



LAO PEOPLE'S DEMOCRATIC REPUBLIC
Peace Independence Democracy Unity Prosperity

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Ministry of Agriculture and Forestry
Department of Forestry

Annual Review of REDD+ in Lao PDR

2009

Report prepared for the National REDD Task Force of Lao PDR

Vientiane, March 2010

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Executive Summary

The concept of Reducing Emissions from Deforestation and forest Degradation (REDD) under an international framework is still a fairly recent idea in Lao PDR. Subsequently, there has been a flourish of interests in REDD related projects, pilots, capacity building and other activities which support the development of a national strategy and framework for REDD implementation in Lao PDR. These efforts have been mainly catalysed by the World Bank's Forest Carbon Partnership Facility and driven by a number of bilateral donor government agreements with the Government of Lao. In addition, a number of Non-Governmental Organisations and private funds have also expressed interest in conducting REDD activities in Lao PDR.

This annual review takes stock of what was achieved in 2009 at the Department of Forestry for REDD. Of particular interest, the Readiness Preparation Proposal (R-PP) is being developed for submission in August 2010 and several activities which support the development of the R-PP were co-financed by the Sustainable Forestry and Rural Development (SUFORD) project and Forest Strategy Implementation Program (FSIP) in cooperation with the Lao REDD Task Force. These include:

- Pilot project testing LIDAR remote sensing technology on flat terrain degraded forest; co-financed by the SUFORD project
- Pilot project testing the accuracy and cost efficiency of Very High Resolution (VHR) imagery ; co-financed by the SUFORD project
- The study on the Analysis of Land Use and Forest Changes and Related Driving Forces in Lao PDR; co-financed by the Forest Strategy Implementation Program (FSIP)
- Seminars on methods for measuring and monitoring of forest carbon stocks; co-financed by the Forest Strategy Implementation Program (FSIP)

As the year progressed, it became apparent that the remote sensing and Geographical Information Systems (GIS) skills and equipment required to accurately monitor and measure forest carbon stocks at a national level were deficient for future monitoring and reporting requirements under a national REDD programme. In response, the Japanese Grant Aid Assistance put forward the proposal for a Forest Resource Information Management Center under the Forest Inventory and Planning Division (FIPD). The Forest Resource Information Management Center is expected to produce a national baseline for REDD, as well as providing the much needed equipment, capacity building and training for Lao staff in close collaboration with the National Forest Inventory design implemented by SUFORD.

The German Technical Cooperation (GTZ), German Development Bank (KfW) and German Development Service (DED) proposed a project aimed at reduce emissions from deforestation and degradation in Nam Phoui and Nam Et Phou Leui under the Climate Protection through Avoided Deforestation (CLiPAD) cooperation module. The project was proposed in close coordination with the Lao REDD task force and other donors, provincial and district officials and the Wildlife Conservation Society (WCS). The project is a milestone for the Government of Lao and is the first large REDD project in Lao PDR.

Within the second half of 2009, the Department of Forestry started to engage in the negotiations held under the United Nations Framework Convention for Climate Change (UNFCCC) and sent several national delegates to the negotiations on REDD+. Capacity building and training sessions focused on the climate change negotiations were also held in Lao PDR, Thailand, Vietnam and Cambodia keeping delegates up to date on the developments and potential implications within the negotiations. Several of the key outputs of this effort include policy analyses on the negotiations and the drafting of the Lao national

The Lao REDD Task Force has consistently recognised the extensive capacity building which needs to be done in order to implement an operational national REDD scheme in Lao PDR. In addition, there has been emphasis put on the desire for a Lao led process within the national REDD strategy formulation and implementation processes. Capacity building in 2009 focused on developing in depth knowledge on REDD for selected individual experts within the Lao government whose work is mainly related to REDD. In addition, a number of introductory REDD training sessions and seminars were held in various government departments.

1 Introduction

1.1 Background

The concept of Reducing Emissions from Deforestation and forest Degradation (REDD) under an international framework is still a fairly recent idea. Subsequently, there has been a flourish of interests in REDD related projects, pilots, capacity building and other activities which support the development of a national strategy and framework for REDD implementation in Lao PDR, mainly driven by bilateral donor agreements with the Government of Lao. The Department of Forestry (DoF) under the Ministry of Agriculture and Forestry (MAF) has been assigned to the coordination of the Lao national REDD Task Force which oversees the implementation, planning and coordination of REDD activities in Lao PDR. The chairman of the Task Force is the Director General of DoF, in addition, the national focal point for REDD and the REDD Task Force Secretariat also resides at DoF.

1.2 Purpose

The purpose of this report is to improve and facilitate communication and information on REDD+ and climate change activities related to forestry in Lao PDR between the Government of Lao PDR, project implementers and donors. This report aims to enhance internal communication within government departments by informing government officials on activities, reports and policy processes that are under implementation or planning for REDD+. The report also aims to enhance external communication by providing information useful for stakeholder decision making and share information and results between projects and interested parties.

1.3 Outline

This report is intended to give a broad overview of all work done on REDD+ in Lao PDR during 2009, the first part of the report briefly reviews project and pilot activities which were implemented or presented to the Lao REDD Task Force during 2009. The second part of this report reviews activities which support the development of the Lao national REDD+ strategy, in addition to project and pilot activities. A brief overview of the developments towards an ASEAN common position on REDD+ are also presented. Following this, is a component which reviews capacity building activities for Lao nationals which were carried out by a number of donors, projects and organisations during 2009. Finally, the Lao delegation's national REDD+ position to the UNFCCC and, an outlook on REDD+ for 2010, based on the 15th Conference of Parties (COP15) developments in Copenhagen, is included and shares the REDD expert's expectations on how REDD could develop within the on-going international climate change negotiations.

2 Pilot Activities

2.1 LIDAR Pilot (SUFORD)

For Further information contact Esa Puustjärvi (esa.puustjarvi@indufor.fi)

The LIDAR pilot was supported by the Government of Finland and implemented through the Sustainable Forestry and Rural Development (SUFORD) project. A recent study in Lao PDR has demonstrated that aboveground and belowground carbon can be estimated accurately, and effectively using LiDAR technology in combination with satellite imagery and field sample plots. The results of the study demonstrate that LiDAR technology has great promise in carbon stocks estimation in tropical forests. Using LiDAR point clouds to automatically guide the interpretation of satellite images reduces the rate of error in carbon estimates by more than 50% when compared to using optical satellites alone. The study also showed that regional or national scale carbon stocks estimation is appropriate using LiDAR data and satellite imagery (e.g. SPOT, IRS, ASTER, ALOS AVNIR).

A two-stage sampling was conducted in which LiDAR data and satellite data were combined with field reference data. A robust Sparse Bayesian regression method was first used in calibrating LiDAR fields with field measurements, and subsequently for calibrating satellite images with LiDAR-interpreted biomass fields, with 10 percent of the field area covered by LiDAR. The results were verified against a wall-to-wall LiDAR interpretation. Results yielded a correlation coefficient of 0.75 over a sample plot cluster of 4 × 400 m² in forest biomass. A wall-to-wall map was prepared using satellite imagery to identify deforestation and forest degradation. LiDAR data and field sample data were used for a detailed analysis in the demonstration forest. Baseline deforestation rates can be calculated using satellite imagery combined with country-specific historical data and other auxiliary data. Land use change can be accurately estimated using ArboLiDAR method combined with temporal satellite data and field measurements.

STATUS: Complete

2.2 Monitoring Techniques for Carbon Stock Monitoring in Lao PDR – Pilot Study (SUFORD)

For further information contact

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The objective of the study was to develop and demonstrate a proof-of-concept system to monitor land cover and forest resources in a tropical region using satellite imagery. The system combined wall-to-wall medium resolution satellite data, a sample of Very High Resolution Data (VHR) and field data.

A key element of the system was application of a statistical sample of satellite images with a ground resolution of one meter or better (VHR imagery). It was hypothesized that accurate satellite images could provide reliable information on forest and land cover with lower costs other alternative methods. With medium resolution data the specific issues to investigate were designing of the processing chain and the roles and potential of optical and radar data. Also, the costs of an operative monitoring system were roughly estimated. The study area was one province in Lao PDR but the approach was aiming at more a general procedure for the forest monitoring including the tropical zone but also other climatic regions.

Sampling design for the VHR image sample was developed using the Globcover land cover map over whole territory of Savannakhet. The effect of the number and location of VHR images in the sample to the accuracy of forest area estimation was studied. It was also studied how plots of the visual interpretation should be placed within the VHR images and what is their optimal distance. Stratified sampling was compared with non-stratified sampling. Visual and numerical interpretation of satellite images was applied. In the visual interpretation Lao and Finnish experts analyzed land cover class proportions within 50 m by 50 m squares that were placed at 800 m distances within the VHR images. Crown closure within the forest class and degree of degradation were also evaluated.

In numerical interpretation land cover and biomass maps were made from Savannakhet both from radar data and optical AVNIR data. As a preliminary step a VHR QuickBird image map was first made with numerical interpretation. This map was used as reference for the lower resolution “wall-to-wall” data. The growing stock was estimated as one-step procedure because constant cloud cover during the project prevented image acquisition.

We conclude that the procedure that was developed in this pilot study can be applied operatively. Its application needs, however, an investment to the production chain development. Optical image data are recommended as the primary remote sensing data source. Radar data are used to augment the optical data on cloudy regions. Radar images are also applicable to alert on forest removal in change detection applications. However, the forest area in the radar images tends to be overestimated. The forest resource inventory has two major steps:

1. Making wall-to-wall digital and multi-layer maps for stratification. The mapping is done by making first a map from VHR image and further using the high resolution map as reference for the medium resolution wall-to-wall data. In this phase the mapping is made using all available reference data and expert knowledge.
2. Computing estimates and confidence intervals from a sample of VHR images using the wall-to-wall map for stratification. Step two must be based on a strict statistical approach without any subjective judgment.

STATUS: Complete

2.3 The study on the strengthening of methodological and technological approaches for preventing deforestation and forest degradation within the REDD implementation Framework (DOF and Asia Air Survey)

For further information contact Nori Kitamura (noriyoshi.kitamura@gmail.com)

In August 2009, a Memorandum of Understanding between Asia Air Survey of Japan and the Department of Forestry was signed for the study on the strengthening of methodological and technological approaches for preventing deforestation and forest degradation within the REDD implementation Framework. The objectives of the study are;

1. To assist the forestry sector efforts in a variety of ways for the establishment of a REDD system,
2. To implement technological development for enhancing the monitoring system for deforestation and forest degradation using remote sensing and geographic information systems, and
3. To provide technical transfer and capacity development assistance to relevant organisation through the above activities and training programs in Japan.

The pilot sites encompass two provinces Bolikhamxay and Luang Prabang. The scope of the study includes a consultation with relevant organisations and counterparts concerning the pilots study area, legislative analysis, analysis of deforestation and forest degradation using remote sensing technologies, field surveys, simulation and modelling, analysis of external socioeconomic factors and development of a monitoring system that integrates remote sensing technologies with socioeconomic surveys. The researchers have been to two provinces many times to set the project area and collect some basic data. They have organized several times of training for FIPD staff and will provide training programs on remote sensing in Japan for two FIPD staffs in January 2010.

STATUS: Under Implementation

2.4 Study on the Change of Forest Cover and Biomass in Lao PDR (DOF, NAFRI and Forest and Forest Products Research Institute of Japan)

For further information contact Nori Kitamura (noriyoshi.kitamura@gmail.com)

In October 2008, an MoU was signed between the Department of Forestry (DoF), National Agricultural and Forestry Research Institute (NAFRI) and the Forest and Forest Products Research Institute of Japan. The test site area was the Xiang Ngeun district in Laung Prabang.. The project aims to identify and propose mechanisms related to reduction n of deforestation through examining the feasibility and issues of avoiding deforestation within the technical and institutional fields. The purpose of the project is to:

1. Development of a methodology for estimating emissions from deforestation using remote sensing
2. Study and identify causes of deforestation and forest degradation for understanding and estimating the trend forest cover and forest biomass changes in the past and future
3. Study influence of land and forestry policy for formulation of appropriate REDD policy and program

The team will report on the methodology for estimating deforestation and degradation, cause of deforestation and degradation and influence of land and forest policy in *shifting cultivation areas in Xengen district, Luang Prabang province* by the end of March 2010. Several missions have been to the field with FIPD and NAFRI staff and the first remote sensing training for one staff of FIPD was done in Japan.

STATUS: Under Implementation

3 Project Activities

3.1 Lao-German Climate Protection through Avoided Deforestation for (CliPAD) Program

For further information contact Mr Georg Buchholz (Georg.Buchholz@gtz.de)

Based on the Government to Government negotiation in April 2008 and subsequent pledges from the German government, the implementation of the “Climate Protection through Avoided Deforestation for (CliPAD) Program” started in January 2010 with the Technical Cooperation Module implemented by the Department of Forestry and GTZ. The German technical cooperation contribution provides national policy advisory services, capacity development and institutional support in the area of forests and climate change mitigation. These are implemented within selected REDD pilot activities in and around the conservation areas of Nam Phui (Sayaboury Province) and Nam Et Phou Loey (Houphane Province). The results will be fed into the national, regional and international debate on forest conservation and climate change mitigation. The relevant support components are: provision of advice by local and international long-term and short-term specialists, training of partner staff, local subsidies and financing contributions for the implementation of REDD pilot measures. The focus of the CliPAD programme is on forests in and near national protected areas under acute or potential threat through destruction or conversion into other forms of land use combined with high GHG reduction potential and particular significance for species protection and water management in the region.

Overall, therefore, the TC Module contributes to the implementation of the national strategies on forest conservation, climate change mitigation and poverty reduction. It supports the objectives of the Lao Forestry Strategy 2020 and the REDD R-PP. It looks for synergies with the contributions of other donors in connection with implementation of the R-PP and further planned contributions of the other German implementing organisations KfW, DED, CIM and InWEnt. The term of the offered TC Module is 9 years (from 10/2009 to 09/2018). The current commitments for the first three-year phase are EUR 2,000,000. Additionally to the GTZ contribution, DED provides up to 5 Integrated Experts placed on the local level in line with CliPAD programme objectives and CIM positions support its implementation.

Beside the TC Module, a Financial Cooperation Module within the CliPAD Programme is planned through KfW (German Development Bank) with the volume of 10,000,000 EUR for 7 years. Several feasibility studies were jointly conducted in 2009 and the Minutes of Meeting of the KfW appraisal mission in November 2009 were signed by the Laotian and the German side. The FC Module is planned to start in the second half of 2010.

STATUS: Under implementation

3.2 Participatory Land and Forest Management Project for Reducing Deforestation (PA REDD)(by NAFES, DOF and JICA)

For further information contact Ms. Miyuki Ishikawa (miyuki.ishikawa@gmail.com)

Building upon the results of the Forest Management and Community Support (FORCOM) project through the joint efforts of the Government of Lao and JICA, PAREDD aims to produce a system for reducing deforestation applied to Northern Laos through consolidating the Community Support Program Tool (CSPT) which was used for supporting means of livelihoods in a sustainable manner as an alternative measure to stabilizing shifting cultivation within the FORCOM project. PAREDD

and improve the CSPT for specific utilisation under a REDD scheme. The project's purpose is to develop a system for reducing emissions from deforestation through participatory land and forest management.

Project document which includes detail activities and outputs are still under consideration. Joint coordinating committee (JCC) will be held in next February and after agreement at JCC this project will start implementation. The project site will be 2 or 3 clusters in Luang Prabang province.

STATUS: Final Planning Phase

3.3 Sub-national REDD Projects in Lao PDR by the Wildlife Conservation Society

For further information contact Dr Arlyne Johnson (ajohnson@wcs.org)

The Wildlife Conservation Society (WCS) is currently working with the Government of Lao PDR under the international *Convention on Biological Diversity* to plan for and manage two large landscapes under the *Program of Work for Protected Areas*. These landscapes are, i) the Nam Et Phou Loey National Protected Area in north-eastern Laos and, ii) Bolikhamxay province in central Laos, including the Nam Kading National Protected Area. In these landscapes, WCS is now collaborating with various partners to undertake feasibility assessments to determine how two sub-national REDD projects focused on the voluntary carbon project might be developed and implemented to provide long-term sustainable financing while achieving the “triple benefits” of, i) reducing deforestation and degradation, ii) conserving biodiversity, and iii) improving local livelihoods.

The feasibility assessment for each landscape will include: assessments of carbon stocks, based on available plot data; analyses of deforestation rates, based on available satellite imagery and ground-truth data; analyses of drivers of deforestation; spatial modelling to construct a baseline scenario; and estimation of a project scenario, based on the assumption of being able to reduce deforestation by a certain percentage. The steps for moving ahead are informed by previous WCS experience in successfully setting up sub-national REDD projects to secure triple benefits for pilot sites in the Makira National Park in Madagascar and the Seima Protection Forest in Cambodia.

STATUS: In Planning

3.3.1 Nam Et Phou Loey National Protected Area (NEPL NPA)

Nam Et Phou Loey National Protected Area (NEPL NPA) ranks high in the Lao national protected area system for contributing the highest biological diversity of any protected area in the Northern Highlands region of the country and supports the most important tiger populations remaining in Indochina. The principle drivers of deforestation in the 6,000 km² NEPL landscape in the past have been mosaic deforestation from shifting cultivation and livestock grazing. Today and in the future, the type of drivers are expanding to also include road expansion and frontier deforestation, cash crops (corn, tea), primary forest logging and unsustainable production forestry.

In this landscape, WCS has provided technical and financial support since 2003 for the GoL to train and employ over 120 NPA staff to initiate preliminary NPA land use planning and zoning, outreach and education, ongoing enforcement of government regulations on natural resource protection and management, as well as monitoring of law enforcement and wildlife to measure compliance. Additional management activities needed to reduce the rate of deforestation include additional zoning and protection of the totally protected zone (TPZ), participatory planning and zoning of up to 30 village areas for sustainable utilisation of forest resources and incentives for compliance, as well as expansion of the NPA. For implementation of the sub-national REDD project, WCS is currently

collaborating closely with the German Development Bank (KfW), the GTZ and the German Development Service (DED).

STATUS: In Planning

3.3.2 Bolikhamxay province in central Laos, including Nam Kading National Protected Area (NK NPA)

Bolikhamxay province in central Laos, including Nam Kading National Protected Area (NK NPA) is the watershed forest for the Theun Hinboun and Theun Hinboun extension hydropower project. This water shed extends up to the Phou Chom Voy Provincial Protected Area in the Annamites on the border with Vietnam. The NK NPA contains the largest block of high quality dry evergreen forest remaining in Indochina and the province contains many unique Annamite endemics such as a recently discovered forest dwelling ox called the Saola . The NPA, covering 1,570 km², also contains areas of mixed deciduous forest, grasslands, wetlands and limestone karst and is bisected by the Nam Kading River, one of the largest tributaries of the Mekong River. Bolikhamxay has a moderate risk of deforestation due to similar drivers as found in NEPL.

In this landscape, WCS has provided technical and financial support since 2005 for the GoL to train and employ over 80 NPA staff to engage in preliminary NPA land use planning and zoning, outreach and education, ongoing enforcement for natural resource protection and management, as well as monitoring of law enforcement and wildlife to measure compliance. Additional management activities needed to reduce the rate of deforestation include additional zoning and protection of the totally protected zone (TPZ), participatory planning and zoning of up to 60 village areas for sustainable offtake of forest resources and incentives for compliance. For implementation of the sub-national REDD project, WCS is currently collaborating closely with Theun Hinboun Power Company, with support from the Blue Moon Foundation.

STATUS: In Planning

4 External Reports

4.1 Report on REDD for Lao PDR, Nepal and Vietnam

For further information contact Richard McNally (info@indochinacarbon.com)

The study was carried out by IndoChina Carbon, which was established in 2008 with the aim of promoting cleaner development and forest conservation across the region by tapping into finance from the carbon market. In addition, the Netherlands Development Organisation (SNV) also provided support for the study as it has a particular interest in Lao PDR, Vietnam and Nepal, as each of the countries are receiving support for ongoing international activities to become ready for REDD. The report provides a profile on ongoing REDD projects currently under implementation in the world. It looks at several highly relevant REDD methodologies, and discusses the major issues which are facing the implementation of REDD projects, such as remote sensing for REDD, benefit sharing and the impacts of REDD on poverty, and provides country specific case studies for Lao PDR, Nepal and Vietnam.

4.2 Report on Mapping Potential for REDD in Lao PDR

For further information contact Tim Holland (timothy holland@gmail.com)

Information on forest cover was gathered from the Vegetation Continuous Fields (VCF) data product, which is produced by the Global Land Cover Facility. This is an internationally recognized and extensively peer-reviewed data set. It has relatively low resolution (500m pixels), which means that it is not appropriate for finer-scale forest monitoring as will be required under REDD. Despite this lower spatial resolution, however, the VCF is processed such that each individual pixel contains more useful information than do individual pixels in higher-resolution raw imagery; the VCF provides an estimate of forest cover within each pixel to the nearest percentage point. The consistency, universal coverage, and relative ease of use of VCF make it an appropriate data set for overviews of large areas. This kind of overview can be useful in the selection of REDD target areas.

In addition, carbon density maps were created using the data from the Carbon Dioxide Information and Analysis Centre. This data is similarly low-resolution (1km by 1km), but is presently the best that exists at a global scale. REDD prioritization maps were developed at province and district levels.

5 Developing the Lao National REDD Strategy

5.1 The World Bank's Forest Carbon Partnership Facility (FCPF)

Based on a participatory and consultative process, the preparation of the Lao PDR REDD readiness preparation proposal (R-PP) will provide:

- A consolidated strategy
- Reference scenarios
- A monitoring, reporting and verification system;
- Implementation arrangements
- An assessment of the economic, social and environmental impacts of national REDD implementation

The program will be led by the National REDD Task Force, assisted by consultants and advisors, and will be comprised of five studies supported by the FCPF (and other studies supported by other donors): (i) REDD Strategy Development and Management; (ii) Development of a Reference Scenario of Deforestation and Degradation; (iii) Design and Implementation of Monitoring, Reporting and Verification Systems; (iv) REDD Implementation Framework Development; and (v) Economic, Social and Environmental Impact Assessment and Stakeholder consultation. A grant from the FCPF of USD 200 000 will be administered by the SUFORD project management unit. The table below outlines the coordination for co-financing for activities that support the FCPF's R-PP and other on-going donor activities at the Department of Forestry in addition to the USD 200 000 from the FCPF.

Table 1 Coordination of Co-financing Activities Supporting R-PP Development in Lao PDR

Activity (must match the activities in section C)	Partner (name)	Co-financing (yes/no, plus mention US\$ amount)
Land use, forest policy and governance quick assessment	FSIP	Yes, \$60,000
E.1 REDD strategy Development and Management		
E.2 Development of a Reference Scenario of Deforestation and Degradation		
Design land and forest use system (contribution to E.2)	FSIP	Yes, \$28,000
Review inventory data, develop method for carbon density estimation (contribution to E.2)	SUFORD/MFA	Yes, \$37,000
E.3 Design and Implementation of Monitoring, Reporting and Verification Systems		
E.4 REDD Implementation Framework Development		
E.5 Economic, Social and Environmental Impacts Assessment and stakeholder consultation		
E.6 Others		Yes, Central Management Unit of SUFORD will assist DOF in administrative aspects of FCPF fund use and will cover audit requirements.
Technical advice and coordination for Task	FSIP advisers	Miscellaneous costs including

Activity (must match the activities in section C)	Partner (name)	Co-financing (yes/no, plus mention US\$ amount)
	URDP advisers NOUL/GTZ adviser	translation, printings and so on

At the end of 2009, the Grant Agreement for Preparation of the Readiness Preparation Proposal (TF094048) was being processed by the Ministry of Finance (MoF) and a representative has been assigned to work between MoF and the World Bank to facilitate the timely submission of documents.

Changes to the Terms of Reference (ToRs) for the preparation of the Readiness Preparation Proposal (R-PP) suggested by the REDD Task Force to account for work undertaken, have been reviewed and agreed on by the World Bank and FCPF representatives. Revisions to the draft procurement plan have been made in accordance, and clearance of the revised procurement plan by the REDD task team leader is expected soon.

At the end of 2009, a candidate was still sought for the post of REDD planning and management advisor. It is anticipated that an agreement will be made on selection of a lead consultant and other consultants for R-PP development to start in the beginning of 2010.

Task Force members expressed eagerness to ensure national ownership of the R-PP and, in relation, raised the possibility of allocating a high ranking DoF official to guide and oversee REDD. In particular it is expected that much of the work associated with developing plans for a REDD Implement Framework Advisor would be best undertaken by GoL/DoF with drafting assistance from the consultant. This initiative is strongly encouraged. To promote national ownership of REDD during the upcoming stages of development, the Forest Strategy Support Project has organised translation of the R-PP template and related documents into Lao.

A recent mission from a World Bank Expert for the FCPF visited and drafted preliminary ideas for consideration and discussion for the Lao REDD Task Force. The mission made the following recommendations which were presented to the Lao National REDD Task Force.

In developing a REDD strategy the following factors, among others, need to be taken into account:

- Extent to which emissions from deforestation and degradation will be reduced;
- Social and environmental co-benefits;
- Mitigation measures that are likely to be effective in context of past national experience;
- Institutional and resource management issues prevailing in areas selected for implementation;
- Opportunity costs of land in areas selected;
- The extent to which REDD is ultimately included in an international climate change agreement.

Given current institutional limitations a possible national level REDD strategy could, for example, focus on the following priorities: (i) securing carbon stocks in areas of forest with high carbon density and (ii) developing a fully functioning and standardised national level REDD mechanism. In relation to the first priority, focus on areas of high carbon density is likely to yield benefits in relation to both deforestation and degradation and leakage control. Reductions in emissions from deforestation and degradation will be high in comparison with a more diffuse strategy and leakage through in-country displacement of wood products production should be reduced as major forest carbon stocks will be accounted for. Concomitant focus on areas where jurisdiction and land management policy are clear will further reduce hindrances in reducing deforestation and

degradation. Areas of land where opportunity costs are lower are also likely to provide easier gains than where land is in high demand.

Given the importance of national level coordination in relation to REDD, the following agencies, amongst others, should be included in consultations:

- Ministry of Planning and Investment – responsible for granting concessions for mining and hydropower development;
- Ministry of Energy and Mines – responsible for providing technical review for mining and hydropower concessions;
- Ministry of Finance – responsible for managing proceeds related to Government assets;
- Ministry of Communication, Transport, Post and Construction – responsible for road development and placement.
- National Land Management Authority – undertake mapping of land use and intend to undertake land use planning at the national level;
- Ministry of Industry and Commerce – administer activities associated with forest products processing and trade and collect related statistics;
- Provincial Government – administer provincial level logging quotas and allocation of smaller land concessions.
- Ministry of Justice – responsible to approving new legislation;
- WREA national climate change committee – responsible for reporting to UNFCCC and drafting national climate change strategies. Also responsible for drafting the National Adaptation Programme of Action (NAPA) including priorities related to forestry;
- National working group on climate change set up under the Prime Minister’s Office – MAF are responsible for forestry and land use.
- DOFI – work plan includes the following components: Forest Law Enforcement Strategy, Interagency Agreements and Operations, Law Enforcement Training and Public Awareness, and Intelligence Systems

5.2 Analysis of Land Use and Forest Changes and Related Driving Forces in Lao PDR (supported by FSIP)

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The study on the Analysis of Land Use and Forest Changes and Related Driving Forces in Lao PDR was co-financed by the Forest Strategy Implementation Program (FSIP) to complement work within Lao PDR’s Readiness Preparation Proposal (R-PP) under the FCPF, see above. The study was tendered by Mekong Maps and was structured into 2 parts specifically designed to complement the FCPF R-PP development. The first part was a change detection component, and the second part was a change analysis component. The change detection component identified and quantified recent land use and forestry changes that have taken place in 3 districts based on the comparison of the results of analysis of available satellite images of 2 years (2002, and 2008) and used appropriate remote sensing methods and GIS software.

Nine sources have been identified as driving causes of forest degradation and deforestation associated with the different actors responsible. The nine sources are fire, industrial tree plantation development, mining, hydropower, infrastructure development, unsustainable wood extraction, pioneer shifting cultivation, agricultural expansion and urban expansion.

The study recommends that future efforts to avoid forest degradation should be geared towards 1) National Protected Areas (NPAs) as they have the majority of carbon dense stocks and the forests

are in the best condition compared with other forest types, 2) Regional locations with valuable tree species and forests in the vicinity of borders to neighbouring countries.

The study recommend to avoid deforestation, efforts should focus on 1) Production Forest Areas, National Protected Forests and Village forests including fallow areas, 2) the location of the PFAs in the central and southern parts of Lao PDR, National Protected Forests in the Northern region and village forests with large territories. The study was financed by the Forest Strategy Implementation Program (FSIP) to support the Readiness Project Proposal (R-PP) under the World Bank's Forest Carbon Partnership Facility (FCPF).

STATUS: Draft Final

5.3 National Forest Inventory Design and Methodology for Carbon Measurement and Monitoring (SUFORD)

The Sustainable Forestry and Rural Development (SUFORD) project is responsible for the design of the national forest inventory within the Forest Inventory and Planning Division (FIPD) in coordination with other stakeholders. With increasing pressures on forests and the additional benefits forests provide to the environment and communities, reporting requirements are becoming increasingly demanding and therefore there is a need to review current forest assessment and inventory methodologies from alternative sources and design a new forest inventory and resource assessment that can meet the reporting demands of international, national and regional policies. The design of a new forest inventory methodology provides a multiple opportunities to improve cost effectiveness modernise, improve accuracy and data quality. In additional, increased access to forest areas and new remote sensing methodologies over the past decade are expected to provide new opportunities to improve results. The following information is based on the report *The Development of a Forest Resource Assessment in Lao PDR* completed in December 2009 by the SUFORD remote sensing advisor Dr Timo Tokola.

There are two distinct needs of a forest resource assessment. The first are the core needs of the assessment, and the second are optional needs of the assessment. So far, the core needs identified include:

- Strategic level monitoring of status and trends on all land containing trees
- Indicators could be developed for ecosystem health, biodiversity, carbon sequestration, wildlife corridors, habitats and agro-forestry stands.
- Minimum areas accuracy of 10%

The data needs for specific areas and scale also should be considered within the design at least for the national, regional (northern, central and southern) and provincial levels.

The report found that sampling and stratification are the key issues for efficient data collection. MODIS-derived deforestation is used to partition the study area into strata to intensify sampling within forest clearing hotspots. The results of the study demonstrated the use of a stratified design based on MODIS-derived deforestation data to improve precision of the estimated loss of intact forest area estimated from sampling Landsat imagery. In addition to identifying key issues, the report identified the main challenges of using previous inventory methods, and inadequacies of past results due to the exclusion of large trees in the previous inventory, distortions in old forest cover maps, and the absence of national level Permanent Sample Plots.

Finally, the report identified new variable needs given new remote sensing technologies and specific biometric modelling noting that field sample plots are a primary data source for biomass, carbon

data measurements and modelling, and requires the long term commitment in data collection. Finally, the report noted that biodiversity and landscape parameters and their related methods and sampling schemes, in addition to habitat mapping, need to be developed for Lao PDR.

5.4 The Program for Forest Resource Information Management in Lao PDR (JICA with Japan Grant Aid Assistance)

For further information contact Nori Kitamura (noriyoshi.kitamura@gmail.com)

The objective of the program is to improve a system for forest information management in Lao PDR in order to contribute to sustainable forest and land management as well as to mitigate climate change through establishing the ability for development and management of forest base maps using plural satellite information. The program proposes several important tasks to achieve the program objective:

- Establishment and construction of a Forest Resource Management Information Center
- Fully equip the Forest Resource Management Information Center, including equipment for satellite imagery analysis and database construction and equipment for sampling surveys
- Establish a system for forest resource data collection and analysis including capacity building for target staff. Capacity building and training will focus on remote sensing, GIS, Database training, field surveys and REDD.

The expected outcomes from the program include providing a forest baseline for the implementation of a national REDD program, and enhanced capacity building opportunities and training for government officials to support a Lao led process on REDD. Minutes of this program will be signed in next January and it will be taken place in the middle of 2010.

STATUS: In Planning

5.5 Policy and Financial Studies to Support REDD+ in Lao PDR

For further information contact Majella Clarke (majella.clarke@gmail.com)

A comparative policy options report was completed for the Lao REDD Task Force based upon the negotiations under the United Nations Framework Convention on Climate Change (UNFCCC). The purpose of the report was to inform the Lao REDD Task Force of the options being discussed within the UNFCCC and analyse the implications of the options for Lao PDR. The report was the basis of support to the Lao National position on REDD+ within the UNFCCC.

Several market studies were also completed within the SUFORD project to support knowledge on forest carbon offsets and provide strategic direction on forest carbon offset market mechanisms in Lao PDR. The first report was on the *Estimation of the Hedonic Forest Carbon Offset Price Function Considering Co-benefit Variables*. Based on a sample of forest carbon projects from Australia and New Zealand, the effects of the co-benefits of biodiversity, community development, water functions, soil functions, salinity functions and landscape functions were studied with respect to the forest carbon offset price. A hedonic price function was developed to study the effects of co-benefit variables on the price of forest carbon offsets for the sample. The results showed that the co-benefits have almost no positive effect on the price of a forest carbon offset in the sample.

The second report was a *Characterisation of the Current Market for Reducing Emissions from Deforestation and Degradation (REDD) and Forest Carbon Offsets*. Forest carbon offsets from REDD

and forestry projects are providing increasing opportunities in the voluntary carbon market. Currently, forest carbon offsets from REDD and most forestry projects are only able to be traded in the voluntary carbon market on a project by project basis, and on a deal by deal basis through the Over-The-Counter market. The paper argues that because of the global nature and flexibility of the voluntary market, project based crediting mechanisms have been set up under a range of different standards for accounting, monitoring, verifying and distributing carbon credits from forest carbon projects, leading to growing product complexity, difficult marketability and little overall transparency. The paper concludes that market and liquidity fragmentation have implications on achieving a common price signal and that inefficient price formulation is, at this stage, an unavoidable characteristic of the voluntary market for forest based carbon credits.

5.6 Forest Law Enforcement Strategy and REDD+

The Department of Forestry Inspection (DOFI) joined the national REDD Task Force in 2009. As the agency with the mandate to implement the Forest Law and Wildlife Law, it is clear that DOFI will be a key agency in the implementation of REDD from local to national levels. There is scope to deepen DOFI's involvement in the implementation of a national REDD program, and REDD is mentioned in DOFI's forest law enforcement strategy. DOFI is establishing itself in a wide range of areas of law enforcement and governance and it has many priorities. It will need to expand its capacity and understanding of REDD development to provide both the policy and framework on governance of REDD and increase the coverage of enforcement at the ground level.

6 Association of South-East Asian Nations (ASEAN)

A Common Position on Climate Change and REDD+

Lao delegates from the Department of Forestry have been actively engaged in providing input into a common ASEAN position to be presented within the UNFCCC COP 15. Unlike 2008, no formal ASEAN REDD+ position was adopted in 2009 for COP 15, however there was an ASEAN Joint Statement on Climate Change to the 15th session of the Conference of the Parties to the United Nations Framework Convention on Climate Change and the 5th session of the Conference of Parties serving as the Meeting of Parties to the Kyoto Protocol, which was adopted in Hua Hin, Thailand in October 2009. Within the statement, ASEAN member states agreed to:

Support efforts to enhance understanding and effective implementation of REDD+ mechanisms in developing countries, with the view to enhancing biodiversity conservation and sustainable use of natural resources, as well as supporting the livelihoods of local communities in a sustainable manner.

ASEAN Regional Knowledge Network on Forests and Climate Change

Based on the 11th Meeting of the ASEAN Senior Officials on Forestry (ASOF), it was agreed that ASEAN should promote the use of regional knowledge networks to broaden the ASEAN base of knowledge on forestry. It was then agreed that one of the major issue the regional knowledge networks should focus on is the issue of forests and climate change. Lao delegates from the Department of Forestry participated in several events within the knowledge network in 2009.

The goals of the network are to:

1. Support ASEAN decision-making and implementation processes by providing inputs based on policy-oriented research results, outcomes and policy analysis on forests and climate change;
2. Support ASEAN Member States to better understand and learn from each other's approaches in the implementation of forests and climate change activities and good practices;
3. Stimulate research and debate to develop, advise and facilitate solutions in forests and climate change issues among ASEAN Member States and ASEAN Partners.

The ARKN on Forests and Climate Change is a venue for ASEAN Member States to share their knowledge and experiences and identify experts and research institutions specialized in the issues of forests and climate change such as Reducing Emissions from Deforestation and Forest Degradation (REDD) in Developing Countries and Afforestation/Reforestation Clean Development Mechanism (A/R CDM). The scientific basis gathered in the network is pertinent to support ASEAN's decision-making process through policy analysis and strengthen ASEAN's role in climate change negotiations. The ARKN on Forests and Climate Change works by firstly identifying research agendas, conducting knowledge sharing exercises, and implementing the researches and capacity building for the stakeholders in ASEAN. The ARKN on Forests and Climate Change is also open for cooperation with the Network's Partners, such as international research institutions or donor countries' initiatives to further develop their activities. It is in the Network's best interests that science and policy go in harmony to find the solutions the world needs to combat climate change and its impacts.

7 Capacity Building

7.1 National Workshops and Seminars

7.1.1 Forest Strategy Implementation Program (FSIP)

The FSIP Project hosted a number of national workshops and seminars to build knowledge on REDD for central level government staff and REDD Task Force Members. On the 20th January 2009, Jeffrey Himel was contracted by FSIP to prepare a seminar for REDD Task Force members, advisors and central level government staff on “Practical Considerations in Implementing REDD”. The seminar gave participants an overview of the different requirements for carbon monitoring under a REDD framework and consolidated recommendations on how to address remote sensing challenges and potential pilot activities for Lao PDR. FSIP also supported the participation of Lao forestry staff in a number of international workshops and conferences, including the UNFCCC negotiations.

7.1.2 RECOFTC

At the end of March, RECOFTC organised an introductory grass roots training on REDD in Pakse in partnership with the National University of Lao PDR. One of the key outputs was REDD material translated into Lao language.

7.1.3 Woods Hole Research Center

Financial Support for Lao REDD Delegates to UNFCCC

The Woods Hole Research Center played an important role in supporting the Lao delegation’s participation in REDD negotiations under the framework. The WHRC provided financial assistance for the accommodation, travel and daily expenses of 2 Lao forestry delegates in the Bangkok and Copenhagen negotiations. In addition, the WHRC held a workshop to complement the UNFCCC REDD negotiations in Bangkok, and through which the 2 Lao delegates participated.

Forum on Readiness for REDD in Lao PDR

For further information contact Mr Khamsene Ounekham (ounekham_k@yahoo.com)

On October 22, the Woods Hole Research Center hosted the Forum on Readiness for REDD in Lao PDR at Lao Plaza Hotel. Participants included government officials, the private sector and Non-Governmental Organisations (NGOs). The Forum is a multi-stakeholder initiative focused on practical approaches for building REDD readiness through cross-stakeholder dialogue, South-South collaboration, and linking local expertise with regional readiness efforts.

The Forum operates as a neutral convening space to allow various stakeholders involved or interested in REDD readiness to build their understanding and capacity, and interact with different stakeholder groups and regions, to increase South-South dialogue, information exchange, knowledge transfer, and collaboration and consensus building on the implementation of readiness activities. The Forum relies on leadership from developing countries, including governments, civil society, and indigenous groups, and will also include other important stakeholders such as international NGOs, multilateral institutions, and representatives from the private sector. An Overview of Readiness for REDD was prepared as an outcome of the Forum in participating countries, which presents a *Compilation of Readiness Activities prepared on behalf of the Forum on Readiness for REDD*. Lao PDR is presented in the report.

7.2 International Conferences

Lao representatives from DoF and the National University of Lao participated in a number of international conferences to build capacity and share knowledge and experiences on REDD throughout the region, see table below for summary of seminars and conferences attended.

Table 2 International Participation in Conferences and Seminars by Lao delegates in 2009

Date	Place	Seminar/Conference	Participants
January	Khon Kaen Thailand	NASA-Land Cover and Land Use Change Program Science Team with the MAIRS, GOFC-GOLD and SEA START Programs on Land-cover /Land-Use Change Processes in Monsoon Asia Region	NUoL, Faculty of Forestry
February	Bangkok, Thailand	REDD – Issues of Scale in the Asia-Pacific Region	NUoL, Faculty of Forestry
February	Kuala Lumpa, Malaysia	ASEAN ARKN REDD	DoF
May	Bangkok, Thailand	REDD and Community Forestry - Incorporating Forest Degradation into National Frameworks	NUoL, Faculty of Forestry
May	Phnom Pnem, Cambodia	Regional Workshop on Forest and Climate Change: Consultation support to ASEAN Senior Officer on Forestry and UNFCCC focal points	ASEAN ASOF, DoF. NUoL
June	Bangkok, Thailand	PES Workshop	DoF, WREA, NLMA
June	Yangoon, Myanmar	ASEAN ASOF	DoF
July	Indonesia	ASEAN meeting on REDD in Indonesia	DoF
August	Hanoi, Vietnam	Carbon financing and community forestry	DoF
November	Hanoi, Vietnam	Workshop on Climate Change Talks	DoF
November	Hanoi, Vietnam	Workshop on Carbon Measurement and Monitoring, Vietnam in November	DoF, WHRC, FIPD
November	Seoul, South Korea	Symposium on forest policies and carbon markets	DoF
November	Buenos Aires, Argentina	FAO XIII International Forestry Congress	NUoL

7.3 Training

COP 15 Delegate Training for Negotiations

Between September 16-18, government officials from the Department of Forestry, National Agriculture and Forestry Research Institute, Water Resources and Environment Agency, Department of Environment and Climate Change Office, in addition to delegates from Cambodia, attended a special training workshop in preparation for COP 15. The training was conducted with the assistance of UNDP, WREA and SNV in Vientiane, and resource people included the distinguished Bernaditas Mueller, Dr Pak Sum Low and Ben Vickers as well as Lao government officials.

The programme of the COP15 Delegation Training has enabled all participants to learn and discuss the main elements of the Bali Action Plan and the COP15 including mitigation, adaptation, Reducing Emission from Deforestation and forest Degradation (REDD), technology transfer, capacity building, as well as technical, scientific and political aspects of climate change negotiations. Lao PDR prioritized the following topics.

1. Financing
2. Adaptation
3. REDD+
4. NAMAs

The training Workshop was prepared for the Delegations of Lao PDR before attending UNFCCC Negotiations at COP 15 in Copenhagen.

COP 15 Special Briefing for Ministers, Delegates and Senior Officials

On November 19-20, a special briefing for ministers, COP 15 delegates and senior officials was held in Thalath supported by UNDP, WREA, SDC, SNV and SUFORD. Participants included delegates from the Water Resources and Environment Agency, Climate Change Office, Department of Forestry, and Ministry of Foreign Affairs. The briefing informed participants of the major negotiation positions which Lao PDR is a member to, including G77+China, the position of the Least Developing Countries, and ASEAN under the UNFCCC negotiations. The briefing focused on key technical and scientific issues for mitigation, adaptation, REDD+ and financing, and concluded with organisational matters for the delegation.

8 United Nations Framework Conference on Climate Change

8.1 Lao National Participation in REDD+ Negotiations

A delegate from the Department of Forestry and a delegate from the National Agriculture and Forestry Research Institute participated in the United Nations Framework Convention on Climate Change (UNFCCC) negotiations specifically on REDD+ throughout the year. The Lao delegates were involved in the REDD+ negotiations within the Ad hoc Working Group for Long-term Cooperative Action (AWG-LCA) and the Subsidiary Body for Scientific and Technological Advice (SBSTA). The meetings attended were:

- 30th SBSTA/SBI, 6th AWG-LCA and 8th AWG-KP under UNFCCC in Bonn, Germany in June
- 6th AWG-LCA and 8th AWG-KP under UNFCCC in Bonn, Germany in August
- 7th AWG-LCA and 9th AWG-KP under UNFCCC in Bangkok, Thailand in September
- CMP/COP 15, 31st SBSTA/SBI, 8th AWG-LCA and 10th AWG-KP under UNFCCC in Copenhagen, Denmark in December

The delegates reported the developments from the negotiations back to REDD Task Force members with presentations to the REDD Task Force.

8.2 National REDD+ Position of Lao PDR

The national REDD+ position for Lao PDR has the objective of being flexible, adaptive to the national circumstances and capacities and based on the negotiating text for the Ad Hoc Work Group for Long-term Cooperative Action (AWG-LCA). The below position was prepared specially for COP 15 and was presented by H.E. Mme Khempheng Pholsena to the UNFCCC.

Lao PDR desires a flexible stand-alone internationally binding agreement for reducing emissions from deforestation and forest degradation; with enhancement of carbon stocks, conservation and sustainable management of forests. Such a scope supports the Forest Strategy 2020 and the 5 year plan of the Ministry of Agriculture and Forestry. It also supports the ambitious target of achieving 70% forest coverage of land area in Lao PDR by 2020. Lao PDR does not support the imposition of targets related to REDD+, especially when the level of financing, and time frame is still unclear. Lao PDR does not support REDD+ being administered under Nationally Appropriate Mitigation Actions (NAMAs) framework, because Policies and Measures, as well as action plans and strategies are very difficult to quantify in terms of impact on emissions within the Land Use and Forestry sector.

With respect to principles, Lao PDR affirms that the principles and provisions of the Convention guide that implementation activities of REDD+ and that such activities should be country driven, voluntary, take into account national circumstances and capacities, respect country sovereignty, facilitate sustainable development, reduce poverty, promote broad country participation and be subject to equitable, adequate, predictable and sustainable financing, with financing included for technology support and capacity building.

Lao PDR foresees REDD+ as a mechanism which supports the conservation of natural forests and safeguards against their conversion to plantations. Lao PDR supports the necessary safeguards which should be in place to address risks of permanence and reduce leakage. As a country which has signed the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), and the Convention for Biological Diversity (CBD), Lao PDR supports actions which take into account these relevant international agreements which complement the sustainable implementation of REDD+.

With respect to scale, Lao PDR supports the nested approach in which the overall aim is to implement REDD+ at a national level. However, having a subnational approach nested within

national framework is the most realistic option as it takes into account the national circumstances and capacities of the country, which differ by region, and supports project related REDD activities, as well as national level strategies, programmes and action plans. Having a sub-national approach also means that REDD+ demonstration activities can start very quickly, and have the option of access to the voluntary carbon market. The nested approach also supports the 3 phased implementation of REDD+ where the timeframe for implementing readiness (phase 1), demonstration activities (Phase 2), and full implementation (phase 3) , will differ significantly depending on the region in Lao PDR.

For implementation, Lao PDR supports the 3-phased approach. Phase 1 begins with the development of national strategies, action plans, policies and measures, and has a specific focus on capacity building. Phase 2 would follow with implementation of national policies and measures, and national strategies or action plans and, as appropriate, sub-national strategies that could further involve capacity building, technology transfer and results-based demonstration activities. Phase 3 would include results-based actions that are fully monitored, reported and verified. The timeframe for implementation of such activities should depend on national circumstances, capacities and capabilities.

Financing REDD+ is an essential feature and will be strongly related to the overall outcome and success of REDD+ in Lao PDR – flexibility is the most important element for financing REDD+ in Lao PDR. At this stage, Lao PDR prefers to build readiness for REDD+ with bilateral relationships with donors, given the extensive capacity building which is required within the readiness phase. As a participating country within the Forest Carbon Partnership Facility (FCPF), Lao PDR also supports multilateral approaches for financing. In the hope to keep financing flexible, particularly within the UNFCCC, Lao PDR supports the hybrid approach to financing which means financing REDD can come from both funds and market based approaches. Lao PDR is also interested in opportunities within the voluntary market to support sustainable project based approaches to REDD+.

8.3 Outlook 2010: An Expert's View

Submitted by Lars Schmidt (lars.schmidt@gmx.org)

Progress on REDD was by almost all means good, but due to the overall failure, the prepared COP decision on REDD by the AWG-LCA was not adopted. The AWG-LCA draft COP decision had asked SBSTA to undertake a programme of work to develop the relevant guidance for monitoring and accounting for REDD+. It is not yet clear whether or not the next round of negotiations will build on this draft decision, in any case development of the technical guidance for REDD may be delayed even further now. Hopefully COP 16 will be "pulled" to June/July 2010, otherwise SBSTA may not start work on this before 2011. The adopted decision (from SBSTA) only calls for the use of the most recent IPCC guidelines (GPG 2003, AFOLU 2006). This leaves some monitoring/accounting questions open, including the issue of REL/RL.

With regard to financing REDD projects through carbon markets (not that I like it since it undermines overall mitigation) a new possibility may emerge. The US, together with e.g. Colombia, is pushing strongly to keep sub-national approaches inside the REDD text and intends to allow sub-national REDD offsets for its domestic cap and trade system from a range of developing countries for a time window of 8 to 15 years (up to 2017, possible extension to 2025 max). Countries eligible for selling emission reductions from projects or district/province-based approaches to the US cap and trade system are those with little present capacity for national approaches and that contribute very little to global GHG and land use change emissions (LDC such as Laos would be in, Brazil, Indonesia, China, India are out). From the latter only offsets credited against a national reference (emission) level will be allowed.

Carbon market analysts think it quite likely that projects registered under the Voluntary Carbon Standard will be eligible for those project offsets as the standard is "in place" and is the most rigorous one including buffers to mitigate leakage and permanence effects. The allowed volume of international offsets is expected to be around 0.5 to 1.25 billion credits a year. Whether or not prices will exceed those in the voluntary market will depend on the stringency of the US cap and the amount of free emission allowances allocated to the market actors. Still, the temporary emergence of a new market for REDD project offsets may present an alternative to the voluntary market. In this context it is also worth noting that the WB's Biocarbon Fund intends to buy credits from voluntary REDD projects (VCS) soon.

Another issue is that the Kyoto Protocol is likely to run for another commitment period (2013-2017 or 2013-2020). Given the fact that the US will not join the KP, credits under the US cap and trade system may thus not be fungible (at least not 1:1) with those credits traded under the KP (and the EU ETS). To what extent "forest project credits" could move through the US market to other Annex-I countries (Japan, Canada, Australia) under the KP would then need to be clarified. In any case, it is very likely that the EU will not allow REDD credits into the EU-ETS before 2020 (only government compliance), let alone REDD project credits.