

GREEN GROWTH ADVISORY SERVICES AND ANALYTIC
ON SUSTAINABILITY OF LAO PDR'S FORESTS

VALIDATION WORKSHOP

WORLD BANK OFFICE, VIENTIANE, LAO PDR

MAY 17, 2018



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Korea
Green Growth
Trust Fund



PROFOR
INNOVATION AND ACTION
FOR FORESTS

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GREEN GROWTH ADVISORY SERVICES AND ANALYTICS (ASA)
Validation Workshop on “Sustainability of Lao PDR’s Forests”
The World Bank Office, Vientiane May 17, 2018

The Ministry of Agriculture and Forestry’s Department of Forestry and the World Bank jointly hosted a validation workshop on the Sustainability of Lao PDR’s Forests on Thursday May 17, 2018 at the World Bank Office in Vientiane. The agenda is available in Annex 1. The attendees represented senior specialists from the Ministry of Agriculture and Forestry’s Department of Forestry and Department of Forest Inspection, National Agriculture and Forest Research Institute, Ministry of Industry and Commerce’s Department of Industry and Handicraft, Ministry of Planning and Investment’s Department of Investment Promotion, the National University of Laos’s Faculty of Forest Sciences, the private sector, non-governmental organizations, and the international donor community. The list of participants is available in Annex 2.

OPENING SESSION

Co-chairperson Ms. Viengsamay Srithirath, Acting Country Manager, the World Bank welcomed participants and stressed the importance of the workshop as a platform for policy and investment dialogue towards improving forest resources management to contribute towards a greener and more resilient growth in Lao PDR. The World Bank supports the Government of Lao PDR (GoL) in on-going efforts in green growth initiatives through the Country Partnership Framework (CPF); preparation of a National Green Growth Strategy (NGGS); support through a Green Growth Development Policy Operation (GGDPO) series; analytical investment and support to policy and regulatory reforms and the implementation of projects including the Scaling-up Participatory Sustainable Forest Management (SUFORD-SU) Project, Reduction Emission from Deforestation and Forest Degradation (REDD+) Readiness/Forest Carbon Partnership Facility (FCPF) Project and an emerging large-scale Emissions Reduction Program (ER-P) in six northern provinces¹, as well as the Second Lao Environment and Social Project (LEnS2). The World Bank and the GoL are jointly planning the next-generation financing based upon more integrated, cross-sectoral, multi-disciplinary approaches to natural resources management. “As analytical work is critical to our investment and policy dialogue we invite the wisdom of those collected in the room today to guide us on the future investment, policy, institutional and information priorities and direction for sustainable forestry sector development” Said Ms. Viengsamay Srithirath. The welcome remarks are available in Annex 3.

Co-chairperson Mr. Sousath Sayakoummane, Director General of the Department of Forestry, Ministry of Agriculture and Forestry (MAF) recognized the World Bank’s long-term continuous contributions to Lao forestry sector in managing and conserving forests and forest resources. He also recognized the role of forest in socio-economic development, poverty eradication and green growth agenda. Mr. Sousath stressed the importance of Prime Minister’s Order No. 15, May 2016 for *Strengthening the Strictness of Timber Harvest Management and Inspection, Timber Transport and Business* to halt salvage logging and cross-border trade of round logs and unfinished timber products. Through collaboration between the Prime Minister’s Office, Provincial Governors, line

¹ Bokeo, Houaphan, Luang Namtha, Luang Prabang, Oudomxay and Sayabouri provinces

ministries and law enforcement agencies the Order has been monitored and enforced effectively. The Ministry of Agriculture and Forestry, as the core implementing agency of the PMO 15 sought coordination and collaboration in implementation of the Orders with key stakeholder groups, including within the Government and with development partners, many of whom are in this room today. The PROFOR/Green Growth ASA embraced in the six sub-studies to be presented today was requested by MAF to the World Bank to provide expertise to analyze the past and current forest management, wood industries and trade business, review best practices in other parts of the world, and consolidate views and feedback from wider stakeholders to lay a sound foundations for the forestry and forest industry sectors reform to contribute more towards green growth and economic development, sustainable livelihoods, creation of jobs and the sustainable provision of environmental services. The advisory services and analytics are already contributing to the preparation of the new Forestry Law to be submitted to the National Assembly in October 2018 and the reform of forest policies and the regulatory frame for sustainable forest management and reform of the wood industries sector and forest products trade. It was stressed that the MAF was strongly committed to deliver a set of policy reforms as part of the GGDPO series, including the development and implementation of the Timber Legality Assurance System (TLAS), expand areas under forest certification and upgrade at least two National Protected Areas² to become National Parks. Besides, efforts have also been given to the development and implementation of the National REDD+ Strategy and Provincial REDD+ Action Plans (PRAPs); the amendment of forestry law and updating the Forest Strategy to accommodate changes and future prospects of the sector. The dedicated support of the key stakeholder groups in the reform process were appreciated and participation in the workshop proceedings was encouraged. The welcome remarks by Mr. Sousath Sayakoummane are available in Annex 4.

² Nakai Nam Theun and Nam Et-Phou Louey

TECHNICAL SESSION 1: OVERVIEW OF GREEN GROWTH AND SUSTAINABLE FOREST MANAGEMENT

Ms. Manoly Sisavanh, Natural Resources Management Specialist, the World Bank presented an overview on the Green Growth Advisory Services and Analytics series and how it contributed to the GGDPO series, with a specific focus on GGDPO *Pillar 3: Incorporating Green Growth into selected sectors* and *Policy Track 3.2 on Improving forest resources management*. The PMO 15/PM, dated 13 May 2016 was the Prior Action under the first Development Policy Operation (GGDPO1). Under GGDPO2 a Prior Action will have a Timber Legality Assurance System (TLAS) definition of timber legality and timber products and methodology for supply chain control and verification that meets international standards and mandates the Department of Forestry as the body responsible for international obligations and the Department of Forest Inspection as the implementation and enforcement body for TLAS. A MAF Instruction will formalize TLAS and its implementation and it is proposed that the new Forestry Law will have an article to recognize the TLAS. Under GGDPO3 (2020-21) there is a chance to have MAF issue a Ministerial Decision that legally establishes an effective and transparent 3rd party Sustainable Forest Management certification procedure for Production Forest Areas (PFAs) that include group certification. The aim is to have 230,000 ha in 4 PFAs issued with Forest Management certification by 2020-21.

The PROFOR/Green Growth ASA process from June 2017 to December 2018 has been conducting 6 sub-studies on: (i) Sustainable forest management (SFM); (ii) Markets for certified wood; (iii) Policy support for SFM, certification, TLAS and public-private partnerships; (iv) Public-private partnerships (PPP) for restoration and reforestation; (v) Financial, economic and carbon/CO₂ analyses of SFM production models; and (vi) Retrospective on forest sector development. The validation workshop to present interim results of the 6 sub-studies is today and based upon feedback, final sub-study reports will be prepared by October 2018 which will be synthesized into a draft final summary report to be presented in a final workshop in November 2018 and the final summary report submitted by December 31, 2018.

The impact and effectiveness of the introduction of PMO 15/PM was highlighted with forest products trade graphics for Vietnam and China. Additionally, the reforms in the wood industries sectors were introduced to: upskill labor, modernize equipment, introduce new wood products designs, simplify value chains and link forest management and chain of custody (CoC) certification for proof of sustainability and legality along the value chain. The presentation by Ms. Manoly Sisavanh is available in Annex 5.

Mr. Jim Carle, Forest Management Consultant, the World Bank presented the different dimensions of Sustainable Forest Management (SFM). The most universal definition of SFM is that of the UN General Assembly, 2007: “A dynamic and evolving concept to maintain and enhance the economic, social and environmental values of all types of forests to benefit present and future generations”. Interpretations of the definition have been adapted for Vietnam in their Forestry Law, 2017. Lao PDR does not have a definition of SFM per se, but it is proposed for the new Forestry Law (in preparation). The scope of SFM is that it encompasses all types of forests and forest landscapes (natural, semi-natural, planted), all functions (production, protection, conservation) to maximize value and benefits from provision of a range of forest products (wood, fiber, fuel, NWFPs) and ecosystem services. SFM can be applied at provincial, district or forest

management unit. A matrix to highlight the scope of SFM included natural forests owned by the State and plantation forests owned by the private sector (corporate and smallholder) and key functions of forests to demonstrate how each type of forest has different management objectives, different characteristics and different priorities for the provision of wood and NWFPs and ecosystem services.

Some of the reforms in participatory SFM in PFAs were highlighted including increased focus on forest restoration; alternative livelihoods for local communities; increased forest protection, monitoring and enforcement; greater role of lesser known species; supported piloting of Forest Management and CoC Certification for proof of sustainability; introduction of TLAS for proof of legality; reformed wood industries sector to upskill labor, modernize equipment, redesign wood products; simplify value chains; and pursue opportunities in both international and domestic markets. The fundamental differences were stressed between natural and plantation forests and between corporate and smallholder ownership of plantation forests. It was recognized that Conversion Forests remained the primary source of wood from Lao PDR in clearing forests for strategic investments in roads, hydro-electricity reservoirs, mines, residential developments, agriculture and new economic zones, however, in the long run this is not sustainable due to the erosion of the forest resource base of Lao PDR.

There is an important role for short rotation, high yielding plantation forests and potential exists for PPPs between the public-private and private-people partnership agreements for industrial plantations and outgrower (smallholder) plantations. Although industrial plantation forests aim to maximize the production of wood, fiber, fuel and some NWFPs, they do provide a range of other ecosystem services (particularly sequestration of carbon), employment, and also provide support to alternative livelihoods opportunities. Reform of the regulatory framework is clarifying and simplifying investment and value chain procedures for plantation forest investors and revisiting the Environmental and Social Impact Assessment (ESIA) scope. Reforms to support smallholder plantation forest investment are under consideration, including recognition of their diversity and resilience, revision of taxes, clarifying land-use rights, the provision of technical and extension services and simplifying value chains.

Production models for financial/economic and carbon/CO₂ analyses were outlined including: (i) Participatory SFM in PFAs; (ii) Industrial Eucalyptus Plantations; (iii) Outgrower (Smallholder) Eucalyptus Plantations; and (iv) Smallholder Teak Plantations (current). A production model for wider spacing, short rotation Smallholder Teak Plantations (potential) was introduced for feedback as to viability in the Lao context.

The attributes, types, costs, benefits, challenges and scale of certification were outlined in SE Asia and the current scale and the proposed forest management certification of 230,000 ha in 4 PFAs in Lao PDR by 2020 were highlighted. Some Vietnam market survey results were synthesized to highlight that PMO 15/PM had impacted the export of logs and semi-processed wood products imports from Lao PDR. Substitution of Lao PDR supply of logs and semi-processed wood products has been taken up by Cambodia and Cameroon. Vietnamese importer interest continued for purchase of certified and legally verified wood products from Lao PDR for their access to international markets beyond Vietnam. Although there was a preference for valuable hardwood and plantation species, there is interest in “run of forest” lesser known species as they regularly

experience these supplies from Conversion Forest production. Value chain reforms need to simplify and clarify (technical, institutional and administrative) procedures; revise the 2nd Landing auction system to be more in phase with industry needs and lesser known species production; encourage and strengthen capacity and implementation of forest management and CoC certification along the whole value chain; strengthen DOF, MOIC and DOFI capacity and coordination across the value chain; and modernize, upskill and redesign wood industry and manufacturing in Lao PDR to meet international standards. The presentation by Mr. Jim Carle is available in Annex 6.

DISCUSSION ON TECHNICAL SESSION 1: OVERVIEW OF GREEN GROWTH AND SUSTAINABLE FOREST MANAGEMENT

Mr. Yothin Vetsaphong, President, Vetsaphong Training Centre and Wood Manufacturing Cluster, Lao PDR generally agreed with the research findings. He commented that there needs to be a more regular log supply from plantation forests, both corporate and smallholder. Increasingly wood industries (wood processing and manufacturing) wish to use plantation grown wood but there is not yet a regular supply. Can the Government provide support to simplify the value chain and wood industries access to particularly smallholder teak grown in Northern Lao PDR? He raised a case example of smallholder teak plantation in Luang Prabang, to which he wanted to provide support and trade. However, there have been many difficulties such as unstable prices and trade deals due to high demands for teak. He foresees government intervention in providing extension services in terms of silviculture, plantation management and promotion with a clear amount of raw materials set to be supplied to wood industries in a year would help the industries make sound production and investment decisions. He added that the GoL and the WB should consider supporting teak plantations in Laos. **Jim Carle response:** Acknowledged and agreed.

Mr. Edwin Payuan, Senior Village Forestry Advisor, RECOFTC, Lao PDR commented that: i) Village Forest Management³ should be added to the study as an additional dimension of SFM; and ii) Use of lesser known species (LKS) was introduced from the former FOMACOP project prior to the SUFORD and SUFORD-SU so there is experience on how to utilize these species, however, the bundling of volumes and species for 2nd Landing (LL2) auctions need to be tailored to include both premium and LKS. **Jim Carle response:** Acknowledged and agreed.

Mr. Michael Brady, Senior Operations Officer, Forestry, International Finance Corporation (IFC), Jakarta, Indonesia commented that land-use rights/tenure and land issues, which are fundamental for SFM whether natural or plantation forests (industrial or smallholder) should be highlighted. **Mr. Jim Carle response:** Acknowledged and agreed, the presentation by Dr. Hilary Smith in the afternoon will highlight this point. **Mr. Sousath Sayakoummane response:** registration of land-use rights for all plantation users is necessary under regulations. Registration of smallholder plantations to obtain a land-use certificate has always posed a challenge.

Anonymous commented that as an outcome of the production models and financial/economic

³ **Village forest** is the forest area located within village areas and allocated both within and outside of all three forest categories. Village forest areas are under village management, preservation and utilization according to the land and forest allocation plan

analyses and carbon/CO₂ analyses there should be a strategic planning process to ascertain the potential for each of the different types of production forests (PFAs, industrial plantations, smallholder plantations) to provide the basis for investment in each. Within the SUFORD-SU project 40 out of 41 PFAs⁴ has a management plan based upon forest inventory that has identified different classes of PFA land (suitable for i) commercial production in cycles of 15 years, ii) degraded lands suitable for restoration; and iii) severely degraded (unstocked) suitable for reforestation. According to the forest inventory, 800,000 ha of severely degraded PFA forestlands were suitable for reforestation. It should be noted, however, that these areas are currently used by the local people for various purposes and any reforestation effort should be based on a model that provides them with alternative livelihoods/employment (see also his comment during technical session. **Mr. Jim Carle response:** Acknowledged and agreed both points.

Mr. Tim Dawson, Expert, FLEGT and REDD Unit, EU-FLEGT, European Forest Institute, Barcelona, Spain commented that the reforms encouraged forest management and CoC certification to improve access to international markets but when faced with neighboring countries (e.g. China, Vietnam, Thailand, India) with insatiable demands for wood products then there will still be pressure for marketing of uncertified wood products. **Mr. Jim Carle response:** Acknowledged and agreed, this is an issue. Increasingly international markets are demanding certification because of green policies by Governments, companies, trading and manufacturing associations, engineers, designers, town planners etc. Neighboring countries also wish to access these export opportunities so are increasingly having to consider certification of wood products.

Mr. Thongsavanh Soulinamat, Lao Wood Processing Industries Association and Wood Industries Cluster, Lao PDR supported the green growth and sustainable development initiatives that shaped the Government policies and regulatory framework affecting the forestry and wood industries sectors and requested that the links be made to the appropriate Sustainable Development Goals (SDGs). It was stressed that there was a role for the Government, companies and communities (the people) to partner in achieving sustainable livelihoods, landscapes and economy. The new business model or Model Factory⁵ being established surrounding these four issues included:

- Sustainability: of both forest and downstream wood processing industry
- Direction: increasingly be dependent upon plantation sourced wood that had forest management and CoC certification
- Challenges: a focus needed to be put on quality and competitiveness in the wood industries sector
- Limitations: Low skills, low technical standards, limited access to funds and targeted training.
- An issue for the wood industries is who should the actors be to achieve the reforms? The preparation of a green growth guideline/instruction on what needed to be achieved from the forest to the primary processor to the manufacturer to the market place is needed. These

⁴ Phouphaphieng PFA in Xaysomboun province has not been implemented due to remoteness and security issues

⁵ The Government through MOIC encourages Lao Furniture Association and Lao Wood Processing Industry Association to set up *model factories and a wood manufacturing cluster* (PMO No. 265/PMO, dated Feb 15, 2017). The National Steering Committee for the Establishment of Model Factories and Wood MC was set up by MOIC No. 1126/IC, dated Jul 11, 2017 chaired by Vice Minister of MOIC, with DG DOIH and DG DOF as deputy chairs.

include:

- Access to market: need to focus on timber product quality and certification as proof of legality and sustainability
- Upskilling labor and increase knowledge for private sector, including smallholders
- Wood industries are now in 4th generation of competition, we are competing in all aspects in the market i.e. Low carbon products, etc.
- The analytical work should study in depth to get into the heart of the problems and to provide clear recommendations for smooth implementation

Mr. Jim Carle response: Acknowledged and agreed on all points. The SFM study will make links to the SDGs. The Department of Forestry has prepared a guideline and undertaking training for implementing CoC from the forest to the 2nd Landing to the 3rd Landing (mill gate) whilst the Department of Industry and Handicrafts of the Ministry of Industry and Commerce are preparing a guideline and undertaking training to strengthen CoC procedures from the mill gate, through the wood processing and manufacturing to the market place.

Ms. Thavichanh Thiengthepvongsa, Deputy Director General, Department of Investment Promotion, Ministry of Planning and Investment, Lao PDR stressed the need to increase incentives for smallholder plantation investment. MPI provide incentives for investors in Lao PDR, including corporate investment into industrial plantation forests. It was recommended that to stimulate plantation investment that targeted promotion incentives were needed. **Mr. Sousath Sayakoummane response:** highlighted the review of Prime Minister 96 on the Promotion of Commercial Plantations aimed to clarify the policy and make more simple and consistent regulations to stimulate investment in plantations. He also added that GoL is trying to lift obstacles for forest plantation investment including the prospect of investment in forest restoration in selected suitable areas inside PFAs. These reforms will also be reflected in the new Forestry Law.

Heiko Woerner, Senior Advisor, Timber Legality Assurance System, Lao-EU FLEGT Project, Lao PDR highlighted that the production models needed to reflect what is done in practice (forest conversion, timber auction...) rather than what is prescribed, and stressed the need for a domestic wood industries and marketing study to allow a long-term strategic plan for the sector to be prepared. The role of Conversion Forest in wood production from Lao PDR was stressed and the need to legalize wood production from this source, which is perceived as the main supply of wood for the next ten years, thus there is a need to also look into other alternative timber sources. **Jim Carle response:** Acknowledged and agreed however, the focus of our study was on different dimensions of sustainable forest management.

Mr. Bouavanh Vilavong, Deputy Director General, Department of Industry and Handicraft, Ministry of Industry and Commerce, Lao PDR reiterated that PMO 15/PM had provided the necessary basis to strengthen reform of the wood industries and wood manufacturing sectors and MOIC was committed to short-, medium- and long-term planning of these reforms. It was reiterated the need to upskill labor, modernize equipment and redesign manufactured wood products and to explore the role that the Government should play in this process. He also updated on the progress made by MOIC including issue of MOIC regulation on implementation of PMO 15, on Eligible Wood Products for Export, on COC from LL3 to the market, and the Department of Import-Export's active participation in the FLEGT VPA process. MOIC/DOIH also works with

Mr. Thongsavanh's Model Factory Initiative to seek training from a Japanese counterpart. He wanted to hear more about smallholder intervention regarding issues related to plantation registration and certification. **Jim Carle response:** Acknowledged and agreed on both issues. The presentation by Dr. Hilary Smith in the afternoon will highlight the latter points.

Mr. Michael Brady, Senior Operations Officer, Forestry, International Finance Corporation (IFC), Jakarta, Indonesia sought clarification on the Forestry Sector Actions detailed in the draft National Green Growth Strategy (April 2018) that recommended restriction or ending concessions for foreign investors for large industrial plantation development because they were not generating reasonable economic investment for Lao PDR. Concession agreements with existing industrial plantation forest investors meet their Environmental and Social Impact Assessment (ESIA) approved by the Government and their Corporate Social and Environmental Responsibility (CSER) standards. It was questioned how this fitted the green growth initiatives of the World Bank? **Mr. Jim Carle response:** The National Green Growth Strategy is a 1st draft to be reviewed by key stakeholder groups, including the World Bank. The Forestry Sector Actions of the strategy document could revisit the 8th Five-Year National Socio-economic Development Plan (2016-2020), the National Forestry Strategy 2020 and the outputs from the Prime Minister hosted National Seminar on Forest Plantations and Rehabilitation Promotion for Increasing Forest Cover to 70% by 2020 (5 March 2018) for alignment of proposed actions. Furthermore, the 2nd Green Resilient Growth Development Policy Operation (GGDPO2) and the strategy should also be in alignment. Further reviews of the National Green Growth Strategy will be necessary to achieve this, working with key stakeholder group and in an inter-sectoral, integrated planning process. Stakeholders present in the workshop were encouraged to provide feedback.

Frederick Cabbage, Professor, Department of Forestry and Environmental Resources, North Carolina State University, USA presented the global background and economic analyses of models of natural and planted forest management and carbon payments in Lao PDR. The increasing World Population Growth scenarios were introduced to 2040; the variable, but generally positive equity investment benchmark annual returns for the USA Standards and Poor's Stocks (2000-2018); the declining Global Real Bond Yield Rates (1985-2016); and the trends towards timberland investments seeking better returns than the equity and bond market returns were highlighted. The trends in global planted area by country (1990-2015) and the top 20 roundwood producers from planted forests in 2012 were presented as a global context of planted forests growth.

The guidelines for financial analysis, assumptions, keys to timber investment returns and the criteria (Net Present Value (NPV); Land Expectation Value (LEV); Equivalent Annual Income (EAI); Benefit: Cost Ratio, Profitability Index; Internal Rate of Return (IRR); Cost-Price Analysis and Sensitivity and Risk Analysis. An example cash flow spreadsheet and a summary of inputs and returns for each production model (Participatory SFM in PFAs; Corporate Industrial Eucalyptus Plantations; Outgrower (Smallholder) Eucalyptus Plantations; and Current Smallholder Teak Plantations) were introduced.

A Lao Carbon Results Summary for each production model, as calculated by Andy Gillespie, Biometrics and Carbon consultant to the World Bank were introduced. The Biometrics volume estimates and forest Carbon and atmospheric Carbon equivalents (tCO_{2e}) used are shown in Table 1. Results of the current economic analyses are summarized in Table 2. The economic results presented here have been updated based on input at the workshop and subsequent review, and may be improved subsequently as the data inputs are refined. In addition, we will perform some sensitivity analyses for a few regimes based on feedback during discussions before and during the meeting, as reflected in these notes.

Table 1. Forest Growth and Yield and Carbon Information Used for Four Forest Models in Laos

		Long term averages					Long term marginal increases assuming default (regenerating vegetation) is replaced by Plantation Model on (1 - 30% buffer) of area		
Plantation Model	Volume at harvest (m3/ha)	Total Biomass (t/ha)	Total Carbon (t/ha)	Total CO2e (t/ha)	Rotation (yrs)		Total Biomass (t/ha)	Total Carbon (t/ha)	Total CO2e (t/ha)
Industrial Eucalyptus	94.7	92.5	45.3	166.2	7.5		43.39	21.26	77.95
Outgrower Eucalyptus	54.0	88.1	43.2	158.3	5.0		40.32	19.76	72.44
Teak Smallholder	116.8	154.4	75.7	277.4	24.0		86.72	42.49	155.80
Participatory SFM	139.9	184.0	90.2	330.7	15.0		107.46	52.66	193.07
Default Regenerating Vegetation	*	30.5	15.0	54.8	7.0		0.00	0.00	0.00
* = Data not reported									

Table 2: Selected Timber Investment Inputs, Costs, Returns, Capital Budgeting Measures for Four Forest Management Regimes in Lao PDR, 2018 (in US\$)

Costs/Returns/Capital Budgeting Criterion	Industry Planted Eucalyptus	Outgrower Planted Eucalyptus	Smallholder Planted Teak	Sustainable Native Forest Management
<i>Timber Factors</i>				
Rotation (years)	7	5	24	15 (periodic)
Growth rate (m ³ /ha/yr)	33	18	9.33	3.19
Total costs for 1 rotation	3,058	338	603	2,598
Total returns for 1 rotation	9,030	3,204	20,856	4,743
<i>Capital Budgeting @ 8%</i>				
NPV (\$/ha)	2,617	1,853	2,007	503
LEV (\$/ha)	6,283	5,801	2,383	734
AEV (\$/ha/yr)	503	464	191	59
IRR (%)	21.7	60.9	13.0	16.2
B:C Ratio	1.96	6.9	2.62	1.51
<i>Carbon Impacts</i>				
Net added biomass (ton/ha)	43.39	40.32	86.72	107.46
Net added Carbon (ton/ha)	21.26	19.76	42.49	52.66
Net added tCO ₂ e/ha	77.95	72.44	155.8	193.07
LEV at \$5/tCO ₂ e (\$/ha)	6,703	6,192	3,225	1,777
IRR at \$5/tCO ₂ e (%)	22.9	69.4	16.0	45.9
LEV at \$30/tCO ₂ e (\$/ha)	8,808	8,148	7,501	6,950
IRR at \$30/tCO ₂ e (%)	29.6	Undefined	136	Undefined

Notes: (1) Undefined IRRs occur because Carbon payments would make the returns greater than the costs for all years, so no IRR exists. (2) Results presented here based on spreadsheet analyses V7, updated 30 May 2018

The preliminary results from the financial analysis of the four forest management systems based only on market costs and prices indicate that all of them have positive economic returns based on land expectation value (LEV) and internal rate of return (IRR). In fact, the LEVs and IRRs are quite large, indicating that forestry opportunities in Laos are quite promising—among the best in the world. The addition of some payments for Carbon storage in terms of tCO₂e make the economic returns even greater, at \$5 per tCO₂e, and of course much greater at \$30. Spreadsheets were developed for each of these management regimes, and have been updated several times for

this report. The most current versions are available from Cubbage, Carle, Vongsouthi, or Danyo via the World Bank Lao PDR upon request. The team contacts can be found in Annex 11.

As an indicator of plantation investment performance measured by LEV and IRR returns in Brazil, USA, Finland, New Zealand, China, Vietnam were compared with Lao PDR, which appeared competitive as an investment opportunity, subject to stable and transparent investment policies and practices. As an indicator of risks and environmental and social responsibility (CSER), Standards and Poor's graded countries on their investment classification and examples were given for investment grade and speculative grade. Lao PDR was not graded. According to Transparency International's Global Scale of Corruption and Transparency Measures (2013) in 177 countries, Lao PDR was ranked 123rd.

Concluding remarks included: all production models showed positive returns and promising forestry investment opportunities; carbon/CO₂ adds to the returns, but potential returns must be tempered against the stability of governance and investment risk. The presentation by Mr. Fred Cubbage is available in Annex 7

DISCUSSION ON TECHNICAL SESSION 2: ECONOMIC MODELS AND CARBON PAYMENTS

Anonymous commented that industrial plantation development was essential for SFM of the wider forest resources of Lao PDR, however, in the past there have been some difficulties. Severely degraded PFA forest lands can be used by local communities for gardens, shifting cultivation, livestock etc, so if these lands are to be identified for plantation development, alternative livelihoods opportunities (agroforestry, rice cultivation, employment etc.) need to be addressed by the plantation investor or displaced peoples could result in increased deforestation/forest degradation elsewhere. It was recognized that downstream processing will create new employment opportunities, diversify livelihoods and may reduce pressure on natural forests. Within the SUFORD-SU project there have been 20,000 small projects for alternative livelihoods which presents a heavy management and logistical work load. A logical partnership between the company investing in an industrial plantations hub could encourage development of outgrower (smallholder) plantation investment with mutual benefits. There is scope for up-scaling agroforestry within industrial and smallholder plantations to provide intermediate returns to farmers and communities. There is a wide diversity in agroforestry options associated with plantation forest investments.

Mr. Ignazio Oliver-Cruz, EU mission commented that a more holistic approach to green growth needs to make a more analysis of benefits and returns on investment to the country that will require taking into account other factors such as urbanization (Lao PDR 2nd fastest in Asia) and other metrics of benefit sharing such as non-timber forest products (NTFPs) or local populations employed.

Mr. Chris Flint, Mekong Region Land Governance commented that the stumpage prices for the species list given in the Participatory SFM model seemed low and should be checked.

Heiko Woerner, Senior Advisor, Timber Legality Assurance System, Lao-EU FLEGT Project,

Lao PDR commented that there have been no representative prices for standing stumpage from PFAs since 2012, so there was no benchmark prices for natural forest species other than salvage logging from Conversion Forests or illegally harvested and traded wood. This supported his earlier comment in the earlier session that a wood industries and marketing study was needed in the Lao PDR domestic market.

Mr. Thongsavanh Soulinamat, Lao Wood Processing Industries Association and Wood Industries Cluster, Lao PDR commented that the economic analyses would allow the future forest investment opportunities to be assessed based upon investment potential, carbon sequestration potential and other factors (ecosystem services, employment, livelihoods etc); Who would decide to invest? Is there availability of capital? What incentives are needed to stimulate investment in the sector? Should investment be through international financial institutes? What about an assessment of degraded forest lands to ascertain what land is available for plantations? What species will best grow there? What market opportunities? What diversity of products? What business models? Which investors (corporate or smallholder)? What added value? Thongsavanh explained about his ongoing development of ‘business model factory’ that would look into supporting smallholder plantations to provide raw materials and improve downstream wood processing based on market needs. He added further that for LKS there is no clear market information, ineffective auction process and a confusing and unstable timber price for LKS. It is important to have market information that leads wood industries so that products are designed based on market demand, thus ability to sell with profits.

Mr. Michael Brady, Senior Operations Officer, Forestry, International Finance Corporation (IFC), Jakarta, Indonesia commented that it was good to see practical economic analyses, which the World Bank and IFC use as the basis of decision making. This sort of information is particularly useful for the Forest Plantation and Restoration Promotion Division of the Department of Forestry and to be recognized by other decision makers more broadly, who decide on future forestry investments in Lao PDR. This sort of information is also very useful for use by Dr. Somvang Phimmavong, Faculty of Forest Sciences, the National University of Lao PDR in their teaching forest economics courses. Where are we for Lao PDR in terms of providing training on forest economics so that forest managers have this kind of information when making decisions on forest investment? **Mr. Fred Cabbage response:** Forest economics training is critical for forestry investors and forest businesses to make rational and responsible investment decisions. Smallholders may not be trained formally in forest economics, but they adopt very practical applications of economics in their decision-making and risk assessment given the very limited capital constraints that they have to make investments and provide for their livelihood.

Dr. Somvang Phimmavong, Deputy Head of Department of Forest Economics and Wood Technology, Faculty of Forest Sciences, the National University of Lao PDR, Vientiane, Lao PDR commented that he was proud to see the real practical forest economic analysis done for Laos by a very well-known professor. The current approach of forest economic analysis paid attention to investment analysis, but how the forestry industry interacts with the rest of the domestic economy has been either overlooked or poorly understood as this requires a huge set of data and resources. Nevertheless, this type of information is also crucial for the decision makers and staff working to understand and it is important to shape sustainable forestry investments in Lao PDR. It should be noted that taxes and formal/informal fees along the value chain throughout Laos are not fixed and remain very dynamic compared to the current regulations. Taxes and fees play a

large role in the expenses of timber producers such as plantation owners, sawmills, etc. These fees are key reason why a sawmill in Lao will not be financially viable – if the sawmill must pay all the taxes as required in government regulations. Some smallholder plantation owners have no access to market so no return on their investment. Additionally, he commented that there was little support for production forestry, a major potential for green growth in the National Green Growth Strategy and encouraged review and comments. Agroforestry was recognized as an important source of benefit for alternative livelihoods but recognized that the diversity of agroforestry models made it difficult to model.

Mr. Tim Dawson, Expert, FLEGT and REDD Unit, EU-FLEGT, European Forest Institute, Barcelona, Spain commented that corporate industrial plantation investors would need a minimum feasible scale and access to large areas of land and questioned whether these areas existed in Lao PDR. It was important to have strategic environmental and social safeguard requirements outlined in our report. Mr. Fred Cabbage response: estimated that a minimum 20,000-40,000 ha of land suitable for planting would be needed as a strategic investment. SUFORD-SU had done an assessment and estimated that 800,000 ha was suitable for reforestation in 41 PFAs but on the ground discussions with local communities would ascertain how much was available/accessible. Reputable companies do conform to ESIA standards and their shareholders do require a commitment to CSER. The World Bank as a guideline for environmental and social safeguards. **Mr. Peter Fogde, CEO, Stora Enso Ltd, Vientiane, Lao PDR** added that the area required to justify an investment in a pulp mill would need to be 50,000-60,000 ha with associated outgrower (smallholder) plantations as an additional plantation resource.

Anonymous reconfirmed that SUFORD-SU had assessed 800,000 ha suitable for reforestation in 41 PFAs with people living in and adjacent to the areas.

Mr. Peter Fogde, CEO, Stora Enso Ltd, Vientiane, Lao PDR asserted that the area required to justify an investment in a pulp mill would need to be 50,000-60,000 ha with associated outgrower (smallholder) plantations as an additional plantation resource.

TECHNICAL SESSION 3: PUBLIC-PRIVATE PARTNERSHIPS AND ANALYSIS OF THE REGULATORY FRAMEWORK

Mr Jim Carle, Forest Management Consultant, the World Bank presented an introduction to Public-Private Partnerships for Forest Restoration and Reforestation. The 8th 5 Year National Socio-economic Development Plan (2016-2020) identified the private sector as an engine for growth in the market economy in Lao PDR. The PPP mechanism was considered appropriate for public infrastructure and rural development services investments as the private sector can bring funds, innovation, efficiency, creativity and commitment to deliver value-for-money of otherwise public services.

Each PPP needed to define the roles and parameters for agreements on duration of the contractual relationship, allocation of risks, maintenance of fixed and operational assets, the roles of partners and the funds structures and payment arrangements based upon delivery of services and outputs/outcomes.

The proposed frame for the long term is to have PPPs as the regular procurement mechanism at all levels of Government and other public entities which will be required to initiate, develop, approve, tender, negotiate, execute and monitor PPP projects within their mandate. A PPP Development and Knowledge Centre is being set up in MPI to advise and support public entities to understand and implement PPP arrangements, do value-for-money assessments, cost-benefit analyses, financial structuring and provide guidance in preparation of agreements. The Ministry of Finance would evaluate affordability and long-term impact on public finances and as necessary approve PPP projects ensuring adequate financial support according to clear and transparent criteria. A PPP Decree (7th Draft), Policy and Manuel are all under preparation to define legal, policy and institutional roles, responsibilities, implementing guidelines and procedures.

The conceptual process phases for PPP preparation was outlined including the project Identification Phase (project sheet, Government agency Management Approval); Assessment Phase (pre-feasibility study, EIA study, Social and Economic Cost Benefit Analysis, Value-for-Money Analysis; due diligence and risk assessment, and affordability and sovereign liability check); Approval Phase (preparation by Government entity with PPP Development & Knowledge Centre, appraisal and approval by the Investment Board); Procurement Phase: (tendering and documents, qualification criteria and check of qualification of bidders, request for proposals, evaluation criteria, draft PPP contractual agreement, risk allocation and mitigation matrix); Contracting Phase (contractual and financial close); Management Phase (PPP Management Plan, progress reports, notice of commencement); and Monitoring Phase (monitoring and audit reports).

PPP case studies in restoration and reforestation being evaluated around the globe include those in the restoration in the Brazilian Amazon; peatland restoration in Indonesia; SFM in wetlands in Chesapeake Forest in the USA; SFM in model forests in Canada; co-management of forests, Saskatchewan, Canada; reforestation and restoration in the Philippines; and multi-purpose reforestation in Australia. Lessons will be learned from these case studies and PPP agreements that may be appropriate in Lao PDR.

The different interests of partners in PPP partnerships are summarized in Table 2

Table 2: Different interests by parties to PPP partnerships

Public Interests	Private Interests	People Interests
<p>On behalf of Lao People:</p> <p>Sustainable supply of Wood & NWFPs for economic development of forests & forest industries sectors</p> <p>Sustainable provision of Forest Ecosystem Services (C sinks, biodiversity soil & water, recreation etc)</p> <p>Sustainable capture of forest & forest industry-based rentals/funds</p> <p>Sustainable socio-economic development (reducing poverty, increasing food security, sustainable livelihoods, employment)</p>	<p>On behalf of shareholder investors:</p> <p>Return on investments with corporate social & environmental responsibility</p> <p>Green investments in wood, NWFPs, Ecosystem Services</p> <p>Stable long-term investment policies, laws, regulations</p> <p>Developing & maintaining assets</p> <p>Sustainable growth & long-term return on investments (profits) for shareholders</p>	<p>On behalf of local communities:</p> <p>Reduced poverty, increased food security, sustainable livelihoods</p> <p>Increasing resilience to CC, markets etc</p> <p>Access to community development funds to maintain roads & social services</p> <p>Access to stable work & income</p> <p>Participation in planning & development of communal lands</p> <p>New opportunities (outgrowers)</p>

It was critical for partners to understand and respect their different values, interests and perspectives and trust the commitment to the partnership and communicate and collaborate in a transparent manner to ensure that benefits were apportioned appropriately. The presentation by Mr. Jim Carle on PPP is available in Annex 8.

Mr. Jim Carle on behalf of Dr. Hilary Smith, Forest Governance Consultant to the World Bank presented an Analysis of Regulatory Framework for Scaling-up Certification, Timber Legality and Public-Private-People Partnerships. Forest Management certification is voluntary, so does not need to be mandated. Although there are no explicit regulatory barriers to forest management gaps in the regulatory frame unclear regulations make compliance difficult for participants and auditors. There is no definition of SFM in regulations or laws, but forest management regulations have not been effective in achieving SFM in PFAs, resulting in PMO 31. it is necessary to define SFM in the new Forest Law; MAF promulgate a legal instrument to promote certification; and establish a national certification standard that applies to PFAs supported by regulations and skilled forest managers.

In corporate industrial plantations forest management certification has provided a good option to demonstrate sustainability and social, environmental and economic responsibility. Availability of suitable land for industrial plantation investment is critical, but insufficient land information is available to identify suitable and accessible land; land access rules are unclear, inconsistent and can be contradictory causing confusion; and land access options are too narrow and prevent innovative partnerships between companies and land owners and communities. The

Environmental Protection Law and social policies are complex and inconsistently applied at different levels of governance or between provinces; excessive regulations, some of which do not seem appropriate for plantation production systems; unclear regulations lead to misinterpretation and misapplication; inadequate technical knowledge about plantations within ESIA agencies; and limited monitoring of company environmental and social performance is carried out in accordance with ESIA's due to limited capacity. Smallholder plantations are mostly “informal” without land registration or a certificate so they can't meet forest management certification standards for legality. Most smallholder plantations are teak which attracts extra regulations as an indigenous plantation species, which makes compliance difficult. Many regulations do not seem appropriate for smallholder plantations. They present a small risk, but certification costs are too high and the benefits and risks too low so smallholder plantation certification in Lao PDR has not been sustainable, even with external support.

Supply and value controls of wood from PFAs involves many actors from the Government to the private sector; there are many regulations, none of which cover the entire supply/value chain and can be poorly linked; industry has limited capacity to implement supply chain controls. In corporate industrial plantations most companies have vertically integrated businesses so relatively simple supply chain control, but if they source wood from smallholders or outgrowers these sources of supply will need to be addressed for sustainability. When there is a direct relationship between grower and purchaser, CoC certification would likely be encouraged to improve value chains and benefit distribution. CoC certification for smallholders have more complex supply/value chains with many small and medium scale enterprises that lack support from the policy and regulatory frame; the supply chain can largely be informal; limited capacity to develop supply chain control systems; and the pressure from the insatiable demand for wood from China, Vietnam, Thailand and Korea allows maintenance of the status quo. Attempts at smallholder group certification for teak, supported by external support have not been successful because smallholders do not conform to prescribed silvicultural treatments or traditional rotation lengths so predicting wood resource flows and regulatory of supply is not possible, so this risk is reflected in prices achieved. There have been conflicting policies and practices between MOIC and MAF with regards to small and medium enterprises

Scaling up certification requires promotion of FM and CoC certification and a definition of SFM in the Forest Law; a national certification standard supported by regulatory based and skilled workforce; supply chain analysis and regulatory mapping to understand the actors, flow of wood, legal requirements and barriers to compliance; revise regulations that connect supply chain elements with clear documentary evidence; revise and simplify policies and regulations to enable compliance; simplify regulations for smallholder plantations to enable them to meet legality requirements and help them to attain forest management certification or legality assurance; and promote small and medium sized enterprises to link to grower groups.

The scope of the TLAS under the Voluntary Partnership Agreement (VPA) is all wood, from all sources to all markets (domestic and international) and applies to PFAs, Conversion Forests, plantations (corporate and smallholder), trees outside forests, agroforestry, confiscated wood and wood products imports. Once ratified by the Government and the EU, the VPA and the TLAS become legally binding. In the interim, a Ministerial Instruction on the method for an implementation of a TLAS has been drafted for comment; a draft text has been included in the draft new Forest Law; and a checklist of other tasks required for implementation of the TLAS has

been prepared.

With regards to PPPs, in addition to the introductory presentation the issues include: there are existing regulations that support this approach in principle but there are inconsistencies and gaps; social and environmental safeguards need to be agreed; the role of people in the partnerships need to be articulated; distribution of benefits need to be clarified; and the National Green Growth Strategy was inconsistent with other policy and planning documents and did not support existing land access models (concessions) that has created investment uncertainty. A clear and consistent policy is needed to provide clarity for Government, as stable investment environment for the private sector and certainty for the people. Rules need to be clear for investments in restoration and reforestation so that partner expectations can be met. Accurate land information (tenure, planning, suitability) is needed to ensure that the right trees get planted in the right place by the right investors, at the right time for the right reasons. New land access options need to be piloted but the concession system is the current mechanism for plantation investment and partnership and need to be properly implemented and monitored

To scale up PPP value chains for all products need to be understood with effective strategies and regulations to develop and support them; ownership, sales, marketing rights and benefit sharing models for all products need to be formally agreed by partners to legally enforceable agreements; strong financial systems are needed that support all partners, including the “people”. New mechanisms and supporting regulations will be required; and understand, utilize and embrace formal, informal and customary institutions e.g. for participation and mediation. The presentation by Dr. Hilary Smith is available in Annex 9.

DISCUSSION ON TECHNICAL SESSION 3: PUBLIC-PRIVATE PARTNERSHIPS AND ANALYSIS OF THE REGULATORY FRAMEWORK AND OPEN DISCUSSION

Ms. Thavichanh Thiengthepvongsa, Deputy Director General, Department of Investment Promotion, Ministry of Planning and Investment, Lao PDR highlighted that preparation of the 8th draft of the Decree on PPPs was still on-going as they sought feedback from a broader consultation with key Government offices and sought lessons learned from other countries. The opportunity for PPP for restoration and reforestation is new to MPI but most interested in developments. ADB have been the partner to assist them in promulgation of the PPP Decree, Policy and Manual. The aim is to have the final version of the Decree by July 2018. The PPP Development and Knowledge Centre is under development within MPI but will require support to maintain. Forestry investments and partnerships have some unique challenges, particularly related to land issues and the long-term nature of the investments. Laos is increasingly becoming a market economy where integrated spatial planning is needed to work together. The new Investment Promotion Law and the Small to Medium Enterprise Law emphasized the role of SME in Laos but did not cover smallholder plantation opportunities adequately, but these did need to be recognized as an important forest resource with potential for growth. MPI would need to clarify the modality for working in reforestation under a PPP partnership.

Ms. Dalaphone Sihanath, Lao Agroforestry Project, International Finance Corporation (IFC),

Vientiane, Lao PDR stressed that IFC had been supportive of smallholder plantation registration and certification linking with the wood industries sector. Meeting the requirement under the new regulations to have land and plantation registration within 3 years was difficult for smallholders to achieve. There will be a National Consultation Workshop on Plantation Management in mid-June.

Mr. Michael Brady, Senior Operations Officer, Forestry, International Finance Corporation (IFC), Jakarta, Indonesia stressed that under the PPP partnerships that one agreement may be public-private partnership but there are likely to be many private-people partnerships. It would be difficult to encapsulate all public-private-people agreements into a single partnership.

Mr. Peter Fogde, CEO, Stora Enso Ltd, Vientiane, Lao PDR commented that the current concession agreement with the Government embraced all the dimensions as detailed in Table 2 above, including all the environmental and social dimensions. Any new partnership arrangements may wish to stipulate the partnership agreements more clearly, but the concession system does work in ensuring ESIA and CSER.

Mr. Sousath Sayakoummane, Director General of the Department of Forestry, Ministry of Agriculture and Forestry (MAF) commented that PMO 13/PM that put restrictions on industrial rubber and eucalyptus plantations is being revised by experts following recommendations from the national seminars on smallholder teak management in Luang Prabang in 2017 and on promotion of plantation and rehabilitation to increase forest cover to 70% by 2020, held in March 2018.

Anonymous commented that under a concession agreement all partnership interests are noted and an ESIA is required. The current regulatory frame for SFM in PFAs is adequate, it is the implementation of that regulatory frame that is inadequate. The CoC regulatory frame does not have major issues, it is the implementation that has constraints.

Mr. Peter Schwab, Lao-FLEGT project, DOFI, MAF commented that the Operations Manuel developed under the FOMACOP/SUFORD/SUFORD-SU projects established good SFM standards akin to those required by forest management certification. The experience in Lao PDR is that certification has not had sufficient market incentives to deliver benefits to the grower. The legal and regulatory frame for PPP partnerships depends upon the scale of the operations. Contract farming as an outgrower does not need a legal frame for PPPs, a simple agreement detailing the roles of the partners and the benefits would suffice.

Mr. Tim Dawson, Expert, FLEGT and REDD Unit, EU-FLEGT, European Forest Institute, Barcelona, Spain commented that the Voluntary Partnership Agreement (VPA) derived through a comprehensive country-EU negotiation is extremely unlikely to be terminated.

Dr. Khamfeua Sirivongs, Head of FLEGT Standing Office, DOFI, MAF commented that an article in the new Forest Law will be dedicated to TLAS and the timber legality definition but there is no differentiation between smallholder and corporate industrial plantations, just plantations.

Mr. Thongsavanh Soulinamat, Lao Wood Processing Industries Association and Wood

Industries Cluster, Lao PDR commented that the prospect of PPP partnerships were a positive development and looked forward to wood industries examples including potential public support to wood industries clusters and development of the new business model (upskill labor, modernization of equipment and redesign of wood products) to stimulate the private sector lead in wood industries reforms. His model factory would be available to showcase an example for private and people partnership. Certification is good, but we have to carefully consider whether “certification” added value to processing industries. What the market wanted is good design, sustainable and regular supply of products, and good processing. There is a need to carefully weigh up the benefits and the costs for obtaining certification.

Mr. Bounpone Sengthong, Deputy Director General, Department of Forestry, Ministry of Agriculture and Forestry, Lao PDR queried whether there was some scope for duplication with certification and the FLEGT License required under the TLAS. Could there be certification or FLEGT License under TLAS? According to the GGDPO2, there will be 230,000 ha of forest management certification in PFAs at the cost of the Government. During April/May 2018 the FSC auditor, the Rainforest Alliance is assessing 130,000 ha of PFA at the cost of \$70,000 (\$0.54/ha) but the Government and communities remain unsure of apparent benefits. The study can analyze further what benefits for GoL and the people from forest certification by showcase examples from other countries because price premium from certification has never been realized in Laos.

Heiko Woerner, Senior Advisor, Timber Legality Assurance System, Department of Forest Inspection, Ministry of Agriculture and Forestry, Lao PDR commented that TLAS and certification are not in competition but are complementary. TLAS which is a proof of legality covers all wood from all sources, going to all markets, whether domestic or international. Certification is a proof of sustainability and in cases where companies have already forest management and CoC certification then they qualify for TLAS. The problem with certification of PFAs is that there has been a logging ban since 2012 so the benefits of certification as a SFM tool have not been flowing back to the Government or the villagers. Vietnam can be a good case study.

Mr. Luke McWhirter, Forest Manager, Burapha Agroforestry Company Ltd, Lao PDR commented that large changes to land the concession framework don't necessarily need to be made. Rather, the terms and conditions of new concession licenses can be refined to elaborate any new requirements for environmental, social or other dimensions of SFM. The needs of the different stakeholders in PPP arrangements can already be met, by responsible private sector actors with strong environmental and social policies, within the current concession framework. There are already foreign investment companies operating in Lao PDR that are willing to participate in reforestation through PPP arrangements. However, waiting for PPP legal, policy and regulatory frameworks to be approved may take years, but private sector shareholders and boards can't wait that long. For this reason, there is a risk that the opportunity to utilize investment from responsible companies already operating in Lao PDR to increase restoration and reforestation may be lost. With regards to the National Green Growth Strategy, Burapha Agroforestry Company is happy to work with MPI, NERI and other key stakeholders to strengthen the restoration and reforestation actions.

Ms. Sidavone Chantavong, Forest Coordinator, WWF, Lao PDR commented that WWF supported 200 smallholder teak growers in 22 villages under 4 grower groups to establish about 395 ha of teak plantations under a partnership agreement that could be considered a type of PPP.

When the PPP regulatory frame has been established and being implemented, who will oversee and monitor the PPP responsibilities and benefits?

Mr. Peter Fogde, CEO, Stora Enso Ltd, Vientiane, Lao PDR stressed that for the duration of the workshop, Lao PDR lost another \$270,000/day lost opportunity to their economy. The new pulp mill in Savannakhet province that will commence production of pulp in June 2018 is purchasing 1.5 to 2.0 million green tonnes of plantation grown wood from Vietnam and Thailand per year. This wood should be sourced from Lao PDR not neighboring countries. Reputable companies with funds and with positive CSER reputations are seeking to invest in industrial plantations in Lao PDR, the Government has about 800,000 ha of severely degraded PFA land suitable for forest plantation investment, the Government wish to increase the forest cover to 70% by 2020 and there are many rural communities that are seeking support for their livelihoods and employment. It is time for action.

Mr. Bounpone Sengthong, Deputy Director General, Department of Forestry, Ministry of Agriculture and Forestry, Lao PDR commented that it was good to hear the PPP opportunities for restoration and reforestation. Clarification was sought on where the scale of project and the approval levels, and time periods needed for PPP agreements to be achieved.

Ms. Thavichanh Thiengthepvongsa, Deputy Director General, Department of Investment Promotion, Ministry of Planning and Investment, Lao PDR commented that the draft Decree should be promulgated by July 2018. Smaller partnership agreements are unlikely to justify being involved in the formal PPP process e.g. the private-people partnerships for outgrowers or smallholder plantation development.

Co-chairperson Mr. Sousath Sayakoummane, Director General of the Department of Forestry, Ministry of Agriculture and Forestry (MAF) recognized the active participation of the attendees and concluded that the important follow up actions were:

- Stakeholder feedback to strengthen the draft National Green Growth Strategy;
- Compliance with PMO-15 as a foundation for establishing sustainable forest management, wood industries processing and wood products trade;
- Expansion of participatory sustainable forest management activities in Production Forest Areas;
- Encouragement of Forest Management and Chain of Custody Certification as tools for proof of sustainability across the value chain;
- Promotion of private sector investment in restoration and reforestation in the severely degraded forestlands in Production Forest Areas;
- Assessment of the potential of the principles and procedures of Public-Private-People Partnerships for restoration and reforestation in Production Forest Areas;
- Strengthening of smallholder plantation development and support services;
- Reforming the wood industries sector to upskill labour, modernize equipment, redesign forest products and simplify the value chain;
- Inclusion of the Timber Legality Assurance System for all types of wood from all sources in the new Forestry Law and a Ministry of Agriculture and Forestry Ministerial Instruction to support implementation;

- Implementation of a domestic forest products market study;
- Preparation of a sustainable forest management strategy based upon economic analyses and spatial planning tools;
- Reforming the log auction system; and
- Introduction of formal procedures and legality compliance in Conversion Forests

The full concluding remarks by Mr. Sousath Sayakoummane are available in Annex 10.

The meeting demonstrated an integrated approach between Ministries and key stakeholder groups that provided guidance on how to improve forest resources management to contribute more towards a Green Growth future. The World Bank team were thanked for their studies and presentation and those present were thanked for valuable discussions and feedback. The World Bank and the Department of Forestry welcomed continued feedback. It was highlighted that each presenter had an e-mail on their title slide and welcomed on-going feedback to strengthen their sub-study reports and to strengthen other draft documents including the new Forest Law, Ministerial Instructions, Regulations and the National Green Growth Strategy. The meeting was concluded at 4 pm.

LIST OF ANNEXES

Annex 1: Agenda

Annex 2: List of Participants

Annex 3: Welcoming remarks by Acting Country Manager of the World Bank, Vientiane

Annex 4: Opening remarks by Mr. Sousath Sayakoummane, DG DOF

Annex 5: Presentation on overview of GG ASA by Ms. Manoly Sisavanh

Annex 6: Presentation on SFM by Mr. Jim Carle

Annex 7: Presentation on economic and financial analysis by professor Frederick Cabbage

Annex 8: Presentation on PPP by Mr. Jim Carle

Annex 9: Presentation on Policy and Regulatory Framework by Dr. Hilary Smith

Annex 10: Concluding remarks by Mr. Sousath Sayakoummane, DG DOF

Annex 11: Team contacts

Annex 1 AGENDA

Time	Item	Responsible person
08:00 a.m.	<i>Guest arrival and registration</i>	<i>WB Program Assistant</i>
08:30 a.m.	Welcoming Remarks	- Viengsamay Srithirath, Acting Country Manager - Chairperson (Department of Forestry)
08:40 a.m.	Opening Remarks	
08:50 a.m.	Overview of the Advisory Services and Analytics	Manoly Sisavanh, Natural Resources Management Consultant
09:15 a.m.	Sustainable forest management Components of SFM Production models Certification Verification Forest products market study Value chain reforms	Jim Carle, Forest Management Consultant
10:00 a.m.	Discussion and feedback	
10:30 a.m.	<i>Coffee break</i>	
11:00 a.m.	Financial/economic and Carbon/CO2 analyses of production models Methodology Results Key Messages	Frederick Cubbage, Forest Economist Consultant
11:30 a.m.	Discussion and feedback	
12:00 p.m.	<i>Lunch</i>	
01:00 p.m.	Public-private-people partnerships for forest restoration Current policy/legal/institutional framework Opportunities and roles Cases from other countries Proposed frame	Jim Carle, Forest Management Consultant
01:30 p.m.	Supportive legal, regulatory and policy framework for SFM TLAS Certification (PFAs) Verification (Conversion Forests) PPPs for forest restoration	Hilary Smith, Forest Governance Consultant Presented by Jim Carle
02:00 p.m.	Discussion and feedback	
03:00	<i>Coffee Break</i>	
03:30	Concluding remarks and key feedback	Chairperson and participants
04:00	<i>End of the day</i>	

Annex 2
PARTICIPANT LIST

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Annex 3

WELCOME REMARKS BY ACTING COUNTRY MANAGER OF THE WORLD BANK

Colleagues and Representatives from Development Partners:

First, I would like to thank all of you for attending this validation workshop that will help re-energize the forestry sector. This event is an important platform for policy and investment dialogue that fits well within our support to greener and more resilient growth in Lao PDR.

The World Bank is delighted that Lao PDR is pursuing a greener and more resilient growth path. This is important because the way in which natural, human and financial capital is managed has implications on the quantity, quality, sustainability, resilience, and inclusiveness of Lao PDR's growth, now and in the future.

The forest sector is critical for Lao to shift its growth and prosperity trajectory from one based on unsustainable natural capital use to sustainable natural capital reinvestment. Legal certified timber will allow the sector to create export opportunities and jobs, support downstream industries like furniture, while protecting watersheds and buffering protected areas important for tourism.

We are supporting the Government in its on-going effort to develop a National Green Growth Strategy for 2030 that will reinforce implementation of priority activities in the 8th National Socio-Economic Development Plan and guide the 9th and 10th Plans far into the future. This work builds on a multi-year, multi-sector strategic engagement that has been gathering momentum.

We have included efforts to address some of the green growth challenges in our Country Partnership Framework with Lao PDR. We are supporting greener growth in the forest sector through analytical, investment and policy operations such as the Green Growth Development Policy Financing series, the SUFORD investment project, REDD Readiness and an emerging large-scale emissions reduction program in northern provinces, and the Second Lao Environment and Social Project. We have also been starting up discussions on potential next-generation financing that takes an integrated approach to Natural Resources Management. Analytical work is critical to our investment and policy dialogue.

This is why we look forward to the wisdom of those collected in the room today to guide the shape of the final report on sustainable forest sector development. This work you are discussing today should help Lao PDR, the Bank, and partners prioritize the next decade's actions in terms of investment, institutions, information, and incentives.

Again, we thank you for coming, and look forward to the productive discussions to be held today.

Annex 4

WELCOME REMARKS BY MR SOUSATH SAYAKOUMMANE, DIRECTOR GENERAL, DEPARTMENT OF FORESTRY, MINISTRY OF AGRICULTURE AND FORESTRY

Dear Ms. Viengsamay Srithirath, the Acting Country Manager for the World Bank Office in Lao PDR; Dear Colleagues, Ladies and Gentlemen

First of all, on behalf of the Lao forestry sector, I would like to extend my sincere thanks to the World Bank for providing long-term continuous support to the Government of Laos, particularly to the forestry sector in order to maintain and manage the Lao forests in effective and sustainable manner.

At this occasion, my heartfelt thanks should be also extended to the World Bank Office in Lao PDR and its forestry team for conducting comprehensive studies that encompass many areas related to sustainable forest management; and thank you very much for inviting me to chair this important workshop, for which I am very pleased and honored.

Dear Colleagues, Ladies and Gentlemen,

As we all know that forests and forest resources have played a vital role for sustainable development and poverty eradication in Lao PDR. The importance of forests has extensively magnified since Government of Laos adopted and localized the UN Sustainable Development Goals into the National Socio-Economic Development Plan and related strategies which are intended to achieve along with the development and implementation of the Green Growth policy framework.

In spite of the fact that magnificent efforts were paid for, it was really unfortunate that our forests and forest lands were carelessly utilized in the last few decades which apparently led to massive deforestation and forest degradation and consequent negative social and environmental impacts. This has become a chronic and complex issue which is unlikely to be addressed with a single solution.

Dear Colleagues, Ladies and Gentlemen,

With increased international environmental concerns and commitments to address the mentioned problems, while adopting the UN SDG, in May 2016 Government of Laos bravely decided to combat and immediately cease illegal logging and timber trading by issuing the PM Order 15, and continues paying efforts to enhance forest governance and maximizing ecological services and values of forests for increased social, economic and environmental benefits in the near future.

In this connection, Government of Laos with supports and assistances from development partners has committed to do and have initiated many things tangibly in order to achieve sustainable forest management. Notably, very recently, the forestry sector has committed to deliver a set of policy reforms as part of the World Bank's Green Growth Development Policy Operation Series in order to develop and implement the Timber Legality Assurance System (TLAS), expand areas under forest certification and upgrade at least two National Protected Areas to become National Parks.

Besides, efforts have also been given to the development and implementation of the National REDD+ Strategy and PRAPs; the amendment of forestry law and updating Forest Strategy to accommodate these changes.

Dear Colleagues, Ladies and Gentlemen,

Knowing that issue related to deforestation and forest degradation is controversial embedded with social, economic and environmental dimensions and solving such an issue, therefore, requires a holistic solution with integrated approaches. To find such solution, Ministry of Agriculture and Forestry has requested technical assistance from the World Bank to provide advisory services and analytics which involves 6 sub-studies encompassing related subject matters.

Up to date, these studies have been intensively conducted by the World Bank Expert Team and the initial results have come out, which need to be consulted with and commented by all concerned partners. This is the main objective for our being gathered here today.

For this reason, I would consider the workshop as very important and would like to encourage your active and constructive participation in this workshop and contribute to improvement and refinement of initial results of the studies. Without further due, I declare the workshop to open from now on.

Thank you very much.

Annex 5

PRESENTATION BY MANOLY SISAVANH: “OVERVIEW OF ADVISORY SERVICES AND ANALYTICS”



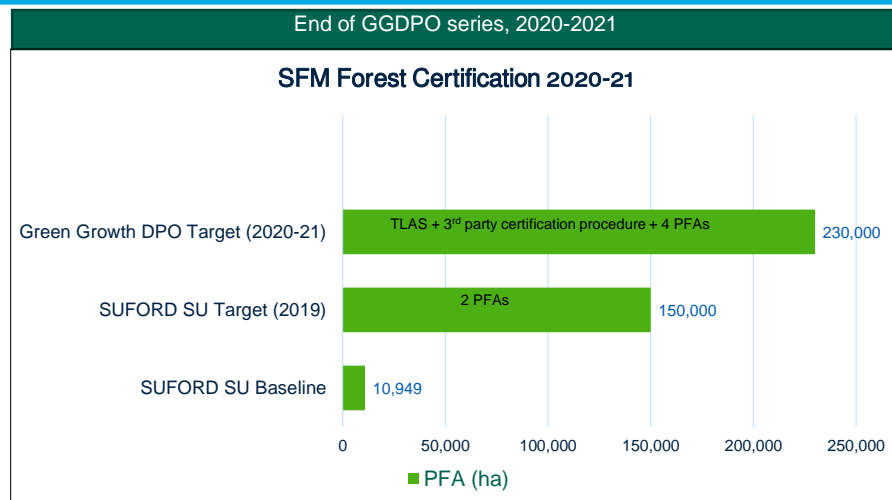
Multi-Stakeholder Validation Workshop on May 17, 2018

Manoly Sisavanh, Natural Resources Management Specialist
E-mail: msisavanh@worldbank.org

Overview on Green Growth Advisory Services and Analytics (ASA)

Green Growth Development Policy Operation Series			
Policy Actions			End of Program Results Indicators
DPO1 Prior Actions (to be closed)	DPO2 Prior Actions (under preparation) Action completion by Sept 2018	DPO3 Triggers (Tentative)	(End of DPO series, 2020-21)
Pillar 3. Incorporating green growth in selected sectors			
<i>Policy Track 3.2. Improving forest resources management</i>			
Prior Action #6: The Recipient, through the Prime Minister, has strengthened strictness of timber harvest management and inspection, timber transport and trade in order to control illegal logging in infrastructure areas and timber harvesting, processing, and trade, as evidenced by Order No. 15/PM dated 13 May 2016 .	Prior action #11: The Recipient, through MAF, has required a Timber Legality Assurance System that introduces a definition of legality for timber and timber products and a methodology for “supply chain control and verification” that meets international standards, and mandates DOF as the body responsible for international obligations and DOFI as the implementation and enforcement body for the TLAS, as evidenced by Ministerial Instruction No. XX, dated X month 2018 . (MAF DOFI, DOF)	(Indicative) Revised Trigger #8: The Recipient, through MAF, has issued a ministerial decision that legally establishes an effective and transparent third-party Sustainable Forest Management certification procedure for Production Forest Areas (PFAs) that includes group certification. (MAF DOF)	Results Indicator 12: Increase in hectares of PFAs with certified Sustainable Forest Management operations based on Lao PDR regulations Baseline: 10,949 hectares in two forest management units (January 2017) Target: 230,000 hectares in four PFAs certified

Overview on Green Growth Advisory Services and Analytics (ASA)



2 Manoly Sisavanh



Overview on Green Growth Advisory Services and Analytics (ASA)

- Prime Minister's Order No. 15 on Strengthening Strictness of Timber Harvest Management and Inspection, Timber Transport and Business
- In response to the request of the Government and in consultation with key stakeholders (MAF, DOF, DOFI, SUFORD-SU, MOIC, PFS, POICs, Private Sector, Development Partners, NGOs, Academia, Scientists)
- **Objective:** to provide advisory services and analytics for reforming policy and regulatory frameworks related to forest management and timber business in Lao PDR
- Period: June 2017 to December 2018

ນາຍົກລັດຖະມົນຕີ	ເລກທີ 15 ກອ ນະຄອນຫຼວງວຽງຈັນ, ວັນທີ 13.05.2016
<p>ຄຳສັ່ງ</p> <p>ວ່າດ້ວຍການເພີ່ມຄວາມເຂັ້ມງວດ ໃນການຄຸ້ມຄອງ ລະບົບ ກວດກາ ການສູດຕົ້ນໄມ້, ທີ່ຕາມບ້ານໄມ້ ລະບົບ ຄຸ້ມຄຸ້ມໄມ້</p>	
ສະຫຼຸບການສຳນືກສາດນາຍົກລັດຖະມົນຕີ	ເລກທີ 769 ກອ ນະຄອນຫຼວງວຽງຈັນ, ວັນທີ 1.6.2016
<p>ຮັກສາການ</p>	
ນາຍົກລັດຖະມົນຕີ	ເລກທີ 110 ກອ ນະຄອນຫຼວງວຽງຈັນ, ວັນທີ 01.06.2016
<p>ສຳນືກສາ</p> <p>ວ່າດ້ວຍການແຕ່ງຕັ້ງຄະນະສະເພາະກິດພັດທະນາການ ລະບົບ ແບບການ ຈັດຕັ້ງປະຕິບັດຄຳສັ່ງ ເລກທີ 15/ນຍ ຂອງນາຍົກລັດຖະມົນຕີ ໃນອະນາໄມສາດ</p>	
ກອງຊ່ວຍເຫຼືອ ລະບົບ (H1)	ເລກທີ 005-4 ກອ ນະຄອນຫຼວງວຽງຈັນ, ວັນທີ 09.06.2016
<p>ດຳລະດັບ</p> <p>ກ່ຽວກັບ ການຈັດຕັ້ງປະຕິບັດຄຳສັ່ງ ຂອງ ນາຍົກ ເລກທີ 15/ນຍ, ວັນທີ 13.05.2016 ຂອງ ນາຍົກ ການເພີ່ມຄວາມເຂັ້ມງວດ ໃນການຄຸ້ມຄອງ ລະບົບ ກວດກາ ການສູດຕົ້ນໄມ້ ເປັນບ້ານໄມ້ ລະບົບ ຄຸ້ມຄຸ້ມໄມ້</p>	
ລະຫວ່າງການ	ເລກທີ 005-4 ກອ ນະຄອນຫຼວງວຽງຈັນ, ວັນທີ 09.06.2016
<p>ສຳນືກສາ</p> <p>ວ່າດ້ວຍການແຕ່ງຕັ້ງຄະນະສະເພາະກິດພັດທະນາການ ລະບົບ ແບບການ ຈັດຕັ້ງປະຕິບັດຄຳສັ່ງ ເລກທີ 15/ນຍ ຂອງນາຍົກລັດຖະມົນຕີ ໃນອະນາໄມສາດ</p>	

3 Manoly Sisavanh

Six Substudies and Workshops

Six Substudies:

- Sustainable Forest Management (SFM)
- Markets for Certified Wood Products
- Policy Support to SFM, CoC and TLAS
- PPP for Forest Restoration
- Economics of Certified SFM
- Retrospective on Forest Sector Development

Workshops:

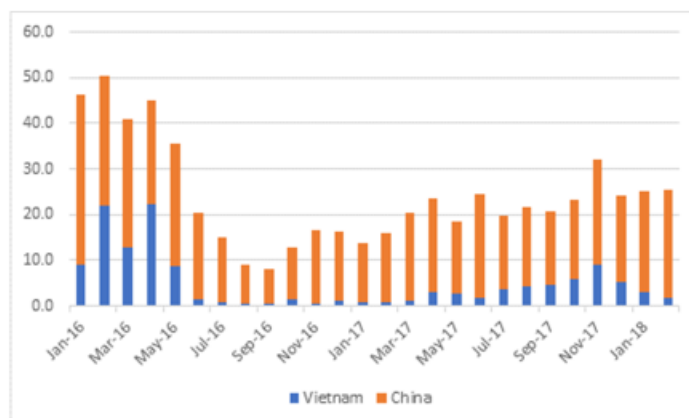
- Multi-Stakeholder Validation Workshop on May 17, 2018: Validation of Sub-studies and key conclusions and recommended actions
- Final Workshop (Policy Level) in November 2018: Presentation of highlights, conclusions and recommendations of Summary Report

Final Summary Report

4



Effect of PMO 15: Strengthening strictness on governance and inspection of timber harvesting, timber transportation and timber business



5 Source: Customs Departments of PRC and Vietnam



Wood Industries Sector Development

- Wood processing is **mandatory** but conversion factors and outturn from Lao sawmills/factories remain **low**;
- MOIC/POIC encourage **upskilling and modernizing** sawmills and factories but a lack of sustainable raw material supply and funds flows makes further investment difficult;
- Sawmills/factories are currently surviving on unsustainable sources of wood from **confiscated or conversion forest wood**, that require transport of up to 300-400km* to maintain supply;
- Encourage **greater use of LKS and planted wood**;
- Encourage wood industries to pursue **CoC certification** to ensure proof of legality and sustainability throughout supply chain and to take advantage of **international market access**.

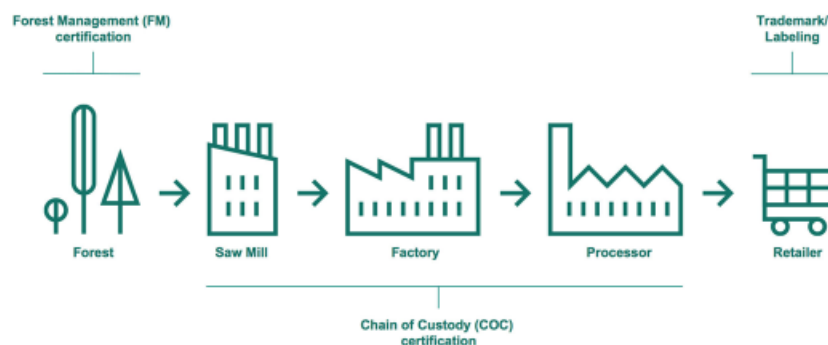


* Savannakhet case

6 Footer Information



Proof of Legality and Sustainability throughout Supply Chain



7 Citation: <https://goo.gl/images/nr3lWd>



Annex 6

PRESENTATION BY JIM CARLE: “SUSTAINABLE FOREST MANAGEMENT”


THE WORLD BANK
IBRD • IDA | WORLD BANK GROUP


PROFOR

Multi-Stakeholder Validation Workshop,
May 17, 2018

Jim Carle, Forest Management Specialist;
E-mail: carle.jim@gmail.com

Content

- Dimensions of SFM
- SFM reforms
- Production models
- Conversion forests & verification
- Dimensions of certification
- Vietnam market study
- Value chain reforms



Sustainable Forest Management: What is it?

- “A dynamic & evolving concept to maintain & enhance the economic, social & environmental values of all types of forests, to benefit present & future generations” (UN General Assembly, 2007)
- “A method of forest management that meets protection and development needs without depleting the forest values; such method also enhances forest values, improves livelihoods, protects the environment, and helps sustain national defence and security (Vietnam Forestry Law, 2017)”
- “Management, preservation, development, utilization and inspection of forest resources and forestland, promotion of regeneration and tree planting, and increase of forest resources aimed to maintain a balance of nature, making forest and forestland stable sources of living and use for people, ensuring a sustainable condition and protection of the environment, water resources, protection from soil erosion and maintenance of soil quality, protecting plants, tree species wildlife and aquatic life, as well as contributing to national socio-economic development (Lao PDR Draft Forest Law 2018?).

2 Jim Carle



Sustainable Forest Management: Scope

- Natural (primary, modified), semi-natural (assisted natural regeneration & planted) & plantation forests (productive & protective) in all geographic & climatic regions & all ecological zones in Lao PDR
- All functions: conservation, protection or production forest areas, including degraded forests & landscapes requiring restoration
- Provision of a range of forest products (wood & non-wood) & ecosystem services (see later) to maximize value & benefits (more than harvesting)
- Scope can be applied at national, provincial, district or specific production, conservation or protection forest areas



3 Jim Carle



Different Forest Functions & Characteristics

Forest Land -use	Natural Forest (GOVERNMENT)			Plantation Forest (PRIVATE)		Non-forest (SM)
	Primary	Modified	Degraded	Native Spp.	Exotic Spp.	Trees outside forests
Management Description	Native spp., no human activity, ecology undisturbed, NBCAs, PAS Eco-tourism	Natural regeneration native spp. visible human activity & disturbance: PAS, PFAS	Natural regen, ANR, planting potential, severe disturbance PFAS	Planting majority (> 50%) native spp. in rows or clusters e.g. Teak	Planting of exotic species (single or few), even aged e.g. Euc., Acacia	Smallholder agroforestry, plant urban areas, roadsides, rice bunds, homes Spp. diversity
Multi- functions						
Wood, fibre, fuel	Negligible	Moderate	Low	High	Very High	High
NWFPS	Low	Moderate	Low	Moderate	Low	Moderate
Biodiversity Con	Very High	Moderate	Low	Moderate	Low	Moderate
Water/Soil Prot.	Very High	Moderate	Low	Moderate	Low	Moderate
C Sequester	Negligible	Moderate	Low	Moderate	Very High	High
Sust. Livelihood	Low	Low	Low	Moderate	High	Very High
Employment	Low	Moderate	Low	Moderate	High	Moderate
Spiritual/Custom	Very High	Moderate	Very Low	Low	Negligible	Low
Recreation	High	Low	Very Low	Negligible	Negligible	Negligible

SFM: PFA Reforms

Participatory SFM standards & guidelines

- Inventory
- Revised Management Plans
- Pre-harvest Inventory
- Harvest Quota
- Manage Restoration, (ANR, Suppl. Planting)
- Alternative livelihoods (Village Development Funds)
- Protection from encroachment, shifting cultivation, livestock, illegal wood/NWFPS
- Greater use of Lesser Known Species
- Up-scale Forest Management Certification
- Up-scale CoC Certification by Wood Industries
- Wood Industry/Manufacturing Reform (upskill labour, new equipment & designs)
- Improved supply & value chains (remains complex)
- Forest Products access to Domestic AND International Markets



SFM: Industrial Plantation Forest Reforms (1)

- Recognize fundamental difference between natural and plantation forests owners/investors
 - State vs Private Enterprise ownership & decision making
 - State vs Private crop ownership & decision making
 - Business objectives
 - Extensive vs Intensive management
 - MAI growth rates: natural 3m³/ha/yr; plantation 30+m³/ha/yr
 - SFM standards different
 - Heterogeneous vs Homogeneous
 - Specialist wood industries equipment
 - Different market opportunities



6 Jim Carle



SFM: Industrial Plantation Forest Reforms (2)

- Revisit past bias against short rotation, high yield forest plantations
- Pursue PPP opportunity in PFAs to expand plantation resources on unstocked forest lands
- Potential & promotion of outgrower schemes
- Recognize wood, NWFP & ecosystem services benefits of plantations
- 2016 Investment & Planning Law: incentives (tax holidays, fees etc)
- New Forest Law: Clarify & simplify investment, operational, supply & value chain, & wood industries procedures for industrial plantations
- ESIA monitoring & reporting

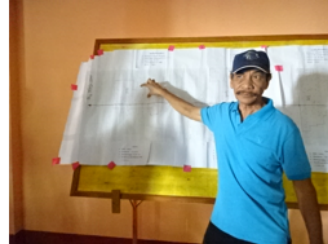


7 Jim Carle



SFM: Production Models

- Production Models prepared for financial, economic, carbon & CO2 emission analyses (Fred Cabbage to present results)
 - Participatory SFM in Production Forest Areas (PFA)
 - Corporate Industrial Eucalyptus Plantation
 - Outgrower Smallholder Eucalyptus Plantation
 - Smallholder Teak Plantation (Current)
- Proposed model:
 - Smallholder Teak Plantation (Potential)
- Method (Manoly & Anolay)
 - Model Templates set up
 - Planning, preparation, tending, silviculture
 - Costs, productivities, growth rates (MAIs)
 - Harvest cycles (PFAs), rotations (Plantations)
 - AACs, harvest yields, forest products mixes
 - Standing Stumpage -> LL2 – LL3 value chain
 - Problem to obtain wood industries conversions, outturns, costs, revenues
 - Market survey for export prices



9 Jim Carle



Participatory SFM Model in PFA Natural Forest

- Kathong Neua SFMA under Thapangthong FMA, Dongsithuan PFA, Savannakhet Province chosen as representative of Central-Southern PFAs
- MAI 3.19 m3/ha/year
- 15 year harvest cycle based upon selection logging
- AAC = 48m3/year based on inventory & management plan
- Main management activities
 - Inventory
 - Management plan
 - Pre-harvest inventory/Tree Marking
 - Harvest Qutoa
 - Access Tracks
 - Standing Stumpage (species lists)
 - Harvest, load/unload & transport
 - Log Auction (LL2) (assortment of logs)
 - Transport to Mill (LL3)
 - Village Livelihood Development
 - Restoration



10 Jim Carle



Corporate Industrial Eucalyptus Plantation Model

- Based on information from various Eucalyptus Industrial Plantation companies
- ESIA
- Village & District Development funds & roads
- Use of quality hybrid genetic stock
- Land clearing, site preparation, planting (1100/h)
- Agroforestry Year 1 (Rice)
- Tending (fertilizer, weeding 3 years)
- Fire break maintenance
- Certification
- Commercial thin at 3-4 years, 15m³/ha (80% pulp, 20% veneer)
- Rotation Length 7 years
- MAI 33m³/ha/year
- Harvest at 7 years 233m³/ha (18% pulp, 2% sawlog, 80% veneer)
- Management through the value chain (logs belong to the company)
- Direct delivery of logs from plantation to the mill



11 Jim Carle



Outgrower (Smallholder) Eucalyptus Model

- Based upon pilots of outgrowers linked with corporate industrial plantation hubs already established, supported by IFC
- Company-Outgrower agreement
 - Smallholder contributes the land & labour
 - Site preparation,
 - Planting (1100/ha)
 - Agroforestry (Rice)
 - Fertilizer application
 - Weeding
 - Tending
 - Protection
 - Company contributes
 - Quality hybrid planting stock,
 - Fertilizer,
 - Technical advice (including certification/controlled wood)
 - Market at prevailing market price
- Harvest at 5 years, 90m³/ha, 100% pulp as standing stumpage, roadside, mill



12 Jim Carle



Smallholder Teak Plantation (Current) Model

- Representative of smallholder teak growers in northern Lao PDR
- Smallholdings about 1 ha/grower average, family/farmer owned
- Current practices fit owner land-use, resources (limited funds), time (self-labour), and family needs:
 - Available planting stock not always suitable for site availability
 - Site preparation and plant at 1100/ha (or more)
 - Fertilize/Manure not always applied
 - Weeding done when time available (1-5 years)
 - Form pruning (when labour available)
 - Thinning (in theory 5, 10, 15), generally not done
 - MAI, 9 m³/ha/year
 - Yield 224m³/ha
 - Harvest (in theory 24-25 years) but in reality when funding required for family commitments, standing stumpage, traders, contractors harvest/truck
 - Protection
 - Administration (farmer association)
 - Regulatory costs



13 Jim Carle



Smallholder Teak Plantation (Potential) Model?

- Representative of “potential” for smallholder teak growers in northern Lao PDR
- Model aimed to fit resources (land, time, labour, funds) available to smallholder – **for consideration and feedback**
 - Genetically improved planting stock & site-provenance matching (critical)
 - Site preparation and plant at 625/ha (4x4m or 8x2m in agroforestry) as practiced in Brazil, Venezuela, countries of Central America, Tanzania,
 - Fertilize/Manure
 - Weeding (1-5 years)
 - Pruning multiple leaders & for knot free wood, 1st prune 3-4m, 2nd prune 6 m
 - No thinning to fit with farmer lack of resources & time
 - MAI, 15 m³/ha/year
 - Harvest at 20 years standing stumpage, traders, contractors harvest/truck
 - Yield 300m³/ha, average dbh 35-40cm, 55% sapwood:45% heartwood m³
 - Certification for access to international markets (linked to wood industry)
 - Protection from pests, livestock, illegal harvest (critical)
 - Administration (farmer association)
 - Regulatory costs

14 Jim Carle



Conversion Forests

- Conversion forests relate to salvage of all utilizable wood from forests being cleared for another land-use
 - Highways/roads
 - Hydro-electricity reservoirs
 - Mines
 - Residential developments
 - Agriculture
 - New strategic economic zones
- Nearly all forest production from Lao PDR in recent years has been from Conversion Forests – run of forest species mixes and log sizes
- Significant proportion of Conversion Forest production has been illegal (particularly harvest beyond boundaries)
- Wood does not qualify for certification (sustainability) but 3rd party legality verification, inventory, boundary marking, management plan can prove legality
- Wood from Conversion Forests dominates wood markets and wood industries processing in Lao PDR
- China, Vietnam & Thailand have an insatiable demand for this wood



15 Jim Carle



SFM: Certification Tool for Sustainability (1)

- Independent 3rd Party Assurance of:
 - Consistent, credible and transparent conformity with agreed standards for quality assurance - forest to buyer
 - Sustainable forest management and wood products trade
 - Social accountability
 - Mitigation of environmental Impacts
 - Proof of source of sustainable & legal wood supply
- Types of Certification
 - Forest Management
 - Chain of custody
 - Controlled Wood
- Costs of Certification (vary significantly with size & technical capacity)
 - Global average: Corporate \$3-5/ha; S/holder \$10-20/ha
 - Americas average: > 400,000 ha < \$1/ha; < 4,000 ha = \$10-40/ha
 - Asia average: Corporate \$6-8/ha; S/holder \$20-60/ha
 - Compliance costs vary with corrective actions required



16 Jim Carle



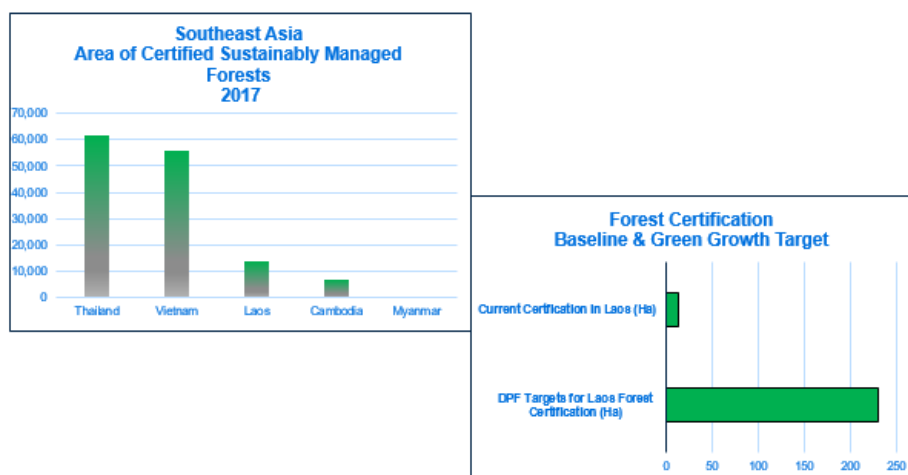
SFM: Certification Tool for Sustainability (2)

- Benefits of Certification:
 - Meets WTO access to markets (developed and developing countries)
 - Access to markets in countries with "Green Policies"
 - Greater transparency/communication, staff morale, community relations
 - Best management practices = production, environmental & social benefits
 - Access to credit (confidence to investors and banks)
 - Corporate image and accountability (board, shareholders, public) CSER
 - Transparency on forest taxes, fees as Government revenues
- Challenges of Certification
 - Costs of certification, audits & compliance to producer but benefits to society
 - Smallholder forest owners disadvantaged (cost, technical, institutional)
 - Developing country producers generally need external funding for certification
 - No guarantee of price premiums (increasingly not)
 - Need forest management & CoC certification in unison to benefit fully
 - Competition from cheaper non-certified and illegal sources of wood
 - No subsidies/incentives to support certification costs (Smallholders)

17 Jim Carle



SFM: Certification Tool for Sustainability & Legality (3)



18 Jim Carle



Vietnam Forest Products Market Study (1)

Vietnam imports of logs and sawn timber in turnover (Million USD)

Year	Logs US\$ Million	Sawn timber US\$ Million	Total US\$ Million
2013	426.9	802.4	1,229.3
2014	505.7	1,212.9	1,718.5
2015	512.0	1,147.5	1,659.5
2016	537.4	749.1	1,286.5
2017	167.6	213.1	380.6

Vietnam Forest Products Market Study (2)

Main countries exporting logs to Vietnam (000 m3)

Country	2013	2014	2015	2016	Q2 2017
Lao PDR	225.8	308.7	321.7	36.2	0.6
Cameroon	177.1	191.1	314.7	420.7	108.9
Myanmar	120.7	56.4	-	-	-
Malaysia	187.4	212.4	206.5	188.5	48.7
US	76.0	61.6	65.7	76.7	24.0
Papua New Guinea	71.5	66.1	105.2	183.1	47.5
Uruguay	59.7	93.3	114.2	77.4	10.5
German	33.8	57.1	77.2	76.2	25.3
Nigeria	14.3	31.8	47.7	85.6	20.3
Belgium	22.0	49.9	74.3	92.9	34.4
Cambodia	0.4	0.5	59.3	139.3	119.0

Vietnam Forest Products Market Study (3)

Main Log species imported into Vietnam from Lao PDR

Year	2013		2014		2015		2016		Q2 2017	
	Volume (000m3)	Value Million US\$	Volume (000m3)	Value Million US\$	Volume (000m3)	Value Million US\$	Volume (000m3)	Value Million US\$	Volume (000m3)	Value Million US\$
Species	225.8	13.4	308.7	149.5	321.7	109.3	36.2	9.6	0.6	1.5
<u>Dalbergia</u>	32.9	84.9	24.3	65.5	2.5	7.2	0.6	1.6	-	-
<u>P. pedatus</u>	9.6	6.7	15.7	11.7	9.3	7.4	2.7	1.4	-	-
<u>Dipterocapus</u>	35.0	6.1	41.0	8.4	12.2	42.7	4.2	0.7	-	-
<u>Paraschorea</u>	20.5	3.7	12.7	2.5	12.0	2.1	3.2	0.5	-	-
<u>Hopea ferrea</u>	11.0	3.2	11.8	3.4	5.6	1.7	-	-	-	-
Teak	8.4	3.0	6.8	2.5	5.9	2.1	1.5	0.5	-	-
<u>Talauma</u>	11.3	2.9	36.9	11.4	25.1	10.2	3.0	0.8	-	-
<u>Cunninghamia</u>	5.3	1.8	12.3	3.4	10.9	3.2	4.3	1.1	-	-
<u>Sindora</u>	4.9	1.7	24.1	8.7	4.9	2.3	0.2	0.1	-	-
<u>Erythrophloeum</u>	2.4	1.7	0.2	0.1	1.3	.9	0.1	0.1	-	-
<u>D. oliverii</u>	1.1	1.6	2.9	4.3	0.5	0.7	0.1	0.2	-	-
Other species	83.6	17.0	120.1	27.7	118.5	28.7	16.4	2.8	-	-

Vietnam Forest Products Market Study (4)

Main Countries Supplying Sawn Timber to Vietnam (000 m3)

Country	2013	2014	2015	2016	Q2 2017
Lao PDR	385.5	494.9	383.1	97.1	2.3
USA	465.7	485.6	474.3	460.4	112.5
New Zealand	185.7	155.4	155.1	164.8	36.4
Cambodia	51.1	153.2	375.0	171.4	102.9
Chile	140.2	137.9	163.6	187.9	53.7
Brazil	57.5	85.9	91.8	110.7	35.8
Cameroon	22.8	23.1	33.8	47.6	17.0
Finland	50.6	35.8	29.9	22.2	6.9
Gabon	19.0	31.4	51.0	58.7	22.9
China	14.7	10.0	7.5	12.9	8.3
German	25.6	43.8	33.0	27.0	6.9

Vietnam Forest Products Market Study (5)

Main sawn timber species imported into Vietnam from Lao PDR

Main Species	2013		2014		2015		2016		Q2 2017	
	Volume	Value	Volume	Value	Volume	Value	Volume	Value	Volume	Value
	(000m3)	Million US\$	(000m3)	Million US\$	(000m3)	Million US\$	(000m3)	Million US\$	(000m3)	Million US\$
Total Lao PDR	385.5	319.8	494.9	410.0	383.1	239.2	97.1	63.7	2.3	5.3
<i>P. pedatus</i>	121.9	135.0	176.8	199.9	90.1	104.3	26.9	30.3	-	-
<i>Dalbergia</i>	49.4	77.9	59.2	93.5	11.6	17.8	1.3	1.8	-	-
<i>Dalbergia con</i>	5.4	21.8	2.1	9.2	0.5	2.1	0.1	0.6	-	-
<i>Sindora</i>	31.1	18.2	5.0	28.9	55.8	32.9	22.3	12.2	-	-
<i>Erythrophloeum</i>	20.7	15.3	18.5	13.9	30.7	23.0	3.8	2.8	1.0	0.6
<i>Azalia</i>	10.9	9.4	14.5	12.6	11.0	9.7	6.8	4.7	1.2	0.8
<i>Talauma</i>	23.5	7.3	22.1	6.7	23.4	7.2	6.2	2.0	1.1	0.3
<i>Pigeum</i>	20.5	4.0	21.1	4.4	28.0	5.4	0.4	0.4	-	-
<i>Xylia</i>	6.2	3.6	3.9	2.3	6.6	3.9	0.9	0.5	1.5	1.1
<i>Parachorea</i>	14.9	3.5	23.0	5.2	18.2	3.5	0.7	0.2	1.7	0.6
Other Species	81.2	24.0	102.8	33.5	107.3	29.3	27.9	8.1	16.4	1.9

Vietnam Forest Products Market Study (6)

Highlights

- Major impact of PMO 15 in both logs and sawn timber volumes and value of exports to Vietnam
- Interest by importers for certified & or legally verified forest products (logs, semi-processed or processed) for access to international markets
- Certification needs to be across the whole supply chain
 - Forest management certification (PFAs and plantation forests)
 - Chain of custody (Coc) across the whole value chain
- Preference for selected species
 - Valuable hardwood species (prior tables)
 - Plantation species (Teak, Eucalyptus, Acacia, Melia)
- Interest in "run of forest" species (as for Conversion Forests)
- Substitution of Lao PDR supply with alternative supply from Cambodia & Cameroon



Value Chain Reforms

- Complex value chain needs to be simplified, clarified & made consistent - technically, institutionally & administratively
- LL2 Auctions require review - in phase with industry needs
- LL2 Auctions need to account for run of forest species mixes
- Guidelines for CoC & value chain procedures from forest – LL3 (DOF)
- Guidelines for CoC & value chain procedures from LL3 – market (MOIC)
- Promote linkages forest management & CoC certification
- Recognize difference between natural & plantation forest products
- Recognize difference between company & smallholder owners
- Strengthen DOF/MOIC/DOFI to provide technical support and monitor across the whole value chain
- Critical to modernize, upskill & redesign wood industry & manufacturing to meet international standards



25 Jim Carie





Annex 7

PRESENTATION BY FRED CUBBAGE: “ECONOMIC MODELS OF PLANTED AND NATURAL FOREST MANAGEMENT AND CARBON PAYMENTS IN LAO PDR”

GREEN GROWTH ASA
on Sustainability of Lao PDR's Forests

ECONOMIC MODELS OF PLANTED AND NATURAL FOREST MANAGEMENT AND CARBON PAYMENTS IN LAO PDR

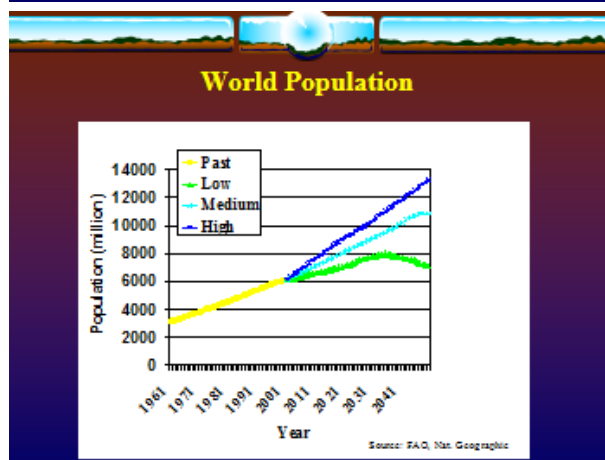
  Presented at: Multi-Stakeholder Validation Workshop, May 17, 2018, Vientiane, Lao PDR

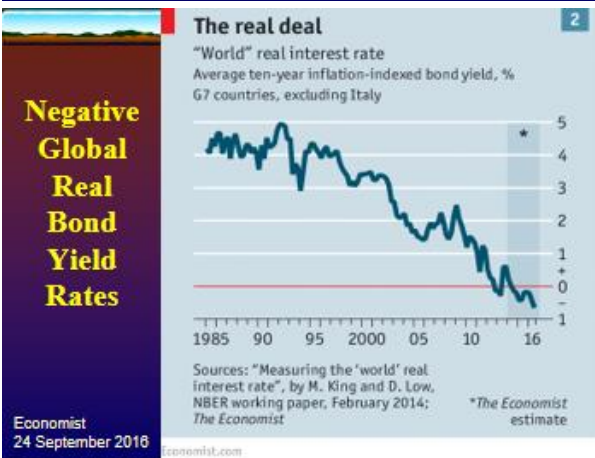
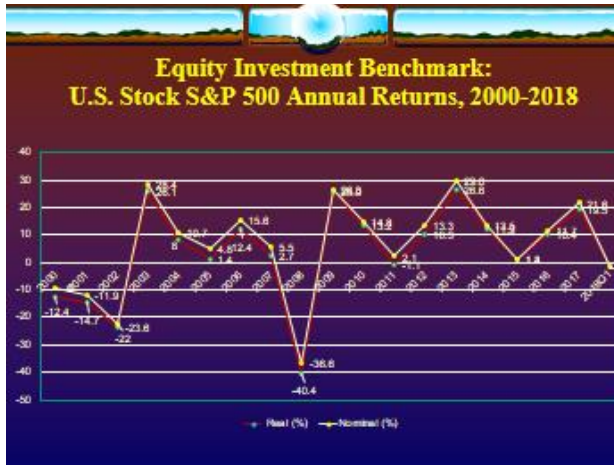
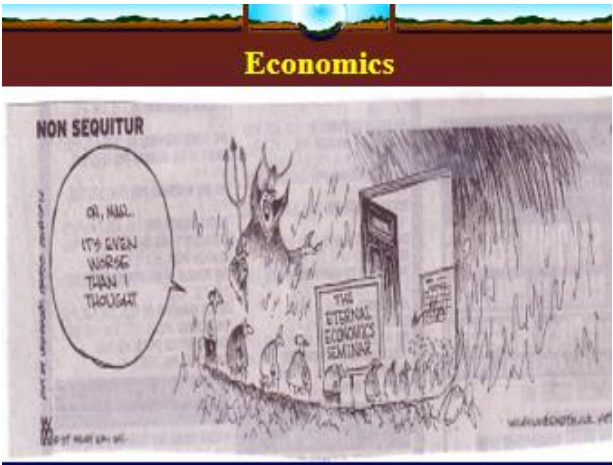
Fred Cubbage, Professor, Forest Economics
E-mail: fredcubbage@yahoo.com

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Outline

- Introduction
- Forest Management Investments
- Economic Analysis Methods
- Lao PDR Returns
- Global Plantation Investment Benchmarks
- Conclusions





WHO WILL OWN THE FOREST? 13

SEPTEMBER 12-14, 2017 | PORTLAND, OREGON

Introduction

Who Will Own the Forest? 13
September 12-14, 2017
World Forestry Center, Portland, Oregon
2017 Agenda in Development—see 2016 Program and Attendee List
[REGISTER HERE](#)

Institutional investors have been allocating part of their portfolios to timberland as they seek diversification, inflation protection, and potentially higher rates of return than the bond or equity markets.

The Who Will Own the Forest? conferences offer a wide range of perspectives on institutional timberland investing, both domestically and overseas. We invite you to join our discussions as we address this maturing and evolving asset class, and explore the issues that will impact the demand for commercial timber, adversely values from forestland, and maximize returns to investors.

This 2½ day conference offers both networking and educational benefits, including continuing education credits for certified foresters, appraisers, attorneys, and CPAs. Day One is focused on North American issues, while Day Two covers the global and emerging markets landscape.

Timberland Assets and Conferences

Harley Langdale Jr.
Center for Forest Business
UNIVERSITY OF GEORGIA
PRESENTS

2017 TIMBERLAND INVESTMENT CONFERENCE

GROWING VALUE

March 1-3, 2017
The Ritz-Carlton, Amelia Island, Florida, USA

Brazil Leads the Southern Cone

brazilian tree industry

Why We Are | Data & Statistics | Forest Tree | Products | International | Sustainability | Press Center | Resources

INFOGRAPHIC: planted trees and their multiple uses

News: **Assault on W. Congo timber: deforestation, human rights issues in security crisis**

Country: **The Congo, in 2016, left more than 100,000 people in need of humanitarian aid**

From the President's Desk: **Myths and facts about the pulp and paper industry**

Data and Statistics: **The Brazilian tree industry (BRI) represents the third largest pulp and paper production capacity in the world**

Resources: **Check out our publications and a selection of our products and services**



Estimating Forest Management Economic Returns

Financial vs. Economic Analysis

- Financial
 - private market prices and costs
 - cash flows as they occur
 - subsidies, taxes, wages at market rates
- Economic
 - social benefits and costs
 - shadow prices when social costs or benefits differ from market
 - transfer payments don't count

Financial Analysis Guidelines

- Financial and Economic Analyses
- Costs, Returns, and Profits
- Steps in Economic Analysis
 - Inputs and timing
 - Costs and prices
 - Physical and cash flow tables
 - Capital Budgeting
 - Reports and recommendations
- Monitoring and Evaluation
- Benchmarking

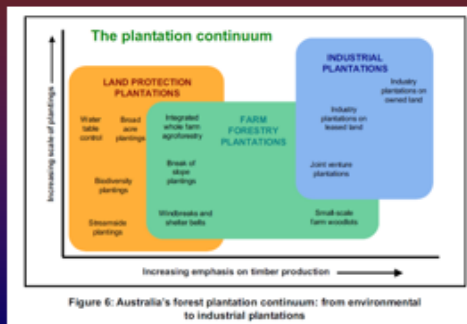
Keys to Timber Investment Returns

- Land purchase / sale / lease prices
- Stand establishment costs
- Management costs
- Timber growth rates
- Rotation length, thinnings
- Timber product prices and appreciation
- Nontimber / carbon / CO_{2e} yields and prices
- Discount rate
- Taxes, subsidies, regulations

Four Useful References

- Cubbage, Frederick, Robert Davis, Gregory Frey, and Diji Chandrasekharan Behr. 2013. Financial and Economic Evaluation Guidelines for Community Forestry Projects in Latin America. PROFOR & the World Bank, Latin America and the Caribbean Region. <http://www.profor.info/knowledge/community-forestry-enterprise-competitiveness-and-access-markets-mexico>.
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Forest Plantation Classification



Callon et al. 2004

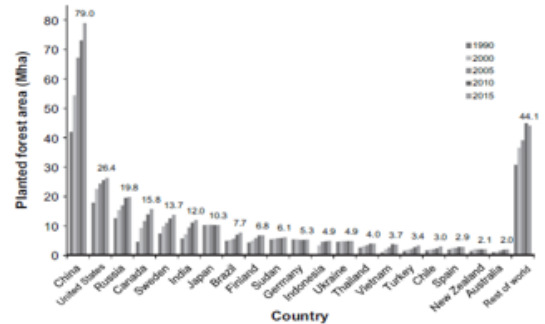


Fig. 6. Planted forest area and trends (1990–2015) for the top 20 countries by planted forest area.

Payn et al. 2015

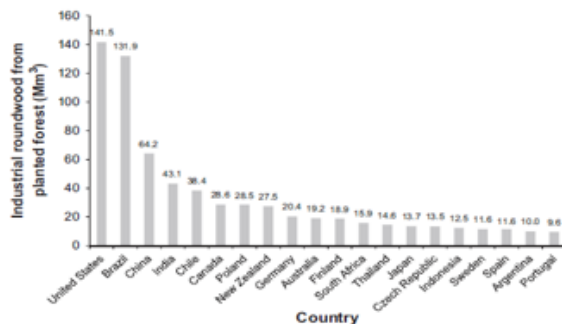


Fig. 7. The world's top 20 producers of industrial roundwood from planted forests in 2012.

Payn et al. 2015

Assumptions

- Capital Budgeting / discounted cash flow analysis
 - NPV $\rightarrow \infty$ = Land Expectation Value (LEV)
 - Internal Rate of Return (IRR)
- Real (constant) input costs and timber prices
 - No inflation
 - Real discount rate of 8%
- No land costs in base case
- Before tax, no subsidy
- Representative sites and growth
- Good plantation and natural stand practices
- LEV becomes proxy for land value

Capital Budgeting Criteria

- Net Present Value (NPV)
- Land Expectation Value (LEV) (or SEV, Faustmann Formula, Bare Land Value)
- Equivalent Annual Income (EAI)
- Benefit:Cost Ratio, Profitability Index
- Internal Rate of Return (IRR)
- Cost-Price Analysis
- Sensitivity and Risk Analysis

Example Cash Flow Spreadsheet, Vietnam

Stylized Vietnam 8FE Timber Returns, Asoals, 11m3/ha/yr, \$0.8/ha, 8% Real Discount Rate

Activity/year	0	1	2	3	4	5	6	7
Costs								
Site preparation	810							
Planting	575							
Weeding		300	300					
Management		30	30	30	30	30	30	
Harvest								3000
Timber Sale								3000
Cash Flow	-1185	-300	-300	0	0	0	0	3000
Discounted Cash Flow	-1185	-278	-257	0	0	0	0	1750
Net Present Value	30.49							
Land Expectation Value	73.21							
Internal Rate of Return	8.3%							

Lao PDR Selected Summary Inputs

Activity	Eucalyptus Industrial	Eucalyptus Smallholder	Teak Smallholder	Sustainable Forest Mngt.
Growth (m3/ha/yr)	33	18	9.33	3.19
Rotation/Cut Cycle	7	5	24	15
----- Cost or Price (\$/ha) -----				
Site Preparation	289	108	263	15 (Inventory)
Planting	610	166	175	77 (marking)
Site Preparation				2,330
Overhead Admin.	104	4	38	
Total Costs, Rotation	3,186	338	603	2,598
Total Returns, Rotn.	9,030	3,204	20,856	4,743
Timber Prices (\$/m3)	35 - 68	35 - 38	92	49 - 66, 888

Lao Carbon Production Summary

Plantation Model	Long term averages				Long term marginal increases		
	Volume at harvest (m3/ha)	Total Biomass (t/ha)	Total Carbon (t/ha)	Total CO2e (t/ha)	Rotation (yrs)	Total Biomass (t/ha)	Total Carbon (t/ha)
Industrial Eucalyptus	94.7	92.5	45.3	166.2	7.5	43.39	21.26
Outgrower Eucalyptus	54.0	88.1	43.2	158.3	5.0	40.32	19.76
Teak Smallholder	116.8	154.4	75.7	277.4	24.0	86.72	42.49
Participatory 8FM	139.9	184.0	90.2	330.7	15.0	107.46	52.66
Default Regenerating Vegetation	*	30.5	15.0	54.8	7.0	0.00	0.00
							Total CO2e (t/ha)
							77.96
							72.44
							155.80
							193.07
							0.00

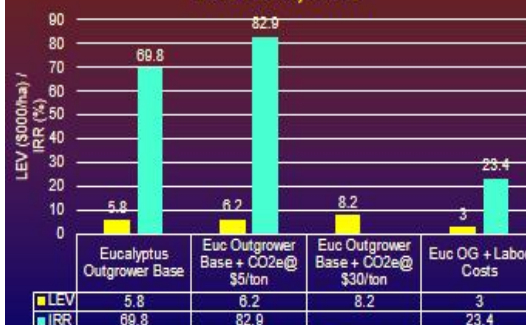
Andy Gillespie, 5 May 2018

Eucalyptus Industrial Plantation Returns, Lao PDR, 2018

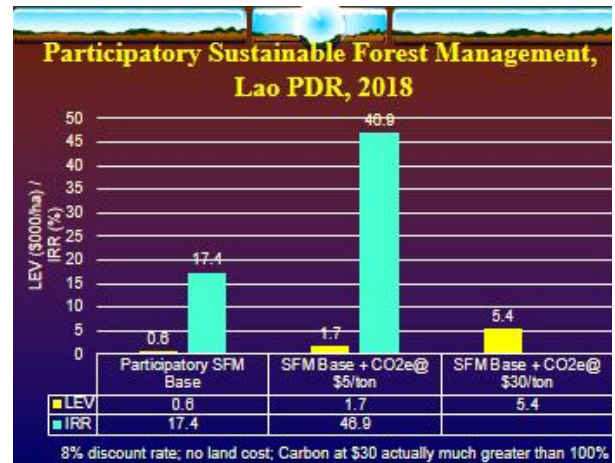
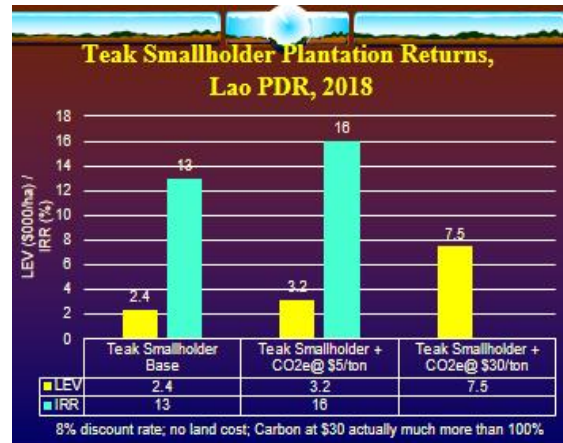


8% discount rate; no land cost

Eucalyptus Outgrower Plantation Returns, Lao PDR, 2018

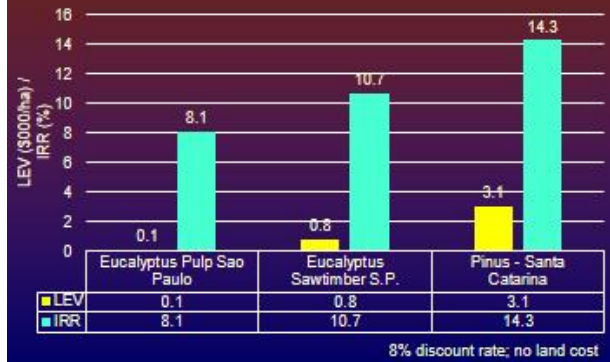


8% discount rate; no land cost; Carbon at \$30 actually much more than 100%

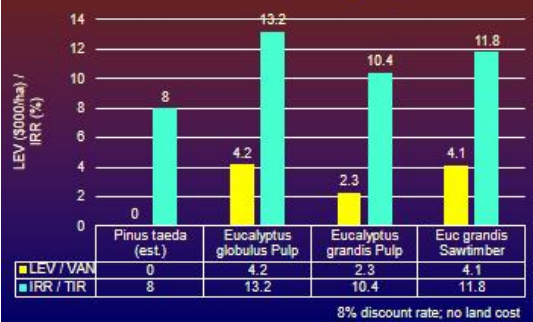


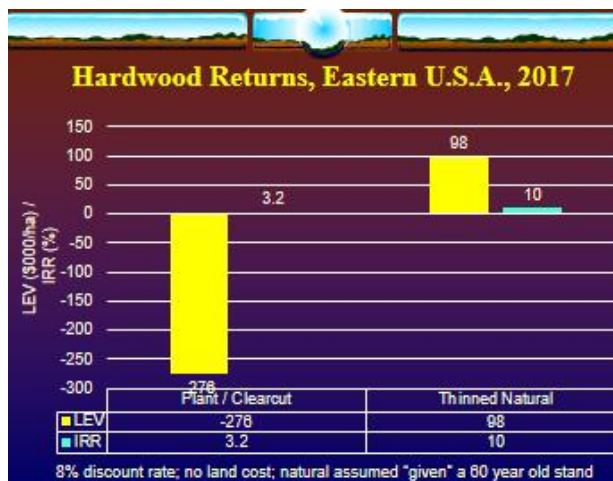
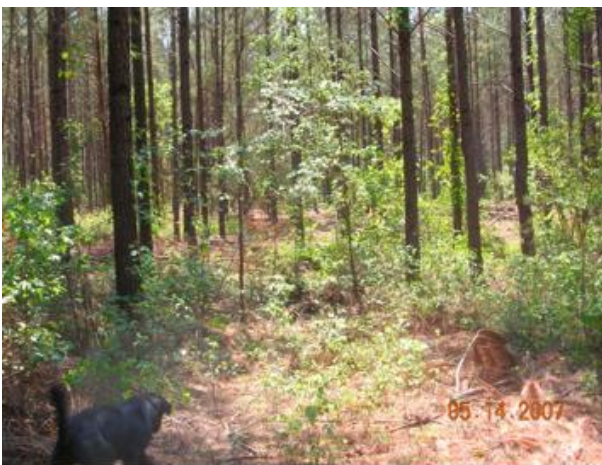
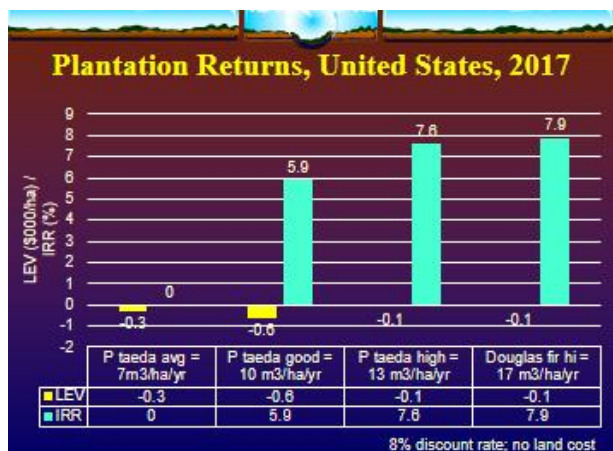
Global Benchmarks

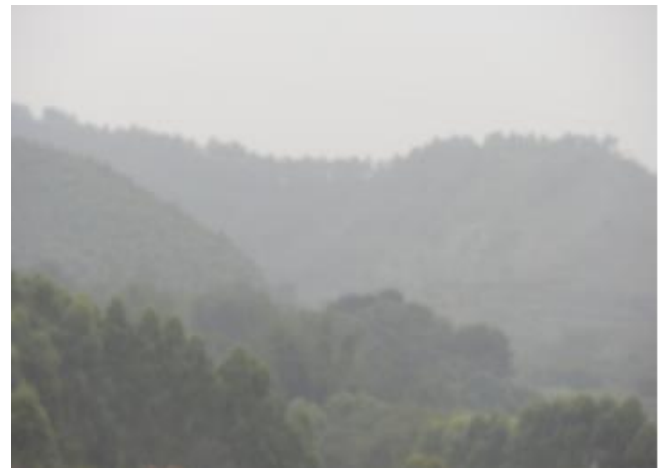
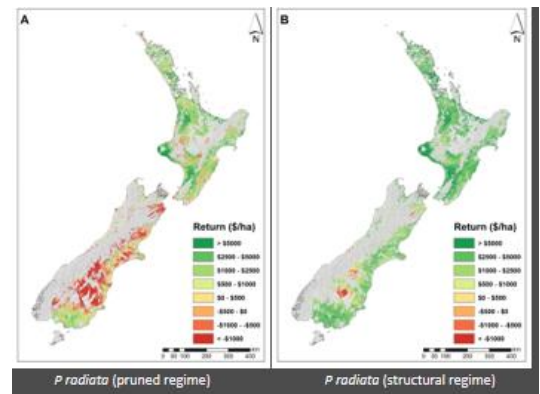
Plantation Returns, Brasil, 2017

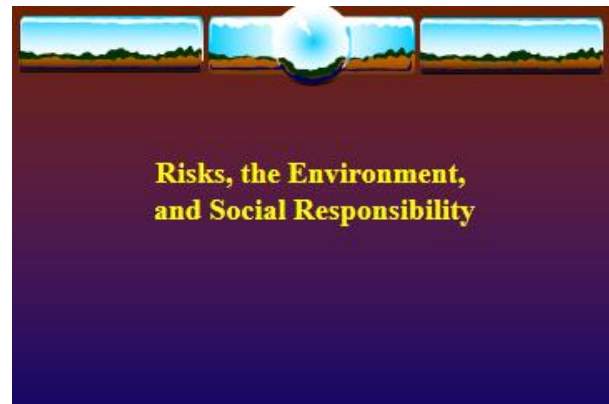
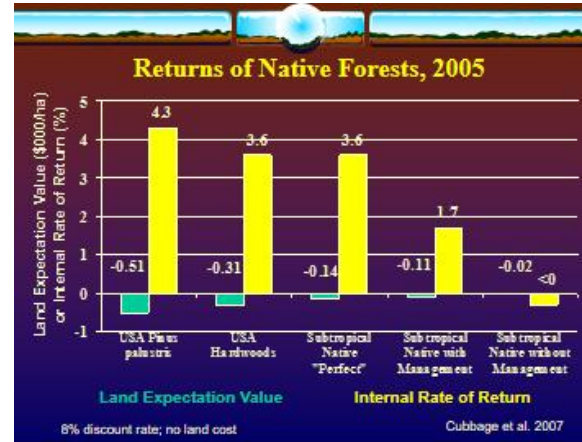


Plantation Returns, Uruguay, 2017









Selected Country Investment Classification,

Classification	Foreign Rating	Country
Investment Grade	AAA	Australia, Canada, Finland, Sweden
	AA+	New Zealand, USA
	AA-	China
	A+ / A- / A	Chile / Thailand / Malaysia
	BBB / BBB+	Philippines, Mexico / South Africa
	BBB-	Brazil, Colombia, India, Peru, Uruguay, Sp
Speculative Grade	BB+	Costa Rica, Indonesia
	BB	Indonesia, Turkey
	BB-	Venezuela, Viet Nam
	B+	Paraguay
	B	Argentina, Bolivia, Honduras
	B-	Ecuador

Standard & Poor's 2013

Note: Laos not

Corruption / Transparency Measures, 2

Country	Global Rank (n=177)	Score (maximum=100)
Argentina	106	34
Australia	9	81
Brazil	72	42
Chile	22	71
China	80	40
Colombia	94	36
Finland	3	89
Lao PDR (2016)	123	30
Mexico	106	34
New Zealand	1	91
Paraguay	150	24
Uruguay	19	73
USA	19	73

<http://www.transparency.org/cpi2013/results>

Conclusions

Conclusions Lao PDR - Methods

- Excellent data collected by local partners
- Economic analysis of forest management
- Cash flow analysis for LEV and IRR
- Planted and native forests
- Based on detailed input costs and product prices
- Timber stumpage prices by product class
- Carbon volumes estimated
- Carbon values mostly aspirational
- Payments for environmental services possible also
- And nontimber forest products

Conclusions Lao PDR - Results

- Excellent returns for all model – to a fault
 - ✦ Industry expensive, but good returns at 21% IRR
 - ✦ Private owner spends less, ~70% (23%) IRR
 - ✦ Teak shows promise, ~13% IRR
 - ✦ SFM of native forests high IRR (~18%), low LEV
- All show promising forestry investment opportunities
- Carbon / CO_{2e} adds small to large amount to returns
- Risk, data, implementation affects output and results
 - ✦ Industry planted eucalypts most certain
 - ✦ SFM least





Questions?

Contact Information

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EXTRA REFERENCE SLIDES

Principal Assumptions, Approaches, and Applications of Financial and Economic Analysis in Forestry Projects		
Characteristic	Financial Analysis	Economic Analysis
Economic Value Assumptions	Individuals have measurable utility, which they seek to maximize; equilibrium market prices measure individual preferences	Individuals and society seek to maximize utility; aggregate social economic values measure society's preferences
Decision Criteria	Efficiency; profit; financial present values and rates of return	Efficiency; net social benefits; economic present values and rates of return
Production Functions	Growth and yield equations, test studies, long-term production data, historical records	Available equations or data, ecological process measurements
Costs and Prices	Measured by commercial markets values	Measured by commercial market values, shadow prices, willingness to pay, and total economic value
Price Measurements	Market costs and prices	Market costs and prices, or the total value of consumer and producer surplus for market and non-market goods
Effects of changes and markets or due to projects	Changes in prices times the quantity change	Changes in the value of the consumer and producer surplus
Data Used	Market prices, price reporting series, historical data, wholesale or retail prices	Market prices, revealed preference analysis, stated preference surveys, benefit transfer
Applications	Financial analysis; individuals, communities, organizations, bank loans, taxes, subsidies	Economic analysis; society or country point of view; individual entities; lending agencies

Steps in Financial / Economic Analysis

- Clarify project investment objectives
- Identify physical processes, activities, timing
- Estimate unit costs of inputs and price of output
- Develop physical flow tables
- Develop cash flow tables
- Apply quantitative capital budgeting criteria
- Sensitivity analyses
- Employment, community, social, welfare considerations
- Identify qualitative factors, risk, uncertainty
- Make recommendations to decision makers

Quantitative Capital Budgeting Criteria

Net Present Value (NPV), Land Expectation Value (LEV), and Internal Rate of Return (IRR)

$$NPV = \sum_{t=0}^n \frac{B_t - C_t}{(1+i)^t} - \frac{C_0}{(1+i)^0}$$

$$LEV = \left(\sum_{t=0}^n \frac{B_t - C_t}{(1+i)^t} - \frac{C_0}{(1+i)^0} \right) / (1+i)^0$$

or

$$LEV = NPV / (1+i)^0 - C_0$$

where:

B_t = benefit in year t ; C_t = cost in year t ; i = annual discount rate; n = year; 0 = project or rotation length

$$IRR = i \text{ such that } \sum_{t=0}^n \frac{B_t - C_t}{(1+i)^t} - \frac{C_0}{(1+i)^0} = 0$$

Benefit-Cost Ratio

$$BC \text{ ratio} = \frac{\sum_{t=0}^n \frac{B_t}{(1+i)^t}}{\sum_{t=0}^n \frac{C_t}{(1+i)^t}}$$

Annual Equivalent Value (AEV)

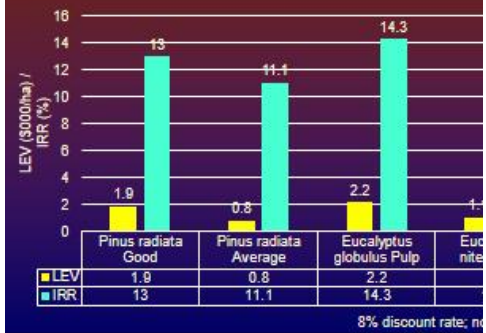
$$AEV = LEV \cdot i$$

$$\text{Cost-Price Future value or Price}^* \text{ Cost-Price} = \frac{C_0}{1+i}$$

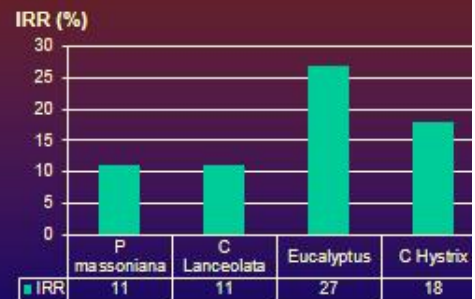
Global Timber Returns: Methods

- Select countries
 - Major world plantation timber producers
- Select principal commercial timber species
- Authors' estimates of:
 - Growth rates, typical current practices, genetics
 - Factor costs and output prices
- Develop cash flow analyses / spreadsheets
- Capital budgeting analyses
- Iterative review by authors and foresters in each country

Plantation Returns, Chile, 2017




IRRs From China Planted Forest



Pu Zhang & He Youjun 2014



Annex 8

PRESENTATION BY JIM CARLE: “PUBLIC-PRIVATE PARTNERSHIPS FOR RESTORATION AND REFORESTATION”




GREEN GROWTH ASA ON SUSTAINABILITY OF LAO PDR'S FORESTS

PUBLIC-PRIVATE PARTNERSHIPS FOR: RESTORATION AND REFORESTATION



Multi-Stakeholder Validation Workshop,
May 17, 2018

Jim Carle, Forest Management Specialist;
E-mail: carle.jim@gmail.com



Content

- PPP: Why?
- PPP Definition & Defining Roles & Parameters
- PPP Proposed Frame
- PPP Conceptual Process
- PPP Case Studies
- PPP Different Interests of Forestry Parties



Public Private People Partnerships – Why?

- 8th National Socio-economic Development Plan identified the private sector as the main engine of growth in Lao PDR
- GOL foster a transition to a private sector-led market economy
- GOL favours the PPP mechanism to upscale the investment program in public infrastructure and rural development services
- Public-services highly sought after but GOL have insufficient resources to undertake these large programs of work
- PPP can unlock private sector innovation, efficiency & creativity in delivery of otherwise, public services
- Increased value-for-money for GOL and users



2 Jim Carle



Public-Private Partnerships – Why?

- GOL favours the PPP mechanism to upscale the investment program in public infrastructure and rural development services
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Public-Private Partnership: Definition, Roles, Parameters

- A long-term contract between a private party & a government entity to provide a public asset or service, in which the private party bears significant risk & management responsibility, & remuneration is linked to performance (World Bank)
- PPP partners define roles & parameters of agreement:
 - Duration of contractual relationship
 - Risk allocation to party best able to bear them
 - Maintenance of fixed & operational assets
 - Public & private partner roles
 - Funds, structures & arrangements by public & private partners;
 - Payment arrangements based on provision of services/outputs/outcomes



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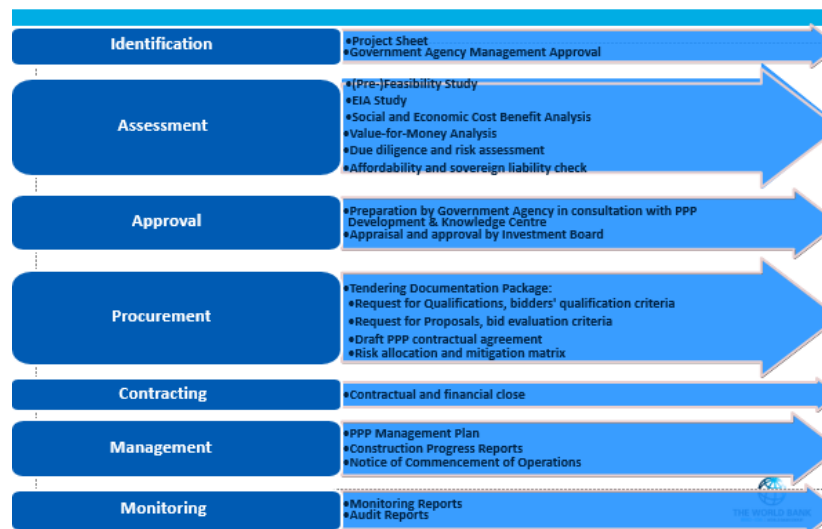
Public Private People Partnerships: Proposed Frame

- Long term vision to use PPPs as regular procurement mechanism for GOL (central, provincial, municipality, specialized government agencies & other public entities)
- Each Government Agency responsible for initiating, developing, approving, tendering, negotiating, signing & monitoring PPP projects within their mandate
- PPP Development & Knowledge Centre within MPI to advise & support GOL Agencies to understand & implement PPP arrangements, undertake value-for-money assessments, cost-benefit analyses, financial structuring & provide guidance to prepare partnership agreements
- MoF evaluate affordability & long-term impact on public finances & as necessary, approve PPP projects ensuring adequate financial support according to clear and transparent criteria
- PPP Decree (draft 7), Policy & Manual define legal, policy, institutional roles, responsibilities, implementing guidelines & procedures

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Public-Private Partnership: Conceptual Process



PPP Partnership: Case Studies

- Brazilian Amazon
 - Strengthening & enforcing the forest code
 - Restoration of 12 m ha of natural forests
- Indonesian forest and peatland management & conservation
 - Government commitment to Policies
 - Private commitment to No deforestation, No peat, No exploitation
- Chesapeake Forest, Maryland, USA
 - SFM & watershed management
- 11 Model Forests, Canada, policy brokering & SFM
- Forestry co-management, Saskatchewan, Canada
- PPP for improved reforestation outcomes, the Philippines
- PPP for multi-purpose reforestation, Australia

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PPP Partnerships: Interests of Partners in Forestry

Public Interests	Private Interests	People Interests
<p>On behalf of Lao People:</p> <ul style="list-style-type: none"> • Sustainable supply of Wood & NWFPs for economic development of forests & forest industries sectors • Sustainable provision of Forest Ecosystem Services (C sinks, biodiversity soil & water, recreation etc) • Sustainable capture of forest & forest industry based rentals/funds • Sustainable socio-economic development (reducing poverty, increasing food security, sustainable livelihoods, employment) 	<p>On behalf of shareholder investors:</p> <ul style="list-style-type: none"> • Return on investments with corporate social & environmental responsibility • Green investments in wood, NWFPs, Ecosystem Services • Stable long-term investment policies, laws, regulations • Developing & maintaining assets • Sustainable growth & long-term return on investments (profits) for shareholders 	<p>On behalf of local communities:</p> <ul style="list-style-type: none"> • Reduced poverty, increased food security, sustainable livelihoods • Increasing resilience to CC, markets etc • Access to community development funds to maintain roads & social services • Access to stable work & income • Participation in planning & development of communal lands • New business opportunities (<u>outgrowers</u>)



Annex 9

PRESENTATION BY DR. HILARY SMITH: “ANALYSIS OF REGULATORY FRAMEWORK FOR SCALING-UP CERTIFICATION, TIMBER LEGALITY AND PUBLIC-PRIVATE PARTNERSHIPS”



Multi-Stakeholder Validation Workshop,
May 17, 2018

Dr Hilary Smith, Forest Governance Specialist
hilary@latitudeforestservices.com.au

Content

Evaluation of regulatory frameworks for:

- **certification of SFM** in production forest areas (PFAs) and corporate and smallholder plantations;
- **CoC certification** for forest products from PFAs and forest plantations;
- **Group certification** of Teak plantations and other species.
- **timber legality assurance**, for PFAs and conversion forests
- **public-private-people partnerships (PPPPs)** for forest restoration and reforestation, including:
 - modalities for cooperation,
 - land-use and crop ownership rights,
 - harvesting transport, processing and marketing rights,
 - social and environmental standards and
 - cost-revenue sharing.

Forest Management Certification - General observations

- Forest management certification is voluntary, it does not need to be mandated.
- There are no explicit regulatory barriers to forest management certification as a voluntary mechanism.
- There are gaps in the regulatory framework that might inhibit successful certification.
 - Unclear regulations make compliance difficult for participants and complicate assessments of legal compliance undertaken by certification auditors.
 - While some gaps have been identified and are being addressed through the Pro-FLEGT VPA process, others may need to be revised in the future.

Forest Management Certification - Production Forest Areas

Issues/Barriers to certification of PFAs

- PFAs are state forest. The choice to certify PFA's sits with the government.
- There is no policy or regulatory framework that promotes nor enables certification of State forest.
- Numerous regulations refer to SFM in principle, but it is not currently defined in the Forest Law.
- Forest management regulations and implementation have been ineffective in achieving SFM outcomes - resulting in PMO 31

To enable certification of PFAs

- A legal basis - the revised Forest Law
- A legal instrument to enable government (at different levels) to pursue certification
- A national certification standard that applies to PFAs and that is supported by appropriate regulations and skilled forest managers.

Forest Management Certification - Corporate Plantations

- Companies need to have a return-on-investment motive, but also commitments to shareholders to demonstrate CSER.
 - Voluntary FM certification good option to demonstrate sustainability - social, environmental & economic.
- But, there are **three key regulatory issues** that inhibit forest management certification:
 - Land access arrangements and conditions
 - Environmental and social impact assessment requirements
 - Excessive regulations for plantations

Forest Management Certification - Corporate Plantations

Land

The availability of suitable land is essential if plantations are to achieve their productivity potential and be profitable while minimising adverse impacts on the environment and communities. But:

- Land information (land use plans/land tenure/forest condition) is inadequate to identify suitable and available land.
- Land access rules are unclear and inconsistently applied.
- Available land access options are too narrow in scope and prevent innovative partnerships between companies and land owners and communities.
- Policies about land access options are contradictory creating uncertainty for companies

Forest Management Certification - Corporate Plantations

Environment and Social Issues

Policies and laws are complex and inconsistently applied:

- There are many regulations and some may not be appropriate to plantation production systems (characteristics, functions, owners).
- The Environmental Protection Law is inconsistently applied by different levels of government or between provinces.
- Unclear regulations provide for local interpretation and misapplication.
- There is inadequate technical knowledge about plantations within ESIA agencies and limited guidance for verifying that ESIAs are compliant.
- There is limited monitoring of company environmental performance or enforcement of regulations, largely due to limited capacity or alternative local priorities.

Forest Management Certification – Smallholder Plantations

- Smallholder plantations are mostly 'informal' and cannot meet SFM certification standards for legality.
- Most (not all) smallholder plantation are Teak. Teak attracts extra regulations that makes compliance very difficult.
- There are many regulations that are not appropriate to smallholder plantation production systems.
- Smallholder plantations are considered low risk – the certification standards are too high. The cost of certification is too high and the return too low.
- Even with external support FM certification is not feasible nor sustainable.

Chain of Custody Certification - Production Forest Areas

- Supply chain control for wood from PFAs involves many actors from government and private sector.
- There are many regulations. None are focussed on entire supply chain control
 - CoC Instruction is being piloted by Pro-FLEGT
- Regulations within and between sectors are poorly linked.
- Industry has limited experience in or capacity to implement supply chain controls.
- The inclusion of controlled wood in supply chains can assist in stepwise progression towards full certification.
 - But many risks still need to be addressed (FSC controlled wood risk assessment)

8 H. Smith



Chain of Custody Certification - Corporate Plantations

- Most plantation companies are integrated businesses and CoC is relatively straight forward.

Grower > harvester> transporter> sawmill> manufacturer

- But companies may also source wood from individuals, out-growers or smallholder groups with limited supply chain control.
- Where there is a direct relationship between grower and purchaser CoC should be able to be encouraged through improved value chains and benefit distribution.
- However, smallholders continue to face barriers in FM certification, which limits CoC certification of wood from these sources.

9 H. Smith



Chain of Custody Certification - Smallholder Plantations

- There are many independent actors in smallholder timber supply chains:
Many growers > finders > harvesters > traders > transporters > sawmills > manufacturer
- Most intermediaries are individuals or micro, small and medium scale enterprises.
- The policy and regulatory environment is not supportive of these enterprises.
- The smallholder supply chain is largely informal (illegal).
- There is little capacity (skill or resource) to develop supply chain control systems.
- High demand for wood products by China, Vietnam, Thailand and Korea enables the status quo

10 H. Smith



Group Certification - Smallholders

- Grower groups and farmer organisations are promoted but not well supported
- They are effective for short-rotation crops (agriculture) but not long-rotation crops (trees)
- Grower groups for teak have not been feasible due to socio-economic and cultural issues
 - Growers sell wood when income is needed not in a way predictable to market
 - Larger processors need regular, consistent consignments but these are not available
 - Lack of confidence in supply by processors reduces demand
- Grower enterprises (small processing) increase feasibility but not sustainability of the group - limited benefits to farmers
- There are conflicting policies and practices between MOIC and MAF for SMEs
- High dependence on donor support for certification is not sustainable

11 H. Smith



Scaling up Certification

- Promote Certification in the Forest Law.
- Define SFM in the Forest Law.
- National certification standard supported by clear regulatory basis and skilled workforce (PFAs)
- Supply chain analysis and regulatory mapping to understand the actors, flow of wood, legal requirements and barriers to compliance
- Review and revise (or develop) regulations that connect supply chain elements with clear documentary evidence
- Reconsider policies on SMEs and simplify regulations to enable compliance. Consider an short-term "amnesty" for unlicensed enterprises to register.
- Simplify regulatory requirements for smallholder plantations to enable them to meet legality requirements and, if supported by other relevant reforms, help them to attain forest management certification or as a minimum, legality assurance.
- Promote SMEs linked to grower groups and village level administration options (SME Decree).

12 H. Smith



Timber Legality Assurance - all sources of timber

- Timber legality assurance system is being developed as part of the VPA process.
- Scope of the VPA is all timber from all sources to all markets (domestic and export).
PFAs, conversion forests, plantations, confiscated wood, imports
- Once ratified the VPA & TLAS become legally binding (Law on Treaties).

5 key components of a VPA TLAS.
 1. A definition of legally produced timber (TLD)
 2. A system to track supply chain of timber products from harvest or import to export
 3. A system to verify compliance with the TLD and the tracking system
 4. Licensing of exports to attest to their legality
 5. Independent audit of all components
- But, the VPA is not enduring (its can be terminated).

13 H. Smith



Timber Legality Assurance - all sources of timber

- A specific legal instrument would create more certainty about a TLAS.
- The highest relevant legal instrument Forest Law - currently under review (est. October 2018)
- An interim instrument can provide a "stop gap" and instruct on TLAS methods and implementation.
- Additional supporting regulations will be required to bring the elements of the TLAS into effect.

Progress

- A Ministerial Instruction on the Method for an implementation of a TLAS has been drafted for comment.
- Draft text for inclusion in the Forest Law
- A checklist of other tasks required for the TLAS

14 H. Smith



Public Private People Partnerships

- Partnerships are being promoted for socio-economic development through investment.
- The Draft **Green Growth Strategy** (NERI April 2018) promotes
 - Public-Private Partnerships
 - Public-People Partnerships
 - Private-People Partners and
 - Public-People-Private Partnerships
- A Decree on Public-Private Partnerships and framework for PPPs are being developed (MPI)
- In the forest sector partnerships are being considered for projects that rehabilitate degraded PFAs through a combination of production and restoration plantings (MAF)

15 H. Smith



Public Private People Partnerships

Issues

- There are existing regulations that support this approach in principle but there are inconsistencies and gaps.
- Some social and environmental safeguards are needed.
- The role of 'people' in the partnerships is not well articulated.
- Existing benefits distribution models are inadequate.
- Policy messages are inconsistent - creating investment uncertainty.
 - The draft National Green Growth Strategy is not supportive of existing land access models (concessions) but there are few other options of land based activities (Land law)

Public Private People Partnerships - Scaling Up

- A clear and consistent policy position is needed to provide clarity for government, a stable investment environment for the private sector and certainty for people.
- Rules must be clear, with agreed definitions of investments and restoration so that all partners' expectations can met
- Accurate land information (tenure, planning, suitability) is needed to ensure the right trees get planted in the right place at the right time
- New land access options/arrangements need to be trialled (Land Law)
- Existing land access options - concessions – need to be properly implemented and monitored

Public Private People Partnerships - Scaling Up

- Value chains for all products need to be understood with effective strategies and regulations to develop and support them (e.g. for timber, NTFPs, PES, carbon etc)
- Ownership, sales, marketing rights and benefit distribution models for *all products* must be formally agreed by all partners – legal, enforced contracts.
- Strong financial systems are needed that support all partners including 'people'. New mechanisms and supporting regulations will be required.
- Understand, utilize and embrace formal informal and customary institutions - e.g. for participation and mediation.

Annex 10

CONCLUDING REMARKS BY MR SOUSATH SAYAKOUMMANE, DIRECTOR GENERAL, DEPARTMENT OF FORESTRY, MINISTRY OF AGRICULTURE AND FORESTRY

Ladies and gentlemen,

It has been a very productive day with many critical feedback and discussions. I would like to summarize key aspects as following.

- National Green Growth Strategy, which is led by Ministry of Planning and Investment and National Institution of Economic Research, sees forestry sector as one of the key drivers for sustainable growth. The Strategy is now in first Draft and on-going process of feedback is encouraged for MAF, DOF and other stakeholders in the forestry sector;
- The 2nd phase of the Green Growth Development Policy Operation (GG-DPO2) in currently in internal peer review
- PMO-15 has been effective in setting a new foundation for forest management, wood industries and trade to establish best practices standards
- Participatory SFM in PFAs has an important role to play in sustainable management of Lao natural forests
- Forest Management and Chain of Custody Certification is a valuable SFM tool but only fully effective if associated with CoC certification along the whole value chain to the market place
- Recognition of the potential for private sector investment in industrial plantation development in the severely degraded forestlands in PFAs
- There is potential for Public-Private-People Partnerships for restoration and reforestation in PFAs where agreements outline the roles & responsibilities, benefits, risks and the social and environmental safeguards
- Recognition of the need to strengthen and promote smallholder plantation development
- Wood industry reform to upskill labor, modernize equipment and redesign forest products and simplify the value chain
- Recognize TLAS in the new Forestry Law, MAF Ministerial Instrument to support implementation of the TLAS system
- More study is necessary to better understand market knowledge on the domestic and neighboring countries
- Following financial and economic analyses there is opportunity to prepare a forest strategy to prioritize the different components of SFM (PFAs, Village Forest Management, smallholder and corporate plantations, agroforestry)
- Review the LL2 Auction system to package volumes, species groupings etc to fit industry needs; and
- Introduce procedures including inventory, boundary marking, planning and monitoring for legality compliance in Conversion Forests

Ladies and gentlemen,

Once again, I would like to thank you for continuously and tirelessly contribute to the forestry sector reform and its related wood industries reform to help the Lao PDR restart growth in forestry sector in a sustainable manner that also creates jobs and delivers environmental services.

Thank you

Annex 11

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