and reforestation-related emissions in all five carbon pools. The New Zealand LUCAS and ETS systems seek to provide credible forestry emissions accounting at the national and sub-national levels, and there is strong international demand for the credits<sup>135</sup>. Sub-national forestry activities in the New Zealand ETS are verifiable by the ETS forestry regulator, MAF. The national GHG inventory reports (including LULUCF accounting) are reviewed annually by visiting expert review teams appointed by the UNFCCC Secretariat to determine their conformity with UNFCCC reporting guidelines and IPCC good practice guidance.

### 7.3 Australia's NCAS

The National Carbon Accounting System (NCAS)<sup>136</sup> was established in 1998 to provide an accounting and forecasting system for all human-induced sources and sinks of greenhouse gas emissions from Australian land-based activities. NCAS is spatially explicit, wall-to-wall and includes time series data since about 1970. All emissions (gases, pools and activities) are estimated through a Tier 3, process-based system that integrates all reporting categories and aims for consistent treatment across all sectors with no overlaps<sup>137</sup>. The NCAS continues to be developed over several phases based on reporting needs for LULUCF activities under the UNFCCC and the Kyoto Protocol.

Australia chose to report annually for GHG emissions and removals via afforestation, reforestation and deforestation activities under Article 3.3 of the Kyoto Protocol<sup>138</sup> and needs to report changes in five carbon pools – soil, litter, dead wood, and above and below-ground living

<sup>134</sup> <http://www.maf.govt.nz/climatechange/consultation/engagement/page-09.htm>

<sup>135</sup> <http://www.carbonnews.co.nz/story.asp?storyID=4506>, <http://www.carbonnews.co.nz/story.asp?storyID=4654>, <http://www.carbonnews.co.nz/story.asp?storyID=4585>, <http://www.carbonpositive.net/viewarticle.aspx?articleID=1904>

<sup>136</sup> <http://www.climatechange.gov.au/en/government/initiatives/national-carbon-accounting.aspx>

<sup>137</sup> [http://unfccc.int/files/methods\\_and\\_science/lulucf/application/pdf/australia.pdf](http://unfccc.int/files/methods_and_science/lulucf/application/pdf/australia.pdf)

<sup>138</sup> <http://www.aph.gov.au/library/pubs/bn/sci/KyotoAccRules.htm>



biomass. Australia chose not to report on forest management, forest, cropland, grazing land, and revegetation under Article 3.4.

Australia's NCAS was designed to enable consistent estimates of carbon stocks and greenhouse gas emissions at national, regional and project levels. Land management practices (agricultural and forest management)<sup>139</sup> are modelled. It estimates emissions using the ecosystem model FullCAM which integrates:

- Thousands of satellite images (Landsat) to monitor land use and land use change across Australia since 1972 that are updated annually,
- Monthly maps of climate information, such as rainfall, temperature and humidity,
- Maps of soil type and soil carbon; and,
- Databases containing information on plant species, land management, and changes in land management over time.

Protocols have been established for sampling above and below-ground tree and stand biomass, wood density, soil and litter for developing data for model development and calibration<sup>140</sup>.

A time-series that currently consists of 18 national coverages of Landsat satellite data is used to map forest cover change between 1972 and 2009 (updated annually). A national testing programme was used to derive and test, a nationally consistent, cost-effective and robust specification. The specification describes approaches and standards for each processing step, including the sequence of quality assurance checks at each processing stage. An independent continuous improvement and verification programme has been developed and applied. Two independent expert reviews have also been completed. Data is in wide use and is freely shared within the research community. The extra products (other than deforestation) derived from analysis of the data archive include plantation forests, sparse woody non-forest vegetation, harvest in managed native forest and woody vegetation crown cover density.

Derived from the NCAS, the National Carbon Accounting Toolbox<sup>141</sup> (NCAT) prototype allows land managers to track greenhouse gas emissions and removals at specific locations based on their specific management activities, such as forest establishment and harvesting, soil cultivation, fire management and fertiliser application. Estimates produced using the NCAT at the site level are consistent with the NCAS at the national level since they both use the same modelling system (FullCAM) and data. Users may access carbon accounting data for a range of species and land management systems.

The NCAS is a nation-wide integrated system with coverage of all sectors, GHGs, pools, land cover and tenure types set up to provide consistent reporting nationwide on an annual basis. The program aims to achieve transparency, accuracy and robustness through technical reports and peer-reviewed science papers, quality assurance and control mechanisms, continuous improvement and verification, independent review, and wide use of data. The system acts as a decision-support tool for emissions management at stand to landscape scales. The system at present does not cover emissions from forest degradation and forest management.

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<sup>139</sup><http://pandora.nla.gov.au/pan/23322/20020220-0000/www.greenhouse.gov.au/ncas/files/pdfs/tr27pt1.pdf>

<sup>140</sup><http://pandora.nla.gov.au/pan/23322/20020220-0000/www.greenhouse.gov.au/ncas/files/pdfs/tr31.pdf>

<sup>141</sup><http://www.climatechange.gov.au/en/government/initiatives/ncat.aspx>

A single agency, the Department of Climate Change and Energy Efficiency, has overall responsibility for NCAS but it draws on multi-disciplinary expertise and data from multiple agencies, such as from the Department of Agriculture Forestry and Fisheries, the Commonwealth Scientific and Industrial Research Organisation (CSIRO) for forestry and remote sensing expertise, and with Universities and State Governments. The Clinton Climate Initiative in partnership with the Australian Government aims to extend the NCAS to other countries for global monitoring of carbon emissions.

#### **7.4 Canada's National Forest Carbon Monitoring, Accounting and Reporting System**

Canada's National Forest Carbon Monitoring, Accounting and Reporting System (NFCMARS)<sup>142</sup> estimates forest carbon stocks, changes in carbon stocks, and emissions of non-CO<sub>2</sub> greenhouse gases in Canada's managed forests<sup>143</sup> using the IPCC tier3 approach. The NFCMARS tracks changes in carbon stocks that result from afforestation, reforestation, or deforestation activities in Canada since 1990 as required under the Kyoto Protocol. Canada chose not to account for forest management activities under the Kyoto Protocol but includes it in the NFCMARS and will include it in its future domestic climate mitigation portfolio that will allow offsets from avoided deforestation, afforestation and forest management.

The Carbon Budget Model of the Canadian Forest Sector CBM-CFS3<sup>144</sup> is an aspatial, stand and landscape-level modelling framework to simulate the dynamics of all forest carbon stocks required under the Kyoto Protocol (aboveground biomass, belowground biomass, litter, dead wood and soil organic carbon)<sup>145</sup>. It is compliant with the carbon estimation methods outlined in the IPCC Good Practice Guidance for Land Use, Land-Use Change and Forestry (2003). The tool was developed in 2002 by the Canadian Forest Service and the Canadian Model Forest Network and tested and refined on various pilot sites. The CBM-CFS model enables analyses at four spatial scales (national, provincial, forest management unit and stand) and in annual time steps<sup>146</sup>.

NFCMARS integrates forest inventory data; temporary and permanent sample plots; growth and yield information; and statistics on natural disturbances, management actions and land-use change into a modelling framework to derive estimates of carbon emissions and sequestration in managed forests (Figure 3). It does not deal with unmanaged areas which forms a substantial proportion of the forest estate of Canada. The major system outputs include a National Inventory Report and Policy Development Support. The system was reviewed and audited by the Expert Review Team (ERT) of the UNFCCC Secretariat.

The system depends on detailed information on reforestation activities, harvesting and thinning applications, fires and insect outbreaks flowing up from the stand and forest management unit level via established management units and administrative structures on the ground (the provinces, the territories and other federal departments). The reforestation inventories are not

<sup>142</sup> [http://carbon.cfs.nrcan.gc.ca/ForestCarbonAccount\\_e.html](http://carbon.cfs.nrcan.gc.ca/ForestCarbonAccount_e.html)

<sup>143</sup> Managed forests are those subject to periodic or ongoing human interventions from commercial timber production to stewardship for non-commercial purposes. This is a subset of Canada's forests.

<sup>144</sup> [http://carbon.cfs.nrcan.gc.ca/CBM-CFS3\\_e.html](http://carbon.cfs.nrcan.gc.ca/CBM-CFS3_e.html)

<sup>145</sup> [http://unfccc.int/files/methods\\_science/redd/application/pdf/kurz\\_natural\\_resources\\_canada.pdf](http://unfccc.int/files/methods_science/redd/application/pdf/kurz_natural_resources_canada.pdf)

<sup>146</sup> <http://www.imfn.net/?q=system/files/Discussion%20Paper%2002%20%28Carbon%29.pdf>



up-to-date nor comparable<sup>147</sup>. Except for fires which are monitored by a national satellite mapping program, there was no active large-scale forest monitoring from the top. The Canadian Wildland Fire Information System team compiles the various fire datasets into a single annual report that includes both the area affected and the impact of the fires. Entomologists provide expertise on the impact of different insects on carbon stocks. The carbon accounting team incorporates the annual impact of the management activities and disturbances into the NFCMARS. Scientific papers are published backing up the methodologies used. How the system accounted for deforestation is unclear.

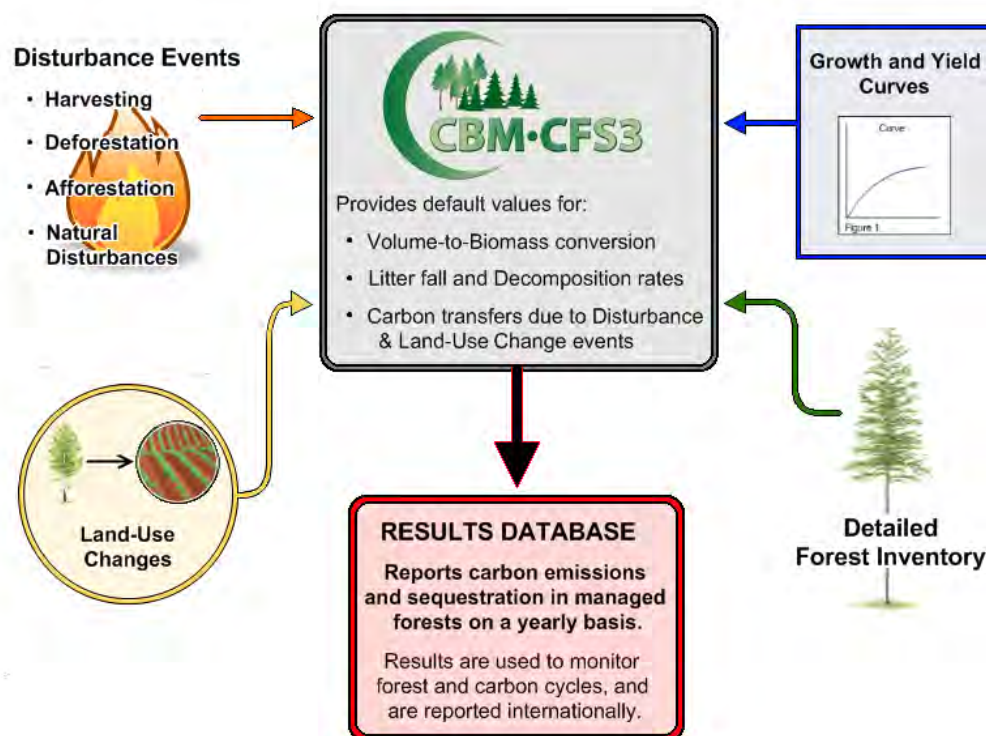


Figure 3. The National Forest Carbon Monitoring, Accounting, and Reporting System. Source: [http://carbon.cfs.nrcan.gc.ca/ForestCarbonAccount\\_e.html](http://carbon.cfs.nrcan.gc.ca/ForestCarbonAccount_e.html)

Canada's new national forest inventory will have a network of sampling points on a 20 x 20 km grid across Canada, with adequate sampling of the different ecozones<sup>148</sup>. Area and other attributes are to be obtained from remote sensing or aerial photo interpretation of large plots of 2 x 2 km resampled every five years. Species data, volume and biomass are to be estimated from field plots resampled every 10 years. Remote sensing was used to develop a (30 m pixels, Landsat 7) forest-cover map of Canada for the year 2000 and will be used to detect forest changes (such as harvesting, wildfire and insect impacts) and land-use change (afforestation, reforestation and deforestation) in collaboration with provincial and territorial resource management agencies.

<sup>147</sup> <http://www.imfn.net/?q=system/files/Discussion%20Paper%2002%20%28Carbon%29.pdf>

<sup>148</sup> [ibid](#)

At the stand level, the CBM-CFS3 tool helps to meet criteria and indicator reporting requirements of sustainable forest management, for forest certification, and to help managers understand how their actions affect the net carbon balance of their forest estate. With this tool, users apply their own stand or landscape-level forest management information to calculate carbon stocks and stock changes for the past (monitoring) or into the future (projection). Users can also create, simulate and compare various forest management scenarios in order to assess impacts on carbon. The model contains graphic user interfaces to help users prepare data, define scenarios, perform analyses, and examine results.

The NFCMARS and the CBM-CFS3 are managed by the carbon accounting team of the Canadian Forest Service that is working to improve various components of the system. The Canadian Forest Service uses NFCMARS to estimate emissions and removals in Canada's forests and sends it on to the Greenhouse Gas Division at Environment Canada who has the overall responsibility for submitting an annual National Inventory report on the country's greenhouse gas emissions and removals in all sectors to the UNFCCC.

Although the CBM-CFS3 model currently contains a set of default ecological parameters appropriate for Canada, these parameters can be modified by the user, allowing for potential application of the model in other countries. Application of the model needs ground-plot data with complete carbon estimates for testing and parameter development. Mexico is adapting CBM-CFS3 to estimate the carbon dynamics in its forest ecosystems.

## 7.5 India's FSI

The Forest Survey of India under the Ministry of Environment and Forests in India conducts nationwide biennial forest cover monitoring using remote sensing, intensive ground-truthing by state forest departments, and accuracy assessments<sup>149</sup>. Reasons for cover change are also explored and reported. The mapping classifies canopy cover density: very dense forest (> 70% canopy cover), moderately dense forest (40-70%) and open forest (10-40%). It however does not distinguish between natural forests and plantations, includes palms and bamboos, and does not register land ownership or use. Data is available down to the district level.

Ten wall-to-wall forest cover mapping and change assessments have been conducted since 1987. Landsat sensors were used from 1987 to 1993, and then IRS sensors with a resolution of 23 x 23 m were used for the next six mapping efforts. Initial mapping was done through visual interpretation but by the eighth assessment the entire country was covered by digital assessment. Hard and soft copy maps are available and "State of the forest" reports are published every two years. Online availability in the future is planned. The information has been used for forest planning, management, law enforcement, policy development, raising public awareness and international reporting.

Since 2002, a systematic national inventory of forest areas and trees outside forests is being conducted by stratifying the country into 14 physiographic zones and taking a random sample of 10 percent of the districts (equals 60 districts) for detailed inventory coinciding with the

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<sup>149</sup> <http://www.fsi.org.in/>

Nationwide biennial forest cover monitoring: India's experience. Subhash Ashutosh, Indian Forest Service. A presentation.

biennial forest cover mapping<sup>150</sup>. In the next two years, another 10 percent of the districts are sampled and surveyed without replacements, so new districts are selected each time. The country is divided into grids and sub-grids and sampling is done on forests in randomly generated sample plots (about 4000 temporary plots sampled every year). Information is gathered on vegetation, regeneration status, biodiversity and soil carbon and estimates of growing stock and other parameters are included in the biennial State of Forest Report. National-level estimates are improved as further areas are sampled. Trees outside forests are sampled with an independent methodology.

An electronic National Forest Inventory Database System (NFIDS) is being developed and refined for data entry, processing and reporting. The data entry module has been installed in all the zonal offices. The field inventory and data entry is carried out by the zonal offices but data checking and processing is done at the headquarters. The system will finally have a GIS interface connecting the inventory data with the forest cover mapping. FSI has well qualified and experienced professional cadre on Remote Sensing application in forestry, GIS and GPS. Forestry personnel of various levels are provided training through 12 two-week courses organised every year with a mix of theoretical and practical classes. To date, more than 2,900 forestry personnel from different State Forest Departments have been trained.

Forest type classification was started in 2009 using the same field validation and accuracy assessments. An overlay analysis of the forest type maps (200 classes) with the biennial forest cover maps (three canopy cover densities) would produce 600 strata of homogenous forest type and canopy density. Using inventory data (biomass and soils) and expansion factors developed, forest carbon changes would be estimated at the district to national levels coinciding with the biennial forest cover mapping. Forest cover monitoring meets the tier3 IPCC Good Practice Guidance requirements. Inventory of other required land use categories will be developed.

Since 2004, India has near real-time detection of forest fires at the national level using MODIS data. The hotspot location information is faxed or emailed to state forest departments for control activities. The hotspot information is also posted on the FSI website<sup>151</sup> and is searchable by date and location (state and district).

The system appears complete, comparable, consistent and cost-effective. It would be helpful to have the information and methodologies online for public viewing and verification. Deforestation and reforestation is monitored on a frequent basis using the adequate resources available – Indian satellite sensors, infrastructure, and skilled staff for remote sensing and field inventories. Forest degradation is not monitored. The system does not include land use and ownership information critical for REDD+ monitoring and enforcement, and there is no independent verification of process and results.

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<sup>150</sup> [http://www.fsi.org.in/forest\\_inventory.htm](http://www.fsi.org.in/forest_inventory.htm)

<sup>151</sup> <http://www.fsi.org.in/>

## 7.6 Options for Laos

- a) Land cover change monitoring (Deforestation and Forestation): Two options exist for monitoring land cover change – remote sensing using 20-30 m resolution Landsat and other imagery as adopted by Australia, Brazil, India and New Zealand; or solely field-based information as in Canada and Europe. Canada is also moving towards remote sensing options for area-based estimates. For Lao PDR with its large swathes of remote terrain, limited existing administrative structures and inventory systems, the remote sensing option combined with some fieldwork appears more feasible and cost-effective. It is also likely to provide more transparent, routine, consistent and accurate estimates over time, once tested and verified protocols are established.

Lao PDR plans to conduct wall-to-wall forest cover change assessments every five years using medium-resolution satellite imagery such as Landsat and ALOS<sup>152</sup>. The first assessments are to be for 2005 and 2010 using ALOS, SPOT5 and Rapid Eye imagery, and possibly extended back to 1990 and 2000 using Landsat imagery. The JICA-funded Program for Forest Information Management (PFIM) will support the first assessments. The remote sensing analysis often needs groundtruthing or use of high-resolution imagery and sensors because of difficulties distinguishing certain land use types (shifting cultivation, bamboo, young rubber, degraded forest), and terrain and cloud cover. Laos also needs to assess and determine how it will deal with rotational cultivation and associated forest fallow areas in its remote sensing analysis.

For more regular monitoring on an annual or biennial basis, Laos could explore the monitoring systems used by Brazil, India and Australia. Assistance and collaboration are possible and forthcoming from these countries. Brazil has offered to make its data and monitoring systems available to other countries and support them in quickly developing their own forest monitoring systems. It may be worthwhile for Lao experts to go on a study tour to the different countries to assess their systems and ensure that what Laos is currently planning to develop meets its ultimate requirements in a cost-effective manner.

- b) Real-time deforestation monitoring: Real-time deforestation monitoring for control and enforcement has been successfully implemented by Brazil using coarse-resolution MODIS and CBERS data. This made the difference in terms of reducing forest-related emissions in Brazil. To implement such real-time monitoring and control, Laos would need to garner resources from REDD readiness funds and elsewhere, and strengthen institutional capability and capacity to respond immediately and effectively.
- c) Monitoring forest quality change (forest degradation and sustainable forest management): Laos would like to include all five types of REDD+ activities considered under the UNFCCC, and thus would need to develop MRV systems for forest degradation and sustainable forest management as well<sup>153</sup>. However, cost-effective remote sensing systems for monitoring national-level forest quality change are still to be developed. Brazil's DEGRAD system mainly captures the process of deforestation at the frontiers that can be recognized via the logging roads, forest canopy damage and burnt canopies. Smaller disturbances such as

<sup>152</sup> Forest Carbon Partnership Facility Readiness Preparation Proposal (R-PP) for Lao P.D.R. 11 October 2010.

<sup>153</sup> Forest Carbon Partnership Facility Readiness Preparation Proposal (R-PP) for Lao P.D.R. 11 October 2010.

selective logging, fuelwood gathering and understorey fires that are characteristic of the Laotian forest landscape are difficult to detect via Landsat type sensors<sup>154</sup>.

Voluntary standards such as the Climate Action Reserve and the Voluntary Carbon Standard provide guidelines for monitoring and verifying sustainable forest management projects. Thus at present, it may be possible to monitor and report on degradation and sustainable forest management on small sub-national activities in Laos with intensive field monitoring till acceptable systems evolve for cost-effective large-scale monitoring. Larger-scale forest degradation or improvement such as canopy density changes could already be combined with national-level land cover monitoring through satellite image analysis.

Brazil is experimenting with the DETEX system for monitoring selective logging operations. A CIFOR information brief<sup>155</sup> suggests a possible way of accounting for forest degradation at a larger scale by using a probabilistic model. This involves stratifying forest by degradation risk based on observation of past trends and proxy variables such as density of road networks and distance from settlements. The model parameters would vary with type of degradation process (e.g., selective logging, fuelwood collection). Carbon stock changes from degradation can be measured by the gain-loss method. Biomass gains are estimated on the basis of typical growth rates in terms of mean annual increment (MAI) minus biomass losses estimated from activities such as timber harvesting, logging damage, fuelwood collection and overgrazing as well as from fire.

- d) Fire monitoring: Fires are regularly used by farmers in Laos to clear their fields for cultivation. The fires could escape and burn unintended areas. Laos will likely want to monitor fire occurrence for real-time control. Brazil and India monitor forest fires on a daily basis using satellite data. Hotspot location information is used for real-time detection and control. In Canada, a national satellite-mapping program monitors fires, and provincial and territorial agencies monitor areas affected by forest fires. The area affected and the impact of the fires on carbon stocks are included into the national carbon accounting system.

Free Moderate Resolution Imaging Spectroradiometer (MODIS) data on fire hotspots are available on a near real time basis each day for the Greater Mekong Region including Laos<sup>156</sup>. A study on the feasibility of using MODIS fire data to monitor shifting cultivation fires and plots in Laos concludes that the results are mixed with varying degrees of undetected fires and false detections<sup>157</sup>. A mismatch between the time of burning and the time of satellite overpass possibly leads to high errors of omission, particularly for smaller areas or areas with low fire density. More work is required to establish an effective fire monitoring system for Laos. The system would be used primarily for monitoring fires and encroachment in unauthorized areas and not to monitor burning in permitted agricultural areas. It would also be used for control purposes as in India and Brazil, and not to estimate carbon emissions from burning.

<sup>154</sup> Imazon. [http://www.dpi.inpe.br/REDD\\_Workshop/Carlos\\_Souza\\_Jr.pdf](http://www.dpi.inpe.br/REDD_Workshop/Carlos_Souza_Jr.pdf)

<sup>155</sup> [http://www.cifor.cgiar.org/publications/pdf\\_files/Infobrief/016-infobrief.pdf](http://www.cifor.cgiar.org/publications/pdf_files/Infobrief/016-infobrief.pdf)

<sup>156</sup> Forest Carbon Partnership Facility Readiness Preparation Proposal (R-PP) for Lao P.D.R. 11 October 2010.

<sup>157</sup> Can the MODIS active fire data be used to monitor shifting cultivation in the Lao PDR? September 2010. Daniel Mueller and Stefan Suess. CLiPAD, GTZ, Laos.

- e) Field inventories and carbon pools: National forest inventory data and modelling are used to determine carbon stock changes with land use change. In order to determine carbon stocks at the national level, site-specific data are gathered through networks of temporary or preferably permanent sample plots in different forest types across a country, and updated on a periodic basis. Protocols are established for sampling above and below-ground tree and stand biomass, wood density, soil and litter, and converting them to carbon stocks per hectare using allometric functions and regression equations. Such sampling could include higher-resolution remote sensing data such as LIDAR.

All the countries studied here have such inventory systems in place or are in the process of developing one to sample the required terrestrial carbon pools more accurately and consistently. Laos plans to reach Tier3 reporting in 3-5 years<sup>158</sup>. Tier3 reporting uses actual inventories and repeated measurements of biomass change in permanent sample plots to provide more rigorous and accurate GHG estimates. Laos would then need to develop an appropriate National Forest Inventory system with adequate field sampling points (ideally permanent) in all forest categories across the country, repeated measurements of the terrestrial carbon pools every 5-10 years, and rigorous sampling protocols to derive local emissions factors.

Annex 1 countries, New Zealand, Canada and Australia report on all five terrestrial carbon pools: Above-ground and Below-ground biomass, Dead wood, Litter and Soil organic matter. The highest Tier3 approach of the IPCC requires reporting on all five carbon pools. Brazil only reported on above-ground biomass and Laos could do the same for a start.

SUFORD developed a comprehensive NFI methodology spelling out remote sensing specifications, stratification and sampling processes, calculations to be made, and models and parameters for carbon monitoring<sup>159</sup>. The method is being used by PFIM to conduct a 2010 NFI. Laos could compare this protocol to the NFI methodologies developed by other countries for monitoring forest carbon and make sure it matches IPCC Good practice guidance for LULUCF reporting as well as all possible forest carbon/REDD reporting requirements.

- f) Data management and modeling systems

The three Annex 1 countries, Canada, Australia and New Zealand have developed comprehensive modeling and accounting systems (NFCMARS, NCAS, LUCAS) to integrate land use change information (and possibly forest management and disturbance information), inventory data and expansion factors to derive accurate, consistent and transparent estimates of national forest carbon stock changes in a given period for Tier3 reporting. The underlying methodologies are tested and published in peer-reviewed journals. Quality assurance and control mechanisms are put in place and the systems are subject to continuous improvement and independent verification by UNFCCC expert teams. The MRV systems follow the IPCC good practice guidance for LULUCF activities. Other countries are exploring adapting NCAS or CBM-CFS3 for deriving their national forest carbon accounting.

<sup>158</sup> Forest Carbon Partnership Facility Readiness Preparation Proposal (R-PP) for Lao P.D.R. 11 October 2010.

<sup>159</sup> Forest Carbon Partnership Facility Readiness Preparation Proposal (R-PP) for Lao P.D.R. 11 October 2010.

The SUFORD project in Laos developed a forest inventory database system that integrates NFI, GIS and FIMP databases and has implemented it on a pilot basis<sup>160</sup>. The focus is on production forests and they are considering expanding it for use in all forest categories and to adapt it for REDD. It may be worthwhile for Laos to assess the established UNFCCC-approved NFCMARS, NCAS, LUCAS systems for carbon modelling and accounting and ensure that what Laos is currently planning to use will meet its REDD+ MRV requirements in an optimal manner. Quality assurance and control mechanisms should be put in place.

- g) Linking national and local MRV: Laos has to develop protocols for measuring and reporting carbon emissions and removals and leakage for sub-national activities. Sub-national accounting protocols and methodologies should be consistent with that used for national-level carbon accounting to avoid fiscal risks for the government. Annex 1 country systems provide some useful models of how this can be achieved.

NCAS (Australia) and CBM-CFS3 (Canada) models can measure carbon at different levels (national, regional, forest management unit, stand and project levels) and directly relate the land use activities to the emissions. NCAT and CBM-CFS3 tools can be used directly by land managers to track greenhouse gas emissions and removals at specific locations based on their specific management activities. Estimates produced at the site level are consistent with those at the national level since they both use the same modelling systems and data. New Zealand is also working towards the same basic method of forest carbon stock assessment at the forest-specific and national levels to reduce divergence between the two estimates.

As in New Zealand, a sub-national activities database could be linked to the national-level MRV system in Laos. Information from the national spatial databases could then be used to check sub-national project eligibility, performance and compliance. Community and other stakeholder involvement in monitoring and verification may be called for in sub-national activities.

If sub-national project activities verified to external standards (such as VCS) are allowed to operate, they tend to have their own approaches for baseline setting and monitoring and verification. A method will have to be devised to reconcile their accounting approaches with the national-level approach to obtain consistent estimates. One option is to require such sub-national activities to perform their calculations for the project area using both the external standard and national protocol requirements. Any differences in estimates will have to be compensated for by the sub-national activity.

- h) Verification and reporting: Credible independent verification, international or national, is a must. Annex 1 country MRV systems for LULUCF and the results are subject to independent review by expert teams appointed by the UNFCCC. Brazil's emissions calculations and reporting under the Amazon Fund are verified by a technical committee composed of six authoritative scientists. The committee is appointed for a term of three years, extendable for another three-year period.

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<sup>160</sup> Forest Carbon Partnership Facility Readiness Preparation Proposal (R-PP) for Lao P.D.R. 11 October 2010.

Transparency and public accessibility of the underlying data, the methods and reports are likely required. Accurate annual reporting would facilitate annual crediting of emissions reductions if desired. More real-time coarse-resolution monitoring and reporting would be required for active deforestation control.

Lao PDR would need to rapidly develop at least three of the above MRV components for estimating GHG emissions and sequestration from the LULUCF sector for REDD crediting at the national scale: land cover change monitoring using remote sensing for reporting and possibly for real-time control, field inventories for deriving model data, and integrated data management and modeling systems for calculating the GHG changes. A step-by-step approach could be used to reach Tier 3 requirements. It would be easiest to start with aboveground biomass reporting and add the other four pools at a subsequent date. Monitoring of forest degradation, improved forest management, fires and their impacts could be on small sub-national projects till cost-effective and efficient methodologies are established for full-scale accounting. MRV for sub-national activities should be consistent with and linked to national level accounting. Credible independent expert review, possibly international, will be required. Reporting frequency depends on national needs for early payment and enforcement, as well as international requirements. Seeking information and assistance from other countries with more advanced systems is highly recommended.



## 8. REGISTRY FOR FOREST CARBON

Accurate systems for issuing, holding, transferring and retiring carbon credits are required to ensure no double counting or resale of a single set of emission reductions. Registries record unit holdings and transactions through a structure of accounts. This is similar to the way that banks record balances and movements in money using accounts allocated to individuals or other entities. Transparency is called for in terms of credit issuance and tracking and the information is required to be publicly available. Price data is usually considered confidential.

I summarize below existing registry systems under the international Kyoto Protocol, the national New Zealand EUR, the voluntary market Climate Action Reserve, and an upcoming state-level registry (in Amapa, Brazil) to be operated by a commercial registry agency. I then draw on useful features and options from these registries for developing a national forest carbon registry system for Laos.

### 8.1 Registry systems under the Kyoto Protocol<sup>161</sup>

Annex 1 parties to the Kyoto Protocol are assigned allowed emissions units (tonnes of CO<sub>2</sub> equivalent emissions) over the 2008-2012 commitment period, can earn LULUCF credits, obtain CDM credits, and trade or otherwise transfer credits to other parties. Registry systems record the holdings of Kyoto units and their transfer from one account to another, and keep track of the credits at all times. Domestic or regional emissions trading schemes that use Kyoto units also undertake their settlement through these registry systems.

#### 8.1.1 National Registries

Governments of the 38 Annex B Parties are implementing national registries<sup>162</sup>, containing accounts within which units are held either by the government or by the legal entities authorized by the government to hold and trade units. The European community and 35 countries have initialized their registries and connected it to the International Transaction Log (ITL) administered by the UNFCCC secretariat (Figure 4).

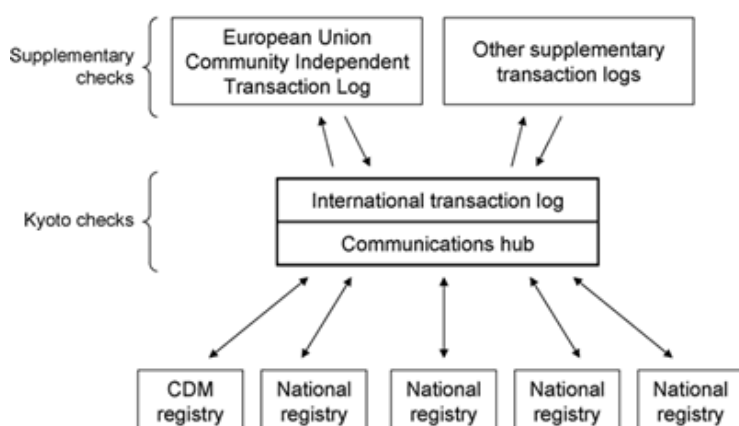


Figure 4. National registries linked to the International Transaction Log under the Kyoto Protocol.

<sup>161</sup> [http://unfccc.int/kyoto\\_protocol/registry\\_systems/items/2723.php](http://unfccc.int/kyoto_protocol/registry_systems/items/2723.php)

<sup>162</sup> [http://unfccc.int/kyoto\\_protocol/registry\\_systems/registry\\_websites/items/4067.php](http://unfccc.int/kyoto_protocol/registry_systems/registry_websites/items/4067.php)

The ITL verifies registry transactions in real time, checks that unit holdings are being recorded accurately and requires registries to terminate transactions that infringe upon the Kyoto rules. After the Kyoto commitment period, the final unit holdings of each Annex B Party will be compared with the Party's emissions over the commitment period to assess whether it has complied with its emission target.

### 8.1.2 CDM Registry

The UNFCCC secretariat, under the authority of the CDM Executive Board, has implemented the CDM registry<sup>163</sup> for issuing CDM credits and distributing them to national registries. It is a standardized electronic database that ensures the accurate accounting of the issuance, holding, transfer and acquisition of certified emissions reductions (CERs). Accounts in the CDM registry are held only by CDM project participants, as the registry does not accept emissions trading between accounts. The UNFCCC Secretariat is the registry administrator who issues CERs based on the EB instruction, assigns unique serial numbers to all credits, and maintains the registry. Transaction types are indicated in Figure 5.

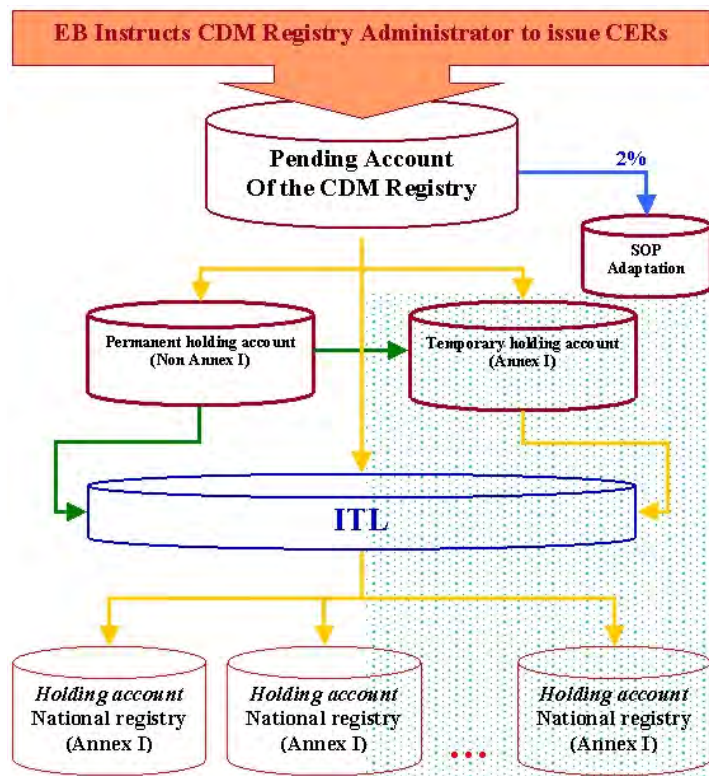


Figure 5. CDM registry under the Kyoto Protocol.

There are four different account types:

- a) Pending accounts where all CERs issued on CDM EB instruction are held prior to forwarding to the holding accounts of project participants.

<sup>163</sup> <http://cdm.unfccc.int/Registry/background/index.html>

- b) Adaptation fund account that receives 2% of the CERs issued for every CDM project to assist highly vulnerable developing countries meet climate change adaptation costs.
- c) Temporary holding accounts for project participants authorized by an Annex I country wishing to receive CERs and whose national registry is not yet connected to the ITL.
- d) Permanent holding accounts for project participants with authorisation from a Non-Annex I Party to open a holding account where CERs can be received for forwarding to the holding accounts of project participants with authorisation from an Annex I Party.

CDM credits finally make their way to the Annex 1 national registry accounts. Instructions are provided online on how to open holding accounts and forward CERs from CDM to national registry accounts. Information on CERs issued is available online for transparent public viewing<sup>164</sup> and includes project details, verification period, CERs issued and date of issuance.

## 8.2 State of Amapa, Brazil

The Brazilian State of Amapá will use a commercial registry “the Markit Environmental Registry ([www.markitenvironmental.com](http://www.markitenvironmental.com))” to track carbon, water, biodiversity and other environmental commodity credits in the state. The registry will initially focus on REDD project credits. Markit will provide its standard registry services and also portfolio management, credit transfer and credit retirement services. Pending development of the Amapa registry, details of standard Markit registry services are summarized below.

Carbon asset managers, traders, retailers, companies, NGOs, individuals and governments among others can open accounts in the registry. There are clear step-by-step online guidelines on how to join the registry and open an account. Accountholders can manage their credits on the system, and can at any time obtain reports and statements of their accounts. Fees to be paid for joining, annual maintenance and access, retirement, account closing, issuance and transfers are listed online.

Credits issued and entering the registry are audited by the registry to ensure they have received the appropriate accreditation and to check that they have not been previously issued. Credits receive a unique reference number so they can be monitored through their entire life-cycle. The system then enables the transfer of credits between sellers and buyers. Finally, at end point, customers can retire their credits into their own retirement account on the Registry. Retired credits can be viewed on the registry, ensuring that the same credits are not re-issued or sold at a later date.

Other key features of the Registry are:

- Transparent and objective Registry Rules
- Full reporting, transparency and traceability for credits from origin
- Visibility of ownership through the lifecycle of the environmental assets
- Processing and delivery of credits against payment
- Inter-operability capabilities with other environmental registries
- Credibility, flexibility and security
- Full-time availability
- Externally audited registry technology and processes

<sup>164</sup> [http://cdm.unfccc.int/Issuance/cers\\_iss.html](http://cdm.unfccc.int/Issuance/cers_iss.html)

The following information is available for public viewing if accountholders permit.

- a) Account Holders – name, classification (broker, project developer, trader, NGO, corporate, certificate provider or retailer, exchange/ clearing house), country, website
- b) Registered Projects – name, ID, type, status (issued, active, cancelled), developer, validator, origin, documents
- c) Issuances/Listings and Holdings – vintage, project name, proponent, verifier, # of units, unit type
- d) Retired Credits – date retired, vintage, project name, accountholder, # of units, unit type (VCU), remarks (who offset it on behalf of whom)

Markit has incorporated a request for information (RFI) platform which allows registry clients to seek buyers for credits that have already been issued by the Registry. Registry account holders can view the listed credits and express interest directly to the seller via the platform. The listing and expressions of interest are anonymous and once contact has been made, the parties can finalise the sales independently between themselves away from the registry.

### **8.3 Climate Action Reserve, North America**

The Climate Action Reserve (Reserve)<sup>165</sup> launched in 2008 is a private, non-profit organization run by a Board of Directors. It establishes regulatory-quality standards for the development, quantification and verification of GHG emissions reduction projects in North America; issues carbon offset credits known as Climate Reserve Tonnes (CRT) generated from such projects; and tracks the transaction of credits over time in a transparent, publicly-accessible system. The CRTs can be traded in the voluntary carbon market or transferred into the Voluntary Carbon Standard's unit of measurement, the Voluntary Carbon Unit (VCU).

The Reserve process involves opening an account; submitting a project; reducing emissions; verifying the reductions; registering the CRTs issued; and holding, selling or retiring the CRTs. All project developers, verification bodies, traders, brokers, and retailers must register for a Climate Action Reserve user account on the Reserve website as per the clearly-outlined process. Each approved account receives an Account Manager login and can begin using all functions of the system available for their User Type. There are fees listed online for account setup, annual maintenance, project submission, credit issuance and CRT transfer, along with payment instructions.

Project developers submit a project by uploading the necessary forms and supporting documents to the Climate Action Reserve online application. The Reserve staff pre-screen projects for eligibility and post eligible projects on the site labeling them as "Listed." An independent, accredited verification body then verifies the projects followed by a review by the Climate Action Reserve staff. If the project passes, they label it as "Registered", issue CRTs for a fee and deposit them into the account. The CRTs can be traded or retired. All generated carbon credits are assigned unique serial numbers to prevent the possibility of double counting and assure buyers that when a CRT has been retired, it cannot be sold or transferred again and has

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<sup>165</sup> <http://www.climateactionreserve.org/>

created a real and permanent offset. All project information is made publicly available through the Climate Action Reserve system.

For transferring credits, the developer contracts to sell CRTs to a buyer and instructs the system to transfer the CRTs into the buyer's account. Financial transactions are conducted outside of the system. Buyer can hold, retire or further transfer the CRTs. Only Reserve account holders can trade CRTs or purchase wholesale quantities. However, if individuals or organizations want to offset their emissions for activities like travel and business operations, they can purchase and retire small quantities of CRTs through a retailer account holder. A list of companies who can handle retail purchases is provided.

Publicly available information on the website includes:

- Project and credit registry – Project ID, developer, name, verifier, project type, status, location, additional certifications, documents, website, protocol version, date of credit issue, quantity of CRTs, vintage
- Accounts disclosed to public – name, credits, type of accounts, ID
- Search CRTs by serial number
- Retired CRT information

#### **8.4 New Zealand EUR**

The NZ ETS is supported by the New Zealand Emissions Unit Register (NZEUR)<sup>166</sup>, an electronic, internet-based national registry system, as required by both the Kyoto Protocol and the New Zealand Climate Change Response Act 2002 (CCRA). The NZEUR manages the accounting, reporting and reconciliation of emissions, and holdings and transactions of NZUs and different Kyoto units. It contains multiple holding accounts and allows the transfer of units between these internal holding accounts, and between NZEUR holding accounts and other official overseas registries under the Kyoto Protocol. It also registers participants' activities under the NZ ETS, and is shortly expected to support the emissions reporting activities and associated transactions required under the CCRA.

People can register as users and then open holding accounts to either participate in the NZ ETS or to trade units. The website details out the process of participation. User guides and help sheets are available for every step. In the forestry sector, participants who would open holding accounts include those transferred Kyoto Units under MAF's Permanent Forest Sink Initiative, pre-1990 forest owners allocated NZUs under the NZ ETS, and post-1989 forest owners who seek to join and earn credits for carbon sequestered by their growing forests. Other individuals, companies or organisations wanting to hold, receive or trade Kyoto units and New Zealand units to, for example take advantage of market opportunities, would also open holding accounts.

A range of ETS transactions can be submitted via online forms while others are to be submitted using paper-based forms and including support documents. For post-1989 forests, one can apply to be registered as a participant, change participant registration, file an emissions return and deregister as a participant. For pre-1990 forests, one can apply to be registered as a

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<sup>166</sup> <http://www.eur.govt.nz/>

participant, give notification of deforestation, apply for an allocation of NZUs, apply for an exemption, file an emissions return and deregister as a participant.

The NZEUR does not record information about the price or financial value of unit trades, nor does it provide a mechanism for the exchange of cash for units traded. It records only the title (ownership) to the units held within a holding account. Cash transactions are performed independently of the NZEUR, either through direct sales or through a broker or organised exchange. The NZEUR is also independent of voluntary carbon markets and registers.

Numerous contact details are provided for participant and other enquiries. Information security measures have been adopted for accountholders. The general public can search the NZEUR for some publicly available information (as dictated by the Kyoto Protocol and the CCRA) such as account holder and account information, unit holding and transaction information, and a list of recognized verifiers. The remaining information is confidential.

The Ministry of Economic Development operates the New Zealand Emission Unit Register and manages the day-to-day running of the New Zealand ETS (sectors other than forestry). MAF is responsible for the forestry section. The Ministry for the Environment, the policy agency, compiles the information and reports to the UNFCCC.

## **8.5 Options for Laos**

Laos needs a national registry system for recording and tracking a) discrete forest carbon activities on the ground and their associated carbon emissions and removals, and b) national level emissions reductions and reconciliation with sub-national project activity emissions reductions. The registry would allow for holding, transfer and retirement of credits, and ensure no double counting or resale of the same credits. The registry should ideally serve as a recording and tracking system for all carbon credits arising from Laos (REDD, CDM and any other mechanism) integrating overall climate change activities in the country. WREA serves as the DNA for Laos and could house and manage the overall carbon registry.

There are at least two options for Laos. It can either develop and manage its own national registry or use an established commercial registry service to do the same. The benefits of using an established commercial registry service are that they are already experienced in providing these services, have the technical capacity and infrastructure, and only need to adapt the system to meet Laos' and general REDD+ requirements. Laos can rapidly establish a credible and operational system while saving effort and resources. On the other hand, the relative costs need to be compared.

Drawing from the international registry systems investigated, I list below some standard and useful features that Laos could consider for framing a national forest carbon registry system (whether internally-developed and managed, or through a commercial agency).

- a) Ideally an internet-based system that is user-friendly, automated and updated in real time, and allows for electronic inputs and submission of applications and forms. Much of the registry's activities could be conducted online for convenient tracking and reporting, as well as effective auditing. Clear step-by-step rules and guidelines for all registry operations and procedures would be useful.

- b) Possible account-holders could be:
  - National-level and provincial-level REDD+ accounting managers and ER verifiers
  - Sub-national ER project activity managers (such as government agencies, companies, communities, individuals, NGOs, developers) and verifiers, and
  - Intermediaries (such as brokers and retailers) and buyers if trading is allowed.
- c) Ideally integrating the different permitted crediting pathways and schemes with the common currencies being the discrete sub-national activities on the ground and the carbon credits arising from these activities. Process for linking sub-national credits and accounting to national-level accounting and crediting.
- d) A process of application and approval of sub-national activities and applicants prior to acceptance and opening of an account is required.
  - For sub-national activities, this could involve PDD development and validation as per guidelines for both mandated and voluntary activities.
  - For intermediaries and buyers, verification of credentials as per established guidelines would be advisable to only allow credible entities to operate.
- e) Project information including PDDs, validation, anticipated emissions reductions and schedule, verification and credit issuance could be recorded.
- f) Forest carbon credits issued by Laotian institutions and/or other permitted agencies to the approved sub-national activities would be deposited into activity accounts after auditing and ensuring their accuracy. Their links to the projects they arise from could be clearly indicated throughout their lifecycle.
- g) Unique numbers would be issued to each credit to allow monitoring through the credit life cycle and avoid double counting at any stage.
- h) Could allow for credit transfers to sub-activity reserve accounts and national buffers as per pre-defined proportions for ensuring permanence of emissions reductions.
- i) Could allow for credit transfers to government for taxes and other purposes, and to communities as well based on pre-defined proportions.
- j) A system for transferring credits from account to account (for ownership transfers and trading if allowed) should be put in place.
- k) Likely need for interlinking with other registry systems where the Lao-based forest credits may be issued or transferred.
- l) Can decide on whether only ownership will be tracked or also cash transactions as in Market. The latter involves added complications.
- m) Credit retirement functionality where accountholders can retire credits into their own retirement accounts on the Registry.
- n) Can define the items to be made publicly accessible to fulfill possible transparency requirements. The databases should ideally be sortable and searchable.
- o) Could decide on whether there would be fees for different services such as registration, credit issuance and transfer.
- p) Security measures to ensure security of the accounts and online transactions would need to be built in.
- q) External auditing of the registry technology and process to ensure accuracy and effective functioning is a likely requirement.
- r) Automated reports and statements of accounts online for accountholders and for the country as a whole would be convenient.



## 9. RECOMMENDATIONS FOR LAO PDR

There is ample scope for implementing REDD+ in Lao PDR given its stated openness to the whole range of possible REDD+ activities; intent to use a nested approach; and permit public and private actors to implement and participate in REDD activities. Laos' REDD+ legal framework should provide clear rules and guidelines for:

- National-level accounting, crediting and financing activities
- Sub-national level activity eligibility, approval process, REL, safeguards, implementation, MRV, crediting, financing and benefit-sharing, and
- Linking sub-national activities to national level accounting and financing

Existing forest-related laws should be harmonised and REDD+ provisions incorporated into them as well. The author provides the following key recommendations for consideration in the upcoming development of Lao's REDD+ strategy and legal and institutional framework.

### 9.1 Recommended scope of REDD+ activities

- 1) Allow for **all possible crediting and financing options** to ensure adequate and sustainable financing, and have the flexibility to respond to upcoming international developments.
  - a. Establish and institutionalize a **National REDD+ Fund** (as in Brazil, Indonesia) for REDD-readiness and carbon financing, ideally as separate windows. The fund should be transparent, run by a credible institution, and open to international verification and auditing.
  - b. To promote more action and make it cost-effective, also allow for **sub-national activities to directly comply with and tap into available international compliance and voluntary markets**, and use of these credits by developed country parties for offsetting emissions wherever possible.
- 2) Till appropriate methodologies are developed for national-level accounting of IFM and forest degradation, **focus on reducing deforestation and on conservation and enhancement of forest carbon stocks**. Could however permit actors on the ground to use available voluntary market standards to implement IFM and avoided degradation projects outside of the national accounting system.
- 3) **Implement REDD+ primarily through sub-national project activities** (discrete units on the ground with clear tenure, manager and management plan, REL, stakeholder agreements, ground monitoring and verification of outcomes).
- 4) Ultimately implement REDD+ project activities on a **mandatory basis in all state Production, Conservation and Protection Forest Areas** (as in the Amazon and New Zealand) to reduce emissions at the national scale and avoid significant leakage of emissions from REDD+ implementation areas to forest areas not included.
  - a. Involve NGO and private sector actors in state forest land management for effectively meeting current area goals combined with REDD+ goals through private-public partnerships, NGO-public partnerships, or special licenses to responsible private and NGO sector actors if permitted in the future. Draw from existing partnership models in Laos, ecosystem restoration license model in Indonesia, and



the NGO model in the State of Amazonas, Brazil. Put in place necessary environmental, social and governance safeguards.

- b. Invite and use REDD+ Readiness Funds to resolve the current budget crisis and implement planned forest area reforms: to a) delineate and set up the Protection, Conservation, Production, and Village Forest Areas; b) develop and execute management plans and benefit-sharing schemes to meet existing area goals combined with REDD+ goals, and c) provide alternative livelihoods and other incentives to communities for forest protection.
  - c. Ensure effective local participation in land-use planning, management and benefit-sharing; clear delineation and titling of village and household use areas; and alternative enhanced agricultural and other livelihood options to address degradation drivers in state-administered areas.
- 5) **Explore and promote voluntary REDD+ activities by the owners, managers or lessees on other forest lands** under individual, village/community or private sector management, to provide an avenue for these groups to participate and benefit, and reduce degradation and conversion pressures on adjacent state forest lands. Aggregate small areas with similar goals and management regimes in a given location (example: village use forests in and around National Protected Areas) for cost-effective implementation under a single REL. Provide necessary technical and other support.
- a. Promote the following REDD+ actions on communal, individual and corporate lands: Sustainable management and use, protection and enhancement of the natural forests in village forest areas. Native and mixed species plantations with longer rotations, natural management practices and low-impact harvesting practices on individual, communal association or private sector lands for carbon and/or timber and other benefits. Restrict plantation development to targeted size and ensure that it does not result in conversion of natural forests or other natural ecosystems, displace agriculture and food production, or threaten basic sustenance. Clarify and define the natural regeneration option for individual, communal association and corporate landholders.
  - b. Provide incentives to smallholders and communities to implement REDD+ on their lands such as seedlings, technical and financial assistance, land allocation and lease possibilities, land tenure security, property rights on the planted/regenerated trees and carbon, and partnership models such as the 2+3 contract farming model.
  - c. Clarify the land lease/concession option and contract farming option for villagers (individuals and communal associations) in villages within the three different state forest land categories. Clarify/confirm that outside investors are not encouraged in these areas.
  - d. Incorporate FPIC into the PLUP process in REDD+ target areas to make communities aware up front of REDD+ opportunities and individuals and communities could apply for land allocation for timber and carbon generation. Or conduct FPIC as a separate activity to disseminate REDD+ information.
  - e. Establish eligibility requirements such as CDM AR type additionality tests, proof of degraded land cover on site at baseline date for reforestation projects, demonstration of ownership and/or management authority in area, conformance with other laws, and negotiated stakeholder agreement on rights and responsibilities.

- f. Develop a clear and practical definition of degraded and barren land that could be allocated for household/community/private sector forest development.
  - g. While supporting communities to manage their lands for agriculture, timber, carbon and other benefits; sign binding contracts to stop unauthorised expansion of agricultural areas.
- 6) Use a **phased approach to implementation**: Area by area and ultimately mandated on all the state forest land areas to reduce emissions at a national scale, while promoting voluntary activities on village, other communal, individual and private forest lands.
- 7) **Conduct widespread pilot activities in all different forest and management types** to clearly establish scope, viability, possible methodologies and benefit-sharing arrangements. The forest/management categories include: Larger Production, Protection and Conservation Forest Areas; Village Forests in and around the state-administered areas and outside; Community and Household plantation/reforestation areas in and around the state-administered areas and outside, and Private sector plantations outside larger state forest categories.
- a. Estimate potential carbon benefits to be derived in different types of areas under different types of management, and the economics of potential carbon financing versus other foregone revenues in the forest areas. This includes the economics of different types of reforestation/plantation activities managed for carbon and/or timber and other benefits over different time periods.
  - b. Test different management regimes and models; MRV systems; REL development; stakeholder agreements and benefit-sharing; potential environmental and social impacts; and development and implementation of environmental, social and governance safeguards.
  - c. Analyse the major risks and effective sanctions (best practices) in different areas and project types.
  - d. Complete satisfactory land use planning, tenure stabilization and FPIC using approved processes prior to or as part of project activities.
  - e. Explore alternative agricultural and livelihood systems.
  - f. Set up the forest and potential forest areas for delivering carbon as well as other benefits.
  - g. Explore means to address permanence at the project level through reserves, buffers and insurance schemes; and leakage. Determine the number of years required for “permanence”.
  - h. Explore models for aggregating and supporting small-scale activities.
- 8) To scale up from the few REDD pilots operating at present to higher pilot activity levels, **invite and use REDD+ readiness funds** (National REDD+ Fund REDD-readiness window) **and technical support** for testing and implementing pilot activities in the different forest categories. Use high-quality data and information, available models and expertise, consultative and participatory processes, and transparent decision-making to devise optimal solutions and rigorous protocols.

- 9) Define a strategy for meeting **residual national liability for carbon reversals** beyond project-level liability. Options could include maintaining a national reserve of unpaid credits and/or purchasing credits internationally to make up for the reversals.
- 10) Develop **environmental, social and governance safeguards in a participatory and transparent manner** either in-country or in partnership with third-party standards organisations.
- 11) Establish minimum guidelines for REDD+ **benefit-sharing arrangements** on the ground and differentiated proportions going to government agencies, local communities and developers/managers based on the forest land type and tenure regime. Beyond that, allow sub-national actors to negotiate detailed arrangements on a case by case basis. The benefits and new income sources have to be adequate and sustainable, and shared transparently and equitably to change behavior and incentivize people to protect, manage and use the forests as per plan.

## 9.2. Linking sub-national activities to national level accounting

- 1) Use a **nested model that integrates multiple types of crediting and financing mechanisms** that may be sought in a flexible manner. A possible nested model is presented in Section 5.4:
  - Provides choice in carbon crediting through national protocols, and external voluntary and compliance standards as and when they emerge
  - Allows for financing through funds, compliance and voluntary markets
  - Allows for possibly-mandated large-scale emission reductions in government-administered forest areas, while encouraging and supporting voluntary REDD+ actions in communal and private landholdings.
  - Allows room for multiple actors to invest and engage in REDD+ actions
  - Allows for REDD+ actions primarily through large to small sub-national project activities on the ground with clear boundaries, ownership and management plans. Simultaneous room for national-level actions that will also be reflected in national-level ER performance.
- 2) Choose the extent of **national accounting coverage**: a) Wall-to-wall national lands, or b) only areas within the forestry administration system. To include or exclude village, household and private forests. Choice to ultimately be in line with any internationally-negotiated REDD+ agreement.
- 3) Develop and adopt a **rigorous national REDD+ regulation** with clear streamlined processes and safeguards developed participatorily with national stakeholders and international agencies.
- 4) Develop a **rigorous National REDD+ Fund protocol** with different REDD-readiness and carbon finance windows, with participation of relevant national and international stakeholders and experts.

- 5) Ensure **no double counting** overall by effectively integrating sub-national credits into national-level accounting, and using a national carbon registry and streamlined processes.
- 6) **Reconcile sub-national and national level RELs and MRV.**
- 7) **Compensate and reward the landowners, managers and communities on the ground** for their REDD+ activities and performance through direct, transparent and flexible mechanisms.
- 8) **Delink sub-national project performance from the risk of broader national program failure** to encourage and sustain sub-national level actors and investments. The government takes responsibility and liability for overall net emissions reductions at the national level.
- 9) Make provisions for **permanence of ERs and minimize leakage** at sub-national and national levels.

### 9.3 Institutional arrangements

- 1) Enhance current **cross-sectoral task force** arrangement, membership and participation to effectively take REDD+ forward in Lao PDR.
- 2) Confirm NEC as the **cross-sectoral coordinating institution** for REDD+, expand its membership and clarify its role vis-a-vis other related agencies.
- 3) Incorporate REDD+ concerns into **forest land use zoning**, allocation and enforcement by NLMA and rationalize and streamline its role vis-a-vis MAF.
- 4) **Within DOF**, establish the REDD+ office on Division level; clarify its role as also those of the existing Production, Protection and Conservation forest area divisions with regard to REDD; enhance and streamline large-scale private plantation oversight; and institutionalize support for community and household/farmer forestry.
- 5) Establish one or more credible **MRV institutions** for carbon and safeguards monitoring. The agency/ies should work in partnership with relevant technical, management and enforcement agencies on the ground; in a participatory and transparent manner. Designate a single agency with the required expertise to carry out the work and share the information with other agencies that require the same.
- 6) Use REDD-readiness funds to build and strengthen **DOFI** capacity to fulfil the expanded role of REDD+ regulator, and clarify its role vis-a-vis NLMA's enforcement wing.
- 7) Consider WREA as the agency that houses and manages the national carbon **registry** in collaboration with the different sectors including forestry.
- 8) Confirm **Provincial** REDD+ institutional arrangements identified in the R-PP.

- 9) Use and strengthen **existing institutions** and coordination structures rather than build new institutions for REDD+ that overlap with existing ones. Spell out **relative roles** and responsibilities. Make **transparent** the information and decision-making processes for credibility.

#### 9.4. MRV system

- 1) **Study other national MRV systems** (Brazil, India, New Zealand, Australia, Canada) and discuss possible data and technology availability, assistance and **collaboration** for developing an effective MRV system for Laos. The system should meet Lao's ultimate requirements in a cost-effective manner, and be flexible to accommodate responses to new developments.
- 2) To ensure that sub-national activities and emissions reductions total up to national level monitoring and emissions reductions, develop RELs for each major state forest area (and aggregated small forest clusters outside) using the same methods, and **cumulate up to provincial and then a national-level REL.**
- 3) Gradually work towards setting up a satisfactory **Tier 3 MRV system for deforestation and enhancement** activity at the national level incorporating remote sensing, national forest inventory, and a data management and modelling system. Develop and test protocols for accurate, consistent and cost-effective estimates as per good practice guidelines and other likely forest carbon/REDD reporting requirements.
- 4) Start with **aboveground biomass reporting** and add the other four pools at a subsequent date.
- 5) Monitor **forest degradation and improved forest management** on small sub-national projects while exploring cost-effective and efficient methodologies for full-scale accounting.
- 6) Test and define how to deal with a **rotational agriculture landscape** of temporarily unstocked and restocked forest plots in a shifting mosaic that populates much of rural Laos.
- 7) Consider designing and implementing **real-time deforestation monitoring** for control and enforcement as Brazil has done.
- 8) Explore and establish an **effective fire monitoring system** for monitoring fires and encroachment in unauthorized areas for control purposes as in India and Brazil.
- 9) Design **MRV for sub-national activities** to be consistent with and linked to national level accounting to avoid fiscal risks for the government.
- 10) Ensure reconciliation of accounting approaches of sub-national project **activities verified to external standards** with the national-level approach to obtain consistent estimates.
- 11) Ensure **credible independent verification**, national and international. Consider **transparency** and public accessibility of the underlying data, methods and reports.

- 12) Design **reporting frequency** to match national/project payment and enforcement needs, as well as international requirements.

### **9.5 Registry system**

- 1) Develop a national registry system to record and track
  - a. Discrete forest carbon activities on the ground and their associated carbon emissions and removals, and
  - b. National level emissions reductions and reconciliation with sub-national project activity emissions reductions.
- 2) The registry should ensure no double counting or resale of the same credits. Consider the standard and useful features listed in Section 8.5 for framing the system.
- 3) Consider recording and tracking all carbon credits arising from Laos (REDD, CDM and any other mechanism) in the same registry, possibly under WREA management.
- 4) Assess whether to develop and manage own national registry or use an established commercial registry service to do the same based on a cost-benefit analysis.

## ANNEX 1– SCOPE AND ELIGIBILITY REQUIREMENTS OF INTERNATIONAL FOREST CARBON SCHEMES

Scope & Eligibility Requirements	UNFCCC REDD+	CDM	Indonesia	Brazil - Amazon Fund	Brazil - Amazonas State	New Zealand ETS	Climate Action Reserve
<b>Forest Carbon activity types</b>	REDD, Conservation & Enhancement of forest carbon stocks, Sustainable management of forest	Afforestation & Reforestation	Likely REDD, Conservation & Enhancement of forest carbon stocks, Sustainable management of forest	All possible activities that contribute to avoided deforestation	Reforestation, Avoided deforestation, Conservation	Avoided deforestation (exotic species forests) and Reforestation. Not for sustainable management and avoided degradation. Pre-1990 natural forests in steady state excluded.	Reforestation, Improved Forest Management & Avoided Conversion projects
<b>Approach/Level and crediting period</b>	National (subnational in early phases & perhaps as nested approach)	Project - 30 years fixed, or 20 year renewable up to 60 year max	National-level accounting with sub-national implementation (province, district, FMU)	Amazon-level accounting with project implementation	Program/ project activities. Possible double counting of ER in same area with payment to Amazon fund for Amazon-level ER reduction, & direct payments from state & voluntary markets to projects in Amazonas State.	National-level accounting with sub-national activities (private landholder). Landholder liability exists in perpetuity.	Project - 100 years from start date

Scope & Eligibility Requirements	UNFCCC REDD+	CDM	Indonesia	Brazil - Amazon Fund	Brazil - Amazonas State	New Zealand ETS	Climate Action Reserve
<b>On which lands by which actors to address which drivers</b>	Open. Policy approaches & incentives to address the underlying causes across sectors.	Open. Small projects by low income people have concessions.	Open for all forestry tenure-holders (licensees, administrative heads, managers and owners) in all forest types (production, protection, conservation, plantation, restoration, communal) & possibly peatland. Actors include the government, the private sector, NGOs, communities and individuals. Addressing all drivers.	Public (protected areas, concessions, indigenous land) & private lands (protected & other areas). Proponents can be municipal, state and federal government agencies; private sector; NGOs and organizations of public interest; research institutions. To address agriculture and pasture expansion into forested areas.	On State Conservation units by FAS (an NGO). Also on other areas by government agencies, private sector & NGOs? To address crop and pasture expansion.	KP: All private and public pre-1990 forest and post-1989 forest areas are accountable. NZ ETS: Pre-1990 exotic forests and post-1989 forests are eligible, most are privately-owned or held with use rights. To avoid further conversion and encourage private reforestation efforts.	All forest/land owners - a corporation or other legally constituted entity, city, county, state agency, individual. Smaller projects may be aggregated to make it cost-effective and market credits at volume. <ul style="list-style-type: none"> <li>• Refo and IFM - private, &amp; state/ municipal public land.</li> <li>• AC - private land unless land is transferred to public ownership as part of project.</li> <li>• Forest Projects on federal lands with federal approval.</li> <li>• Forest Projects in tribal areas with ownership proof.</li> </ul>
<b>Voluntary versus mandatory actions</b>	Country-driven and voluntary actions	Voluntary	Pending	Country commits to voluntary reductions below baseline and there is mandatory enforcement of forest protection laws on all forest lands. Voluntary projects work to reduce emissions directly or indirectly.	Voluntary	Avoided deforestation - mandatory compliance, receive credits to partially compensate for lost opportunity costs & face obligations for deforesting. Post-1989 forests - voluntary private landowner participation and government responsibility for unregistered landowners.	Voluntary actions



Scope & Eligibility Requirements	UNFCCC REDD+	CDM	Indonesia	Brazil - Amazon Fund	Brazil - Amazonas State	New Zealand ETS	Climate Action Reserve
<b>Management systems/silvicultural activities</b>		Open	Foreseen so far: <ul style="list-style-type: none"> <li>• Planting, maintenance, enrichment &amp; silviculture, delayed harvesting to increase productivity.</li> <li>• Longer rotations, environmentally-friendly harvesting, effective protection, more protection &amp; conservation areas to enhance storage in existing forests.</li> </ul>	Open	Open	<ul style="list-style-type: none"> <li>• Pre-1990 forests: Can harvest/ replant/ regenerate trees without liabilities because it is not land use change. Receive no credits for IFM.</li> <li>• Post-1989 forests: No specifications for type of reforestation activity or how long the wood has to remain on site, only to account for carbon changes. Harvesting, thinning and pruning; rotation lengths; and species choice can be altered to optimise carbon and/or timber revenue.</li> </ul>	<ul style="list-style-type: none"> <li>• Reforestation via planting or natural regeneration. No rotational harvesting in first 30 years with exceptions.</li> <li>• IFM some options - increase rotation ages, thin diseased &amp; suppressed trees, manage competing brush, increase tree stocking on understocked areas.</li> <li>• Avoided Conversion projects can plant &amp; harvest as part of activities.</li> <li>• All projects: Sustainable long-term harvesting &amp; natural forest management practices, no broadcast fertilization</li> </ul>
<b>Additionality (carbon sequestered is additional to any that would have occurred without activity)</b>	To reduce emissions below a national forest REL or forest reference level (transparently developed based on historic data adjusted for national circumstances). Can have subnational forest RELs too.	Demonstrate additionality over identified baseline through options assessment, barrier analyses, & prove not legal requirement.		The amount available each year in the fund depends on the reduction of deforestation below a rolling ten-year average.		Demonstrate additionality over baseline year	Demonstrate additionality over "Business As Usual" scenario and no legal requirement for the project activities. For avoided conversion project, prove real & significant conversion threat.

Scope & Eligibility Requirements	UNFCCC REDD+	CDM	Indonesia	Brazil - Amazon Fund	Brazil - Amazonas State	New Zealand ETS	Climate Action Reserve
<b>Other eligibility requirements</b>		Projects started on or after 1 Jan 2000. Demonstrate land was not forested on project start date & on Dec. 31, 1989. Delineate project boundary, determine legal title to land & carbon, use rigorous baseline and monitoring methodologies.		Clearly state how they will contribute directly or indirectly to REDD. Abide by guidelines of PAS, PPCDAM, and respective state plans to combat and control deforestation.	Bolsta Floresta Program - participants have lived on the Conservation Unit for min. two years, participate in its development and management, not expand crop & pasture areas, join Community Association, sign a Zero Deforestation Agreement, others.	<ul style="list-style-type: none"> <li>• Avoided deforestation: Areas forested on 31 Dec 1989 and remained forested with exotic species on 31 Dec 2007.</li> <li>• Reforestation: Forests on land that a) was not forested as at 31 Dec 1989, or b) was forested on 31 Dec 1989 but was deforested between 1 Jan 1990 to 31 Dec 2007.</li> <li>* Carbon stock changes in unregistered post-1989 forests go to Government</li> </ul>	Demonstrate clear ownership of the GHG reductions and removals achieved by the project, and compliance with all applicable forestry laws. Refo projects - On land that had <10 percent canopy cover for last 10 years or affected by significant natural disturbance. Avoided conversion projects - enact a Qualified Conservation Easement or transfer to public ownership
<b>Ensuring permanance</b>	Address reversal risks	Issues temporary CERs		Not mentioned		<ul style="list-style-type: none"> <li>• Post-1989 forest owners have to surrender units to the Government if carbon stocks fall (as with harvesting or fire)</li> <li>• Pre-1990 forest landowners will have to surrender carbon units for deforestation starting Jan 2008</li> </ul>	Credited reductions & removals to remain stored for 100 years - a) monitoring for 100 years following any CRT issuance, b) forest owners to sign agreement & retire CRTs from their account for avoidable reversals, c) the Reserve maintains (from forest owner contributions based on risk ratings) and retires CRTs from buffer pool for unavoidable reversals. On early project termination, owner retires any CRTs issued.

Scope & Eligibility Requirements	UNFCCC REDD+	CDM	Indonesia	Brazil - Amazon Fund	Brazil - Amazonas State	New Zealand ETS	Climate Action Reserve
<b>Reducing leakage</b>	Address leakage risks	Leakage due to project activities to be estimated, minimised & accounted for		Accounted for at Amazon level	Project-level leakage addressed through inclusion of households in buffer zone.	Accounted for at national scale at end of KP commitment period	Leakage is estimated and accounted for in the different project types.
<b>Environmental co-benefits &amp; safeguards</b>	To promote sustainable management, natural forests & biodiversity. To not support industrial-scale logging, and natural forest conversion to plantations.	To consider environmental impacts within & outside project area	To have safeguards. To protect high conservation value areas, promote sustainable management, redirect conversion to degraded lands, improve peat management, & enforce mining reclamation.				Requires sustainable long-term harvesting practices, natural forest management practices and no broadcast fertilization.
<b>Social co-benefits &amp; safeguards</b>	Guarantee local rights, alleviate poverty, resolve tenure issues, assess socio-economic impacts. Ensure equitable benefit distribution, transparent and participatory mechanisms, FPIC.	Consider socio-economic impacts within & outside project area	To have safeguards. Resolve tenure conflicts. Equitable benefit-sharing, transparent & participatory mechanisms, FPIC.		Participatory processes, direct payments to communities and households for forest services, association established, involvement in management.		

Scope & Eligibility Requirements	UNFCCC REDD+	CDM	Indonesia	Brazil - Amazon Fund	Brazil - Amazonas State	New Zealand ETS	Climate Action Reserve
<b>Governance safeguards</b>	Consistent with national sustainable development goals & forest program objectives. Promote good governance, be transparent and participatory.	PDD, validation & verification details displayed on website & open for stakeholder comments	To have financial and governance safeguards. Full and effective participation of all stakeholders; full transparency regarding financing, actions and results; timber logging & trade law enforcement; harmonise regulations.	High-level action plans and interministerial effort, transparent real-time monitoring systems, effective law enforcement			
<b>Financing &amp; Distribution</b>	Possibly through fund, market and offset options; and a flexible combination of approaches for adequate & sustainable financing. Benefit sharing to be socially equitable.	CERs can be used for ER offsetting. Can trade in compliance & voluntary markets. Benefit-sharing among proponents & others as laid out in PDD.	Both fund (domestic & foreign) and market-based approaches. Credits can be used for ER offsetting. Planned REDD+ Trust fund to channel domestic & foreign funds. Open to compliance & voluntary markets at present. Benefit-sharing - differentiated proportions going to government agencies, local communities & managers /developers based on type of tenure.	Fund can receive voluntary contributions annually from developed countries, companies & others for emission reductions already made (deforestation reduced x carbon/ha) vis-a-vis baseline. Funds channeled to projects. ER are non-transferable, non-tradable and cannot be used to offset emissions.	FAS program/projects receive donations from Amazon fund, the state and private sector. Also payments from voluntary carbon markets. Can offset emissions. Fixed allowances distributed to families & communities for combating deforestation, for livelihoods & community projects.	The ETS issues domestic credits (NZUs) backed by Kyoto credits, that can be traded in the domestic and international markets. Country receives credits (RMUs) after demonstrated performance over first commitment period.	The CRTs can be used for ER offsetting, and traded in the voluntary carbon market or transferred into the Voluntary Carbon Standard's VCU (Voluntary Carbon Unit).

Scope & Eligibility Requirements	UNFCCC REDD+	CDM	Indonesia	Brazil - Amazon Fund	Brazil - Amazonas State	New Zealand ETS	Climate Action Reserve
<p><b>Other policy approaches to address the drivers</b></p>			<p>Moratorium on new conversion permits for natural forest &amp; peatland, possible voluntary “land swaps” for existing permits, agricultural expansion directed to degraded areas, creation of a degraded land database, tenure reform, participatory development of a spatially-explicit national land use strategy integrated with all horizontal &amp; vertical agencies.</p>	<p>To bring vast areas of public land under legal management and control, created new protected areas on a large-scale. Effectively blocked government agricultural credit and product movement for landholders who failed to register their landholdings and landuse. Logging and other concessions for sustainable production management.</p>	<p>Legal framework and financial, market and other incentives for actors to engage in forest carbon projects. State program to reward resident communities for forest protection. Independent but state-supported NGO charged with managing the activities in public forests.</p>		

## ANNEX 2 – FOREST-RELEVANT LEGISLATION IN LAO PDR

### I. General Forestry

#### Legislation examined

1. Decree on the Forest and Forest Resource Development Fund No. 38/PM, February 2005
2. MAF Regulation on Forest Inventory, No.108, April 2005.
3. Law on Forestry (ammended), No.06/NA, December 2007.
4. Forestry Strategy 2020 (not legislation)
5. DECISION of Prime Minister on the endorsement of the outcome of the Nationwide Forestry Conference, held on 01/03/2007
6. PM Decree On the organization and mobilization of the Ministry of Agriculture and Forestry Ref. No. 418/PM, May 2007
7. PM Order on Strengthening the Forest Management , Protection and the Coordination of management Forest and Forestry Business No. 17/PM, Sept 2008

### II. Conservation Forest Areas

#### Legislation examined

1. PM Decree on Establishment of National Conservation Forest throughout the country, No. 164/PM, October 1993.
2. MAF National biodiversity conservation areas, aquatic and wildlife management regulations No. 0360/AF. December 2003.
3. Resolution of ministry regarding implementation and responsibility of National Protected Area Management Unit No. 0073, 30 Jan 2009.

#### Other relevant legislation

4. Provincial & District regulations for individual PAs
5. Annual Orders for fire prevention, wildlife hunting & other
6. Guidelines – PA management plan, NTFP collection
7. Manuals – PA management, Ecotourism development, Land use planning
8. National Heritage Decree (PM office)

### III. Protection Forest Areas

#### Legislation examined

1. MAF Regulation on the Logging and Post Logging Cleaning in the Reservoir Area of a Hydropower Dam, No. 0112/MAF, Nov 2008
2. PM decree on Protection Forest No. 333/PM, July 2010
3. Law on Electricity No. 02/97/NA, dated 12 April. 1997 with Decree for promulgation of the Law No. 34/PO dated 31 May 1997. (Lao version)
4. Law on State Asset No. 09/NA, dated 12 Oct. 2002 with Decree for promulgation of the Law No. 63/PO dated 15 Oct. 2002. (Lao version)
5. Law on Food No. 04/NA, dated 15 May 2004 with Decree for promulgation of the Law No. 37/PO dated 14 June 2004. (Lao version)

#### Other relevant legislation

6. Notice on Protection forest implementation, MAF, August 2010

**IV. Natural Forest Regeneration under responsibility of Protection Forest Division (for regeneration and seed sources across forest categories)**

Legislation examined

1. MAF agreement on Seeds sources, No. 0214/MAF, August 2006. (Lao version)
2. MAF Minister's Order regarding the Enhancement of forest regeneration in the country wide No. 0111/MAF, November 2008.
3. MAF Minister's Decision on Regeneration of Forest, No. 0051, April 2009. Replacement of No. 0173/MAF.

Other relevant legislation

4. Regulation on management & use of tree seed source areas, January 2010

**V. Production Forest Areas**

Legislation examined

1. PM Decree on sustainable management of production forest No. 59/PM, May 2002
2. MAF regulation on establishment and sustainable management of production forest, No. 0204/MAF, October 2003.
3. SUFORD Guidelines and Procedures for Tree Marking and vine cutting, March 2004.
4. SUFORD Guidelines and procedures in forming a village forestry committee (VFC), March 2004.
5. SUFORD Notes on Guidelines for the Establishment and Operation of Forest Management Unit (FMU) under DAFO, April 2004.
6. SUFORD Guidelines On Forest Law Enforcement Reporting System (Lers) And Case Tracking System (Cts), draft, 2004.
7. MOF Guideline on bidding regulation for buying timber and other forest resources (Timbers, herbs, bamboos and NTFP) from state standing timbers, infrastructural areas and production forest areas at second landings. No. 2297/MOF, Oct 2004
8. SUFORD Establishment and Operations of Group of Village Forestry Committees (GVFCs), April 2005.
9. NAFRI Guidelines On Establishment And Maintenance Of The Permanent Sample Plots For Tree Measurement, Ntftp And Biodiversity Monitoring Purposes In Production Forest Areas, draft. 2005
10. PM Decree on PFAs demarcation in 8 priorities of 4 SUFORD project Areas, No: 27/PMO, February 2006.
11. PM Decree on PFAs demarcation in 29 priorities of 8 provinces, No: 321/PMO, June 2006.
12. DOF Guideline on Village Boundary Demarcation, No. 2152/DOF, Nov 2006
13. DOF Guidelines on timber harvesting in production forests, No. 2157, Nov 2006
14. DOF Guideline On Sustainable Production Forest Management Planning, No. 2156/DOF, Nov 2006
15. DOF Guidelines on participatory forest inventory No 2155/DOF, November 2006.
16. DOF Guideline on Timber sale and benefit sharing from production forest areas 2006 draft.
17. DOF Guideline on monitoring the implementation of a Code of Logging Practice: an operational field guide for forest managers – draft, 2006.
18. DOF Guidelines on Chain of Custody (CoC) Control of Timber Harvesting & Transport in Production Forest, No 1097/DOF, 2007.

19. MAF Minister's Decision on Principles for measuring and grading logs, stumps and swelling part of the trunk, No. 0116/MAF, May 2007. (Lao version)
20. DOF Guideline on Monitoring the Implementation of Production Forest Management, No. 0396/DOF, March 2008
21. Order of Prime Minister about increasing the strictness in forest management, conservation, wood business and wood processing industry promotion as finished products No. 17/PM, September 2008.
22. PM Decree on PFAs demarcation in 14 areas in 5 provinces, No: 270/PMO, December 2008.
23. MAF Agreement on Establishment and Management of Timber Harvest Units and Enterprises, No.0182/MAF, February 2009.

## **VI. Private Plantations**

### Legislation examined

1. DOF Instruction on development of a feasibility study of industrial trees and NTFP investment, No. 1643/DOF, June 2010.

## **VII. Investment**

### Legislation examined

2. Law on Promotion of Foreign Investment No. 11/NA, dated 22 Oct. 2004 with Decree for promulgation No. 73/PO dated 22 Oct. 2004.
3. Law on the promotion of Domestic investment No. 10/NA, dated 22 Oct. 2004 with Decree for promulgation of the Law No. 72/PO dated 10 Nov. 2004.
4. PM decree on the organisation for the implementation of the law on the promotion of foreign investment No. 301/PM. Oct 2005.

## **VIII. Village, community, household, individual forest use**

### Legislation examined

1. MAF Minister's Decision on Rights for Customary Use of Forest Resources, No. 0054/MAF, March 1996.
2. MAF Guidelines on the Customary Use of Forest Resources, No. 0377/MAF, April 1996.
3. Lao National Growth and poverty eradication strategy 2004 (not legislation)
4. Prime Minister's Instruction on building villages and village development clusters No.09/PM, May 2007
5. Lao National Socio-economic development plan 2008 (not legislation)
6. DOF Guidebook: Village rights and responsibilities to manage and use Forest, forestland and aquatic wild animals 2009 (Hardcopy)
7. Manual Participatory agriculture and forest land use planning at village and village cluster level March 2010 (Hardcopy)

## **IX. Land related**

### Legislation examined

1. MAF Guidelines on the Land Use Planning and Allocation for Management and Use, No. 0822/MAF, August 1996
2. Law on Land (amended), No. 04/NA, October 2003.
3. NLMA Instructions on Adjudications Pertaining to Land Use and Occupation for Land Registration and Titling No. 564/NLMA, August 2007



4. Notification on the registration of legal transactions relating to land, No. 1040/PMO.NLMA, Nov 2007
5. Registration of legal transactions relating to land No. 211/NLMA, Dec 2007
6. NLMA Instruction on the Use of New Formats of Land Titles and New Registration Book No. 1668/NLMA. CAB, dated 29 April 2008
7. PM Decree On the Implementation of the Land Law No. 88/PM, June 2008
8. Decree on State Land Lease or Concession No. 135/PM, May 2009

## **X. Environmental and Biodiversity**

### Legislation examined

8. Law on Environmental Protection No. 02-99/NA, April 1999.
9. Wildlife and Aquatic Law, No.07/NA, Dec 2007
10. National Environmental Strategy 2006-2020 (not legislation)
11. Notice on Transfer of the responsibility for continuing the implementation of RIO conventions from WREA to MAF, No. 934/GS, June 2009
12. PM Decree on Environmental Impact Assessment, No 112/PM, Feb 2010
13. Regulation on the approval procedure for proposed Clean Development Mechanism (CDM) project activities in Lao PDR, PMO/WREA. Draft.

### Other legislation

14. Biodiversity Strategy & Action Plan 2004 (MAF & WREA – not legislation)

## **XI. Miscellaneous**

### Legislation examined

15. Law on Agriculture, No. 198/NA, Oct 1998
16. Law on State Budget No. 02/NA, 26 Dec. 2006.
17. Decree of the President of the Lao Peoples Democratic Republic on the Promulgation of the Law on Local Administration No. 60/PO, Nov 2003.

### Other legislation

1. Ecotourism strategy (National Tourism Authority – not legislation)

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