FOREST INVESTMENT PROGRAM – INVESTMENT PLAN – LAO P.D.R.

SUPPLEMENTAL INFORMATION

I. Introduction

1. This supplementary annex has been prepared in response to the FIP Sub-Committee's request, as recorded in the Co-Chair's Summary, that the Government of Lao PDR enhance the endorsed Investment Plan by submitting additional information elaborating on:

i) How the 70% national forest cover target fits in with the country development strategy with respect to other sectors such as commercial agriculture, mining and hydro power;

(ii) Steps to be taken to improve the sustainability of the gains achieved in the proposed projects against pressure for deforestation from drivers mentioned above; and

(iii) Concepts for projects 1 and 2 taking into account the questions raised by the independent review and all written comments submitted by Sub- Committee members by November 15, 2011.

2. In addition, a section is included on the method and assumptions used to calculate the emission reductions, since questions on this aspect were also raised by some Sub-Committee members.

II. National Forest Cover Target of 70%

3. The Government of Lao PDR (GoL) would like to clarify that the National Forest Cover Target of 70% by 2020 is an overarching target established for the forest sector in the country as a whole and should not be considered a FIP-specific target. FIP is expected to contribute to this target but FIP resources will have to be combined with several other sources including national budget to achieve this target. Forest recovery efforts will be mainly through natural regeneration (and assisted natural regeneration) using a participatory sustainable forest management (PSFM) approach in the 3 designated state-managed forest types (improved forest cover in officially designated Conservation, Protection and Production forests are expected to provide ~85% of the national target).

4. Efforts to increase forest cover in non-designated areas (areas presently outside the 3 types of state managed forest) represent about 15% of the overall forest cover target and will include both village forest and plantation forest areas. GoL is committed to protecting natural forests and as noted in the Investment Plan the government's intention is to direct the expansion of cash crops and tree plantations to degraded areas (additional details are provided in section V below). Although the 2020 target looks highly ambitious, when one considers the high potential for natural regeneration of most forest lands in Lao PDR and the high proportion of the target that falls within designated forest, the target can be achieved if appropriate supporting mechanisms and resources are in place.

5. Ultimately much of the growth and welfare of Lao PDR is bound up with water and all development plans will depend on water resources in some way. The contribution of the water sub-sectors (Irrigation, Hydro-power, Navigation, Fisheries, Urban Water Supply, and Rural Water Supply) to national development and revenue are significant and their reliance on

abundant high quality water is obvious. The amount of water used by these sub-sectors is expected to increase significantly in the future. In order to protect and sustain national water resources, it is important that as much as possible of the steeply sloping land in the river basins is forest covered. Covering all the steep land in Lao PDR would by itself require nearly 70% forest cover.

6. The area currently inundated by hydro reservoirs, according to the Ministry of Energy and Mines (MEM), is around 953 km^2. If all hydro power schemes currently under consideration were they to go ahead they may inundate an additional 2,550 km^2. Taken together actual and potential future dams may reach a total footprint of 1.5% of total land area (and up to 2.2% of designated forest land).

7. Based on MEM data there are currently around 610 km^2 of mining concessions under active exploitation (representing 0.25% of total land area). Although the land area under active mineral exploitation is currently small, ongoing exploration and general survey covers approximately 29,000 km^2 (12.6% of Lao PDR). As noted in the third Lao PDR Human Development Report only a fraction of the licensed exploration area is likely to be subject to exploitation activities. Oil and gas prospectors generally explore very large areas but use only a small proportion (1%) of their license area for exploitation. In the case of mineral deposits, exploitation is estimated to require about 10% of the exploration area, and deposits are expected to be developed over a decade or more. Based on these estimates it is calculated that the annual area of forest given over to mining is likely to be on the order of 260 km^2 per annum for the coming decade. If mining are overlapped 100% with current designated forest this loss would represent roughly 1.7% of the forest estate over ten years.

Table 1: Land cover of inundated areas, by status of hydropower project, km^2

	Current Forest	Potential Forest	Other Wooded Area	Agriculture Land	Others	Total
Under construction	347.2	225.6	0.0	23.0	65.1	660.9
In planning	431.6	531.7	0.0	11.3	20.0	994.6
Feasibility study	289.8	517.7	5.1	13.2	67.3	893.1
Total	1068.6	1275.0	5.1	47.5	152.4	2548.6

Table 2 : Land cover type by status of mining concession, km^2

	Current forest	Potential forest	Other wooded Area	Agriculture land	Others	Total
Exploitation	198	236	3	72	91	600
Exploration	3919	4888	111	1444	802	11164
General Survey	8616	7996	174	481	697	17964
Total	12733	13121	288	1996	1590	29728

8. The Seventh Five Years National Socio-Economic Development Plan (7^{th} NSEDP) for 2011-2015 anticipates significant Foreign Direct Investment (FDI) to support economic growth and to assist in Lao PDR's efforts to graduate from Least Developed Country (LDC) status by 2020. More than half of economic growth anticipated in this period is expected to come from FDI. This will inevitably lead to tradeoffs and calls for compensation to remain on track with the National Forest Cover Target. GoL acknowledges the inherent challenges in the current growth strategy and has already begun to take steps to balance competing objectives of growth and sustainable forest management.

9. The GoL has recently issued a decree (Decree on the Protection Forest 2010) requiring protection and rehabilitation of forests in catchment areas of hydropower projects and rehabilitation (post-extraction) of forest areas cleared for mining. Article 30.3 of the decree states the requirement for development projects to contribute 1% of gross revenue towards watershed protection. The national REDD dialogue which was conducted during the preparation of the Readiness Plan Proposal (RPP) has already contributed to improved inter-ministerial coordination and dialogue about tradeoffs and approaches to minimizing and mitigating impacts of development activities on forests. FIP investments are expected to make a significant contribution to GoL efforts to balance growth and sustainability in the forest sector by financing coordination and information sharing at national and sub-national levels. FIP is also expected to foster a sustained dialogue on tradeoffs and active oversight of development impacts on forest and forest dependent communities.

III. Sustainability of gains from proposed projects

10. As noted above the GOL is determined to eradicate extreme poverty and move beyond the category of Least Developed Country by the year 2020. To achieve this, the Government has adopted the National Growth and Poverty Eradication Strategy (NGPES) as a comprehensive framework for all its development and poverty eradication programs. Much of the NGPES is focused on Lao upland communities where poverty and environmental problems are most acute. The NGPES places renewed emphasis on decentralization and participatory approaches to development.

11. One of the drivers of sustainability in FIP projects will be increased control over forest resources by local communities. In addition to sequestering carbon the projects outlined in the FIP Investment plan will contribute to the development and scaling up of GoL efforts to help communities by: i) stabilizing shifting cultivation; ii) improving access to social services; iii) facilitating market-oriented economic activities; and iv) strengthening natural resource tenure. The projects proposed for FIP financing are likely to be located throughout the country but are expected to be concentrated in the more forested uplands where poverty rates are generally high and protection and restoration of forest cover can bring multiple benefits in the form of soil, water and biodiversity conservation in addition to benefits from carbon storage. The protection of biodiversity helps to sustain supplies of Non-Timber Forest Products (NTFPs) that are important for subsistence and as a source of income, as well as providing a safety net in times of adversity. Some of the incremental benefits from improved forest stewardship open the possibility for expanding the nascent efforts to develop Payments for Environmental Services (PES) in Lao PDR for water, tourism, and bio-prospecting, among others. PES may help contribute to sustainability of funding beyond the project period.

12. The proposed FIP interventions are strongly linked to and supported by government policies and priorities articulated in the NGPES. FIP financed interventions will help to empower communities by building on and expanding approaches that have already been developed and implemented in Lao PDR (with MDB support) including ensuring that financial incentives reach beneficiaries through an expansion of Village Development Funds. FIP operations will also support participatory land-use planning, land allocation and titling, for communities and individual households. This has been shown in many countries to be a key step in ensuring sustainability of agriculture and natural resource management. Without titling, communities risk losing control of their land to concessionaires or being forced to sell their land at below market rates.

IV. Supplemental information in response to comments on Project 1 - Protecting Forests for Sustainable Ecosystem Services (PFSES)

13. The main comments relating to PFSES (Project 1) that required further clarification were as follows:

- "Projects 1 and 2 are much more speculative and less convincing in their technical assessment and design."
- "Project 1 is innovative and potentially transformative but is totally untested."
- "Project 1 is aimed at protecting ecosystem services but a seeming preoccupation with eliminating swidden cultivation could have serious implications for the welfare and food security of ethnic minority peoples."
- "Project 1 is very speculative and there is doubt whether the strong emphasis on swidden reduction is possible or desirable."
- The treatment of swidden cultivation in project 1, a better understanding of the pros and cons of swidden cultivation is necessary.
- Recommend further work during project design to address comments raised by independent reviewers. The main questions of concern raised in the independent review are around the lack of focus in the investment plan, as well as the likely impact on swidden farmers and ethnic minorities.
- Recommend undertaking a rigorous problem analysis when preparing the proposed projects and using this as the basis for defining specific interventions to be financed. We would like to see a clear evidence-based approach articulated when projects are presented to the board for approval.
- Recommend preparing a strong consultation and engagement plan, explicitly addressing the questions raised over shifting cultivators and ethnic minorities raised in the independent review of the investment plan. We would like to see evidence of how consultation and outreach to these groups has shaped and influenced the projects when they are submitted to the board for approval.

14. The following additional information demonstrates that PFSES is based on five years of successful piloting and a detailed project preparation for scaling up the piloted activities, during which much has been learnt about the needs and aspirations of the communities. The concept is well tested and is responding to the stated wishes of the communities that will be involved. Additional information on experience in Lao PDR in developing improved upland farming systems with ethnic groups is available from the many documents in the reference list at the end of this section.

Adding innovation to a tested and approved national program

15. The FIP interventions under Project 1 of the FIP Investment Plan will build on the Biodiversity Conservation Corridor Project (BCC), which was approved by the ADB Board in December 2010. [1] The Project is based on a successfully implementing an integrated conservation and development model (between 2006 and 2010) under the GMS Core Environment Program and Biodiversity Conservation Corridor Initiative (CEP-BCI).

[1] See http://www.adb.org/projects/project.asp?id=40253

16. Rural landscapes in Lao PDR are under increasing pressure due to infrastructure development, settlements, and large scale commercial agriculture, mining, tourism and other economic activities. Rural communities which have depended on traditional farming practices are being forced into marginalized areas and into adopting unsustainable farming practices. It is increasingly difficult for communities -- especially ethnic minorities and other highland communities -- to find suitable agricultural land to practice sustainable swidden agriculture by adopting the appropriate rotational cycles essential for recovering soil fertility. As a result, declining yields, reduced area for swidden practices, and higher extraction of non-timber forest products (NTFP) has created household level food shortages especially and affected household dietary needs and opportunities of generating cash income. Their coping mechanisms to combat food shortage are seriously being eroded. Consultations during project design clearly show their preference to stabilize NTFP extraction, restore degraded forest areas with indigenous species and protect these, plant fruit trees in home gardens, and secure opportunities of alternative livelihoods through value addition or processing.

17. The BCC project will pilot participatory, sustainable management (PSFM) in National Protected Areas (NPAs) and Watershed Protection Forest Areas (WPFAs). This approach has only recently been introduced in the former forest category in northern parts of the country, but not yet in the south, while Watershed Protection forests have only very recently been given the legal status enabling them to be formally recognised, and as a result have not so far been subject to any form of management despite the fact that they account for more than half the proposed designated forest area. The project supports participatory land use planning in villages where areas of former forest land will be identified and zoned for restoration. This will be done in consultation with the users of the forest land in order to avoid any displacement or restriction of access. Deforested or degraded forest lands will be restored and developed into sustainable agroforestry areas providing communities with cash income from a combination of agricultural and non-timber forest products, employment in forest protection and management activities, payments for environmental services including soil and water conservation from hydro power and other water utilities as well as potentially income from carbon sequestration in the longer-term. These livelihood improvement activities will also support the development of alternative and more diverse livelihoods and cropping systems. The 69 villages that are the focus of the project are located within and on the margin of the WPFA and the NPAs. Within this area, minority ethnic groups constitute 41% of the population, concentrated mostly in Xekong (84%), followed by Attapeu (68%) and Champasak with 5%.

18. PSFM activities involves defining village cluster-based Conservation and protection Forest Management Units (CFMU) and organizing Village Forestry Organizations (VFO) in each village to assist District Forest Preservation Offices (DFPO) in their management. Management activities include surveying and inventorying the forest, preparing a long-term CFMU management plan that is consistent with the NPA/WPFA management plan, and conducting annual operations based on the CFMU management plan. Operational activities will include: strict protection in core zones; forest restoration in degraded areas; ecotourism, agroforestry, and sustainable harvesting of NTFP in management zones; and forest protection from the various drivers of deforestation and forest degradation.

19. The Project supports what are currently 3 Provincial Watershed Protection Forest Areas (WPFA) covering a total of 268,000ha that connect three NPAs, and together cover over 300,000 ha in three Provinces. The boundaries of these WPFAs will be surveyed and demarcated on the ground and it is expected that the areas will be upgraded to National WPFAs

in accordance with the Decree on Protection Forest. These WPFAs connect three NPAs (Xe Sap, Dong Ampham and Xe Pian).

20. The proposed FIP interventions under Project 1 will cover the same geographic area as the BCC Project. The FIP funded component of the BCC will strengthen the project to incorporate REDD+ pilot activities within the overall project framework. This will include increasing the area of natural forest that is protected and restored. The Project will adopt measures to obtain free, prior and informed consent (FPIC) of local communities in identifying such lands. This work will be done with indigenous (often slow growing species) within the *Total Protection Zone* so that they will sequester carbon for a prolonged period. Current BCC funds will only cover restoration of 2,400 ha, compared with the area in need of restoration, which is estimated to be around 125,000. FIP funds will also be invested in improving and supporting local communities in carbon stock assessments as a basis for developing Reference Emission Levels and future monitoring of emission reductions and sequestration. In addition to the biodiversity benefits from improving connectivity within the corridor, there are additional benefits for hydropower generation with a total of 900MW generating capacity under construction or planned, which will inundate around 97,000 ha of which a proportion is forest. This also provides a potential opportunity to pilot biomass disposal to minimize emissions from both the removal process and also from future decomposition of any residual submerged biomass.

21. In addition to the BCC, the ADB supported GMS Core Environment Program is currently undertaking capacity building for REDD+ within the corridor districts and will pilot training of local communities to undertake carbon stock monitoring. This will help to reduce transaction costs associated with assessing actual emission reductions. Additional FIP funds will be used to support the development of Reference Emission Levels for the WPFAs as a basis for monitoring the outcome of the measures designed to reduce emissions and increase carbon sequestration. Areas defined as Protection forest account for more than half the total forest area designated as permanent forest, and the FIP funds will add climate change mitigation as a primary objective of management alongside biodiversity and soil and water conservation. These latter have been the main focus of attention to date. Protection forest however, has only recently become the subject of a specific Government Decree establishing management criteria and procedures. Government funding for protection and management of these very important forest areas is extremely limited and the BCC project is the first donor funded project to support this. The emphasis on alternative livelihoods will also contribute towards Adaptation to climate change for the communities involved.

Building on Sound Technical Assessment and Design

22. The BCC Project is based on five years of piloting the Biodiversity Conservation Corridor Initiative (BCI) by the GMS Core Environment Program.[2] BCI successfully demonstrated a model of integrated conservation and development for rural communities living in conservation landscapes in the GMS. The Pilot was implemented between 2006-2010 in Pathoumphone District, Champassak Province, and covered 11 villages with a total population of 6,678 (2009) comprising 1,129 households.

23. The BCI pilot yielded several useful lessons. Participatory land-use planning (PLUP), as undertaken in BCI pilot site provided villagers an opportunity to delineate village forest

[2] see Biodiversity Conservation Corridors Initiative Report (2006-2011) at http://gis.gms-eoc.org/eoc_documents

boundaries as a first step to issuing collective forest land use certificates. For villagers, retaining security of tenure over collective village forests is of paramount interest; applying PLUP, villagers in Ban Houayko increased protected forest area form 121,254 ha to 188,056 ha by consolidating secondary forest area categories for production and protection. They also opted to set up a patrolling regime and undertake forest restoration and livelihood improvement measures. These experiences served as important lessons to achieve sustainable forest management at decentralized levels. They have been adopted in the design of the BCC.

24. The BCI also demonstrated the need to support alternative sources of livelihood that are voluntarily adopted by communities, as well as to increase the productivity of the staple hill rice food crop. Hill rice productivity is extremely low, resulting in serious seasonal food shortages in most of these communities. Income from perennial crops such as fruits and nuts (e.g. cashew), bamboo and rattan can be used to purchase rice from areas with more suitable growing conditions. However perennial crops need time before an income stream is generated and the provision of paid employment for forest surveying, inventory and protection and forest restoration will bridge the gap. Under the BCI pilot project implementation, direct cash support was provided for works done. Over 23% of households receiving cash have been involved in multiple tasks; (i) forest land preparation; (ii) patrolling of village forest and NPA; (iii) enrichment planting; (iv) biodiversity monitoring; (v) nursery works and other surveys.

25. Evaluation of the pilot phase showed that beneficiaries recognized the following positive impacts of BCI project interventions: (i) managing NTFP access enabled regeneration (44.9%); (ii) agro-forestry inputs stabilized and restored forest products (60.1%); (iii) food crop production and food security improved (37.3%); (iv) improved soil fertility and reduced soil erosion (23.4%); and securing land tenure through land use certificates and participatory land use planning (14.6%).

26. In 2010, the BCI pilot was scaled up into the Biodiversity Conservation Corridor Project (BCC). The project preparation technical assistance (PPTA) of the BCC which was carried out between March to November 2010, included extensive economic, institutional, environmental and social assessments of the potential to scale up the BCI pilot.[3] The Project design was based on surveys were carried out in selected villages of Champassak, Attapeu and Xekong provinces of southern Lao PDR. Project interventions were developed on the basis of priorities identified by villagers which included: (a) forest restoration (b) forest protection (c) NTFP conservation and (d) livelihood improvements (through home gardens, poultry and cattle raising, fish ponds, mushroom growing, cash crops etc). The project design was based on standard due diligence covering social, environmental and economic aspects of the proposed Project.

Applying safeguards during project design

27. The BCI pilot phase activities demonstrated the general environmental and social risks and potential impacts associated with REDD+ in Conservation and Protection forests. The corresponding mitigation measures and safeguard plans were incorporated in the design of the follow-up BCC Project and will be applied during design of the FIP investments as well.[4] A separate Environmental and Social Impact Assessment (ESIA) will be conducted during the preparation of specific investments, using the experience of BCI implementation, and relevant

[3] See PPTA Reports at http://gis.gms-eoc.org/eoc_documents

[4] The safeguard plans relating to ethnic groups, gender, resettlement and environment can be found at http://gis.gms-eoc.org/eoc_documents

safeguard instruments will be developed in line with: (i) laws and regulation of the country including GOL commitments to international agreements; (ii) policies and procedures of financing agencies; (iii) requirements of the UN system in particular the guidelines of UN-REDD Program. Throughout the preparation and implementation process, community participation and consultation – including FPIC -- will be emphasized to avoid any negative impacts on the livelihood of the local population and to safeguard the rights of minority groups.

28. Mechanisms for conflict resolution, grievance and appeals will be established and disseminated to all relevant stakeholders, including indigenous peoples who may be affected by the project. To the extent possible, existing mechanisms on customary use of forests and for conflict resolution, etc, will be utilized. Relevant Indigenous Peoples and Local Communities will be encouraged and empowered to participate in the design and implementation of specific investments, with view to minimizing negative impacts, maximizing the co-benefits and ensuring sustainability.

V. Supplemental information in response to comments on Project 2 – Smallholder Forestry (SF)

29. The main issues relating to SF (Project 2) requiring clarification are as follows:

- "Projects 1 and 2 are much more speculative and less convincing in their technical assessment and design."
- "Project 2 is not innovative or transformative and could benefit from the experiences …"
- "The "jury is out" on the potential effect of Project 2 on poverty alleviation because aspects of similarly proposed small-holder programs in Vietnam actually increased householder indebtedness and resulted in behaviour that increased C emissions and ecosystem degradation"
- "The methodology for establishing baselines and estimating potential reductions is not apparent"
- "Project 2 focuses on the development of smallholder and private plantations and woodlots, however both the environmental and social benefits will depend on the adoption of sustainable plantation models"
- "Throughout this FIP document there is a recurring theme of discrimination and bias against rotational swidden agriculture as practised by ethnic minorities outside the Mekong lowlands"
- "An important consideration in the influence of fire on ecosystem function is the relationship between fire frequency and fire intensity"
- "Commercial tree crop plantations are not forests and their establishment should not be considered reforestation or forest restoration."
- "Simulation models can be used to develop plantation guidelines and prescriptions"

Sub-Committee Comments

- "The main questions of concern raised in the independent review are around the lack of focus in the investment plan, as well as the likely impact on swidden farmers and ethnic minorities"

- "Recommend undertaking a rigorous problem analysis when preparing the proposed projects and using this as the basis for defining specific interventions to be financed"

- "Recommend preparing a strong consultation and engagement plan, explicitly addressing the questions raised over shifting cultivators and ethnic minorities raised in the independent review of the investment plan" The follow section addresses the above issues. Several studies have been referenced in the comments and are included in a reference list provided further in the document. The list of references will also be used to prepare the detailed project proposal.

Building on best practices

30. Under Project 2 world-class companies with proven capacity, recognized skills and experience in managing smallholder schemes will be identified as potential IFC private sector partners. All partners will be required to adhere to IFC performance standards, which address social and environmental issues[5].

31. The suggestion to incorporate experience from Vietnam in Project 2 will be considered during the project preparation phase. In summary, whilst there are some examples of poorly managed plantations in Vietnam and Thailand, examples of effective and sustainable plantation practices are available in both countries where acacia/eucalypt plantations are moving (in some cases) into the 4th rotation and there are thriving export wood chip industries. The technology to manage fast-growing plantations through successive rotations is available (see references below). Studies on fast-growing tropical plantations conducted by the Centre for International Forest Research (CIFOR) concluded that *No major risks to soils were identified that cannot be managed by scientifically-based practices* (Nambiar and Kallio, 2008). In Thailand, the recent paper by Boulay *et al* (2011) demonstrates that smallholdings can be both technically and financially attractive. Harwood (2011) concludes that the resource of tropical acacia plantations "now produces substantial industrial wood flows, contributing to poverty alleviation of many smallholder tree-farmers and helping to reduce harvesting demands on natural forests".

Introducing innovation and transformation

32. The SF project is highly innovative and will involve candidate partners with experience and expertise in this area. Due to the nature of the private sector projects the selection of partners will occur during the project proposal period. The various potential partners for implementing this project are proposing to use different approaches than those adopted in Vietnam. Lessons learned from Vietnam will be referenced through experiences such as the World Bank Vietnam FSDP project, which has produced technical guidelines for smallholder plantation development. One potential partner, Stora Enso, has already done a pilot of rice

[5] The eight IFC Performance standards include: 1. Social and Environmental Assessment and Management Systems; 2. Labor and Working Conditions; 3. Pollution Prevention and Abatement; 4. Community Health, Safety and Security; 5. Land Acquisition and Involuntary Resettlement; 6. Biodiversity Conservation and Sustainable Natural Resource Management which clearly states that "clients involved in natural forest harvesting or plantation development will not cause any conversion or degradation of critical habitat;" 7. Indigenous Peoples; and 8. Cultural Heritage. (http://www.ifc.org/ifcext/sustainability.nsf/Content/PerformanceStandards)

intercropping in plantations with positive results, so models are available to further develop in Lao PDR.

33. The direct involvement of international performance standards and well as the selection of recognized private industry in smallholder forest plantation schemes is both innovative and transformative within the context of Lao PDR (UNDP, 2011). These features of the project will also help ensure and demonstrate best practices and adherence to regulatory control and enforcement according to existing Lao PDR laws.

34. A key feature of the smallholder initiatives being developed by three of the companies which might partner with IFC, is that there has been considerable consultation with potential smallholder partners and that these initiatives are based upon substantial socio-economic analysis (Daviau, 2004; UNDP, 2011).

35. As noted in the IP each of the three MDBs will follow their respective safeguard policies and will be responsible for compliance. Work on defining safeguard issues has been initiated in some cases. For example, socio-economic studies have been completed recently in areas where smallholder plantations might be established (Daviau, 2004; UNDP, 2011).

Alleviating poverty has been demonstrated

36. In areas of Lao PDR where IFC's potential partners operate, comprehensive published studies suggest that smallholdings will play a positive role in the alleviation of poverty (UNDP, 2011). A recent CIFOR study in northern Vietnam concluded that *plantation wood plays an important part in local livelihoods* (Tan, 2011). Economic assessments of acacia plantations in Indonesia and Vietnam indicate that local livelihoods are positively influenced by growing plantation wood (Lindner, 2011; Fisher and Gordon, 2007); van Bueren, 2004). Vietnam now has an estimated 500,000 ha of eucalypt and 600,000 ha of acacia plantations. This plantation resource provides the basis for an export wood chip industry of over 4 million bdmt (bone dry metric tons) annually worth an estimated US$520 million FOB of which US$192 mill goes directly to growers as royalties. Solid wood products from the acacia plantations offer an estimated 20% of Vietnam's export furniture – worth over US$600 million. This activity, based on management of formerly bare hills, provides a great deal of benefit for rural Vietnam (Griffin *et al*, 2011).

37. IFC's potential partners have world class experience in supporting smallholder woodlot establishment. *Aditya Birla Group*'s resource base in India is entirely based upon smallholders, *Stora Enso* has experience in both China (UNDP, 2006) and South America on rice intercropping in plantations, and *Oji Paper Co Ltd* has experience from Vietnam, China and (mixed) experience in Lao PDR. While there is not a large body of experience in Lao PDR, much can be learned from the successes and failures of the extensive plantation regimes in Vietnam and other parts of Southeast Asia (see references).

Assessing biophysical information needs for planning

38. The SF Project focuses on plantation and agroforestry development on highly degraded secondary vegetation mainly in the southern regions of Lao PDR. A crown density classification for specific forest formations would be beneficial, but not directly relevant for smallholder plantation establishment considering the long time period since deforestation in these regions. A revised system of forest classification that takes into account the naturally low density in some forest types such as Dry Dipterocarp forest has recently been developed in Lao PDR and FIP

financed projects will be expected to pilot this new classification system in evaluating sites for inclusion in plantation areas.

39. The IFC performance standard 6 on biodiversity conservation and sustainable management of living natural resources requires, among others, that client projects maintain the benefits of ecosystem services. As part of this requirement the project plan will assess impacts and dependence on ecosystem services provided by vegetation cover.

Assessing land use systems in a balanced manner

40. We acknowledge the reviewer comments that in some situations, rotational agriculture is a benign and productive land use system. In many Districts of southern Lao PDR (ie. Nong and Ta Oy), land access is not limiting and farmers have access to as much land as they can cultivate. In this area farmers practice both rotational agriculture and swidden in intact forest. However, despite this benefit of almost unlimited land, many farmers are unable to provide sufficient rice for more than 3-4 months. Whilst environmentally benign, it could be argued that the rotational agriculture system is inherently inefficient and unproductive and that ongoing dependence upon this system to meet basic food needs helps keep these communities in poverty. If this argument is accepted then some interventions are required which will lead to new opportunities for more productive land use and new ways of managing rotational agriculture. FIP investment via proposed Project 2 represents one such opportunity.

41. As a safeguard to address community preferences for land management, the design of smallholder forestry will incorporate IFC performance standard 7 on indigenous peoples, which requires free prior and informed consent of affected communities of indigenous people. Appropriate consultations will be held during the design period. In one prospective project location, detailed community socioeconomic information collection has already commenced (UNDP 2011), which will provide the information needed to conduct FPIC consultations.

42. The Smallholder Forestry Project involves the development of partnerships between forest plantation enterprises and smallholder communities. The timeframe for the project is at least one rotation of about six years. Project monitoring and evaluation will be designed to incorporate this timeframe and to ensure that successful livelihood enhancement of smallholders is evaluated properly.

Managing ecosystems includes protection

43. Fire, both managed for land clearing and escaped wildland fire are common across vegetation types in Lao PDR. Protection is a core element of sustainable forest management and practiced in all reputable forest plantations. The design of the project will include an analysis of local fire regimes (including fire weather, fuels, fire history and burn severity, and ignition risks) and requirements for an appropriate forest fire protection program.

44. The design of the Smallholder Forestry Project will consider the inclusion of a component on institutional and capacity strengthening of GoL monitoring and enforcement systems in the forest plantation sector.

Defining smallholder forestry and sustainable forest management

45. Forest plantations are considered forests according to internationally recognized definitions such as provided by the United Nations Food and Agricultural Organization.

Moreover, professionally operated plantations incorporate the same elements of sustainable forest management as applied to natural forests. As well, plantations are subject to similar certification systems, such as FSC. Under defined conditions, forest plantations are recognized as afforestation and reforestation activities under the Clean Development Mechanism.

46. A recent review of tropical plantation experience over multiple rotations has concluded that subtropical and tropical plantations can be managed to increase and sustain productivity. The study observed that conserving site resources (organic matter and nutrients) to maintain production is very important. No major risks to soils, however, were identified that cannot be managed by scientifically-based practices (Nambiar and Kallio 2008).

47. There are robust simulation models available (such as CABALA from Australia) which have been developed for a wide range of tropical/sub-tropical sites.

Providing more analysis and detail will be required

48. More detail on the Smallholder Forestry Project will be included the design proposal, as this will require decisions to be made on specific locations, communities and forest plantation enterprises for partnership. Impacts on farmers and minorities will be addressed by IFC through adherence to its Performance Standards, which include requirements, for example, for (i) free, informed and prior consent (FPIC) with indigenous peoples in project areas, and (ii) the need to assess impacts to ecosystem services.

49. Baseline surveys and analysis are required for all IFC project planning. Indicators and targets are based upon such baselines. A thorough baseline survey has already been conducted for one potential location in southern Lao. Others surveys will be conducted at other locations to be selected.

50. The IFC requirement for FPIC mentioned above will help to ensure a strong consultation and engagement plan, the results of which will influence project design.

VI. References

A. References on Lao PDR experience in the improvement of upland agriculture relevant to Project 1 – Protecting Forests for Sustainable Ecosystem Services

Bouahom Bounthong et al. (2006). *Upland agriculture and forestry research for improving livelihoods in Lao PDR*. In K.G. Saxena, Luohui Liang, Satoru Miyata, United Nations University , Yasuyuki Kono Small-Scale Livelihoods and Natural Resource Management in Marginal areas of Monsoon Asia. India, 1st Edition

Bouahom, B., Glendinning, A., Nilsson, S., and M. Victor (eds). (2005). Poverty reduction and shifting cultivation stabilisation in the uplands of Lao PDR: Technologies, approaches and methods for improving upland Livelihoods - Proceedings of a workshop held in Luang Prabang, Lao PDR, January 27 - 30, 2004. National Agriculture and Forestry Research Institute. Vientiane, Lao PDR

Chanthavixay Keobunnam et al. (2008). *Impact of LSUAFRP farm trials: 2002-2006.* Upland Research and Capacity Development Programme (URDP). Research Report 0702. NAFRI, Vientiance, Lao PDR

Foppes, J. and S. Ketphanh. (2004). *NTFPs for poverty reduction and shifting cultivation stabilization in uplands of Lao PDR*. NAFRI

Ingles, A.W., Sounthone Kethpanh, Andy S. Inglis, and Khamphay Manivong, (2006). *Scaling Sideways and upways: Identifying Factors that Affect the Adoption of Forest-Based Livelihoods Development Interventions in Lao PDR*. IUCN, Vientiane Lao PDR

Lienhard, P., et al. (2006). *Improving smallholder livelihood, watershed and soil management through conservation agriculture in Lao PDR.* Conference on Sustainable Sloping Lands and Watershed Management Conference 12-15 December 2006 Luang Prabang, Lao PDR

Linquist, B., et al. (2004). Improving rice based upland cropping systems for the Lao PDR. NAFRI Workshop on Shifting Cultivation and Poverty Eradication in the Uplands of the Lao PDR

MAF. (1993). *Shifting Cultivation Systems and Rural Development in the Lao PDR*. Report of the Nabong Technical Meeting.

NAFRI, NAFES, NUOL. (2005). *Improving livelihoods in the upland of the Lao PDR, Volume 1: Initiatives and approaches.* National Agriculture and Forestry Research Institute. Vientiane, Lao PDR.

NAFRI. (2007). *Research Report on Improved Land Use Planning and Land Allocation Procedures in Re-location Villages in Huay Maha-Poung Pao Village Phonesay District, Luang Prabang Province.* URDP research report 2007/04Vientiane, Lao PDR

NAFRI, Field report from Ban Saisamphanh, Namo, Oudomxay. Field Report 0802. Exploring Human Rights Based Approaches in URDP NAFRI, Vientiane, Lao PDR

Nhoungthong Sihanath et al. (2004). FAO Special Programme for Food Security: Problems and Opportunities in Reaching Rural Women in the Uplands of Northern Lao PDR. NAFRI Workshop on "Poverty Reduction and Shifting Cultivation Stabilization in the Uplands of Lao PDR: Technologies, approaches and methods for improving upland Livelihoods". NAFRI. Vientiane, Lao PDR.

Thongsavanh Keonakhone, et al. *Understanding Livestock Groups*:

B. References on Socio-Economic, Technical, Productivity and Biodiversity Conservation Issues in Lao PDR relevant to Project 2 – Smallholder Forestry Project

Social and Economic Issues

Barney, K. (2009). Lao PDR and the making of a 'relational' resource frontier. *The Geographical Journal*, Vol. 175, No. 2, pp. 146–159.

Belgian Technical Cooperation (2004). *Village Development Plan of Ban Paxia, Nong District. Village development programme in Savannakhet Province*. Lao – Belgian Cooperation Project BTC - LAO/01/004. Department of Planning & Cooperation, Savannakhet, Lao PDR. 41 pp.

Couto, L and Betters, D. R. (1995). *Short-rotation eucalypt plantations in Brazil: Socio and environmental issues*. Biofuels Feedstock Development Program, Environmental Sciences Division, US Department of Energy. Oak Ridge National Laboratory 32pp.

Daviau, S. (2004). *Anthropological and sociological study in Nong and Sepon Districts*, Savannakhet province, Lao PDR. Lao – Belgian Cooperation Project BTC-LAO/01/004. Department for Planning and Cooperation, Savannakhet. 76pp.

Fisher, H. and Gordon, J. (2007). Improved Australian tree species for Vietnam. *ACIAR Impact Assessment Series Report* No. 47, July 2007. Available at: www.aciar.gov.au

Fujita, Y. and Phanvilay, K. (2008) Land and Forest Allocation in Lao People's Democratic Republic: Comparison of Case Studies from Community-Based Natural Resource Management Research, *Society & Natural Resources*, 21: 2, 120 — 133

Harwood, C. E. (2011). Strengthening the tropical acacia plantation value chain: the role of research. Guest editorial. *Journal of Tropical Forest Science* 23(1).

Lindner R. 2011. *The economic impact in Indonesia and Australia of investment in plantation forestry research, 1987–2009*. ACIAR Impact Assessment Series Report No. 71. Australian Centre for International Agricultural Research: Canberra. 89 pp. Available at ACIAR's website at: www.aciar.gov.au

Tan, N.Q. (2011). Chopping for chips: an analysis of wood flows from smallholder plantations in Vietnam. Working Paper 65. CIFOR, Bogor, Indonesia. Available at: http://www.cifor.org/nc/online-library/browse/view-publication/publication/3473.html

Tomaselli, I. (2007). The allure of plantations. ITTO Tropical Forest Update 17(1), 10–13.

UNDP (2006). *Environmental and Social Impacts Analysis*. Stora Enso Plantation Project in Guangxi, China. Final report. 184 pp. UNDP, China. http://www.undp.org.cn/modules.php?op=modload&name=News&file=article&catid=18&topic=6&sid=263&mode=thread&order=0&thold=0

UNDP (2011). Socioeconomic Impact Assessment: Stora Enso Plantation Project. Lao People's Democratic Republic. 200pp. Available at: http://www.undplao.org/official%20docs/2011/Stora%20Enso%20SIA.pdf

Van Bueren, M. (2004). Acacia hybrids in Vietnam. ACIAR Impact Assessment Series Report No. 27. Available at ACIAR's website at: www.aciar.gov.au

Technical and Sustainable Productivity Issues

Boulay, A., Tacconi, L. and Kanowski, P. (2011). Financial performance of contract tree farming for smallholders: the case of contract eucalypt tree farming in Thailand. *Small-scale Forestry* (submitted).

FAO **(**2006). *Responsible Management of Planted Forests: Voluntary Guidelines.* Planted Forests and Trees Working Paper 37/E. FAO, Rome. www.fao.org/forestry/site/10368/en

Griffin, A.R., Midgley S. J., Bush D, J., Cunningham, P., and Rinaudo, T. (2011). Global plantings and utilisation of Australian acacias – past, present and future. *Diversity and Distributions* 17 (5) 837 - 847.

ITTO (1993). Guidelines for the Establishment and Sustainable Management of Planted Tropical Forests. ITTO Policy Development 4. International Tropical Timber Organization (ITTO), Yokahama, Japan, 38 pp.

J.F. O'Hehir, J, F, and Nambiar, E.K.S.(2010). Productivity of three successive rotations of *P. radiata* plantations in South Australia over a century. *Forest Ecology and Management* 259 (2010) 1857–1869.

Karltun, E., Midgley, S. and Olsson, M. (2011). Soil and Water Management and Carbon Sequestration. Environmental Impact Assessment, Stora Enso Plantation Project, Lao People's Democratic Republic. Department of Soil and Environment, Swedish University of Agricultural Sciences, Uppsala. 44pp.

Midgley, S. J. (2006). Tropical Acacias: Their Domestication and Contribution to Asia's Wood and Pulp Industries. Paper to the 2nd Latin American IUFRO Congress: *The Increasing Importance of the Environmental, Social and Economic Functions.* La Serena, Chile 23 – 27 October 2006.

Midgley, S. J. and Beadle, C. (2006). Tropical acacias: an expanding market for solid wood. In: Beadle, C.L. and Brown, A.G. (eds) 2007. *Acacia Utilisation and Management: Adding Value***.** RIRDC Publication No.07/095, Rural Industries Research and Development Corporation, Canberra.

Nambiar, E. K. S. 1996. Sustained productivity of forests is a continuing challenge to soil science. *Soil Sci. Soc. Am J.* 60: 1629 – 1642.

Nambiar, E. K. S. 1997. Pursuit of Sustainable Plantation Forestry. *Southern African Forestry Journal* 184:45 – 62.

Nambiar, E. K. S. 1999. Productivity and sustainability of plantation forests. *Bosque* 20(1): 9-21.

Nambiar, E.K. S., Ranger, J., Tiarks, A. and T. Toma (eds) (2004). Site Management and Productivity in Tropical Plantation Forests. Proceedings of Workshops in Congo July 2001 and China February 2003. 65 pp. CIFOR. Available at: http://www.cifor.org/publications/pdf_files/Books/StMgnt-tropical/Site_Management1.pdf

Nambiar, E.K.S. (Editor) (2008). Site Management and Productivity in Tropical Plantation Forests. Proceedings of Workshops in Piracicaba (Brazil) 22-26 November 2004 and Bogor (Indonesia) 6-9 November 2006. Bogor, Indonesia: CIFOR. 246 pp. Available at: http://www.cifor.org/publications/pdf_files/Books/BKallio0801.pdf

Nambiar, E.K.S. and Kallio, M.H. 2008. Increasing and sustaining productivity in tropical forest plantations: making a difference through cooperative research and partnerships. *In*: Nambiar, E.K.S. (ed.) Site management and productivity in tropical plantation forests: workshop proceedings, 22-26 November 2004 Piracicaba, Brazil, and 6-9 November, Bogor, Indonesia, 205-228. Center for International Forestry Research, Bogor, Indonesia.

Nambiar, E.K.S., Cossalter, C. and Tiarks, A.(eds) (1998). Site Management and Productivity in Tropical Plantation Forests. Workshop Proceedings 16-20 February 1998. Pietermaritzburg, South Africa. CIFOR. 77pp. Available at: http://www.cifor.org/publications/pdf_files/Books/StMgnt.pdf

Poulsen, J. and Applegate, G. (2001). *Criteria and Indicators for Sustainable Development of Industrial Tropical Tree Plantations* (with links to a Code of Practice). Centre for International Forest Research (CIFOR), Bogor, 144 pp.

Tiarks, A., Nambiar, E. K. S. and Cossalter, C. (1998). Site management and productivity in tropical forest plantations. Impact on soils and options for management over successive rotations. CIFOR Occasional Paper No. 16 13pp. Available at: http://www.cifor.org/publications/pdf_files/OccPapers/OP-16.pdf

Issues relating to Biodiversity

IUCN (2008). Rapid Biodiversity Assessment for Stora Enso Plantations in Southern Lao PDR. 208 pp. Available at: http://cmsdata.iucn.org/downloads/stora_enso_final_oct_08_2.pdf

Jactel, H., Franc, A., Sayer, J.A. and Parrotta, J.A. 2005. Biodiversity and plantation forests: An overview. Proc. XXll IUFRO World Congress, Brisbane, Australia. August, 2005.

Sayer, J.A., Aldrich, M., Hager N. and Pollard D. 2005. *Towards better practice for conserving biodiversity in plantation forestry.* An issues paper for the UFRO, INRA, IEFC, WWF and EFI meeting on Biodiversity and conservation Biology in Plantation Forests. Bordeaux, France 26th-29th April, 2005.