

Laos - Planting for the Future

**Environmental and Social Codes of Practice for
Industrial Tree Plantations – An Overview**

Volume II - Annexes

**Prepared for the
Land Issues Working Group
<http://laolandissues.org/>**

**with support from the
Swiss Agency for Cooperation and Development**

**Sean Foley
EcoAsia Limited**

June 2009

Vientiane

Summary

This report was commissioned by the Lao Land Issues Working Group and supported by funding from the Swiss Agency for Development and Cooperation. It was prepared during May-June 2009.

Mapping the principles and process for preparing an environmental and social Code of Practice (CoP) for the industrial tree plantation sector in Laos has proved to be larger and more complex than originally envisaged. This report, in two volumes, is the first part of a larger report, the second part to be prepared on the basis of a workshop to be conducted later in 2009.

For plantations, most CoP are based on an extension of CoP developed for forestry, with additional environmental and social elements. Implementing a CoP should, logically, be a first step in moving towards formal certification using one of the internationally accepted systems available, as the environmental, social and economic benefits for all parties can be substantial.

CoP have their roots in legal systems and the commitment of individuals and organisations to conducting their business, and that of their sector of the economy, on ethical, equitable, publicly transparent and accountable basis. Development and application of CoP in many sectors of the global economy has gathered pace over the last two decades. The learning during the last decade or so from application and monitoring of CoP is that all parties can benefit, while simultaneously destructive environmental and social impacts are minimised or avoided. Most importantly, when implemented following the both letter and the spirit of the CoP, the sustained economic benefits can be greater for all parties involved, and more resilient to the vagaries of markets.

The research revealed that a three-layered hierarchy of assessment and certification systems has evolved during the last two decades. The 'top' layer assesses national and international certification systems, the 'middle' layer, which is used to assess industry association, private and government certification systems, the 'lowest' layer. All of the systems are periodically revised to take account of improved standards or emerging issues, e.g. climate change.

The range of environmental and social issues included in CoP (or certification) systems are broadly similar across all the different systems, but there are important differences in the emphasis placed on groups of issues and means of verification, reporting and transparency. Guidelines developed by forestry organisations, e.g. FAO, CIFOR, ITTO – clearly reflect their professional orientation and priorities, with significantly more emphasis on technical and financial issues and less on environmental and social standards and processes. These guidelines are similar with regard to issues and content to CoP for forestry and plantation associations, but are voluntary guidelines and lack formal monitoring requirements.

Those developed by forestry and plantation business associations, e.g. national and commercial systems under PEFC - have a similar orientation, but provide a defined process and standards for certification; requirements for reporting and public transparency, e.g. full disclosure of monitoring reports - are limited. The exceptions are the 4C and UTZ systems (for coffee, tea and cacao) where public disclosure of monitoring reports is required.

The three major multi-stakeholder certification systems – FSC, RSBO and RSB – all ‘middle layer’ systems – developed through long consultations between large plantation companies, smallholder associations, environmental and social NGOs, processing and marketing companies, academics and others accord much more importance to environmental and social standards, and require public disclosure of virtually all documentation. These systems provide for a well-defined path towards certification supervised by accredited third-party companies, and certified plantation companies can use the certifier’s official logo (e.g. FSC, PEFC, 4C, UTZ) on their products.

It is noteworthy that more recently developed systems, RSBO and RBS, explicitly include requirements to inform, fully consult with and respect the cultural, social and economic rights of ethnic minorities, including fair compensation for land acquisition, labour rights and fair working conditions; FSC is sometimes criticised for lack of explicit attention to these issues. These same issues are dealt with in vague language or absent from the FAO, CIFOR and ITTO guidelines and the industry association CoP, again with the exception of 4C and UTZ. Each of these systems – but not FAO, CIFOR or ITTO systems - requires certification of each element in the whole production and processing system – i.e. the ‘Chain of Custody’ from plantation to consumer must be unbroken.

In Laos the essential legal framework for plantation CoP is in theory in place. There is a quite full suite of forestry, environmental and social laws, regulations and technical guidelines, most of them developed according to internationally accepted standards. The major exception being an effective land tenure and land titling system for rural areas, especially for communal land and ethnic groups. Major donors have also drawn attention to major problems in governance, such as application of the law and lack of administrative transparency and accountability.

It is widely recognised there is a serious lack of capacity to effectively and fairly implement existing environmental and social (e.g. resettlement) laws and regulations. This makes the implementation of plantation (and forestry) CoP difficult, and undermines the economic and other advantages companies may seek to gain.

The next steps proposed for developing a plantation CoP, prior to initiating formal multi-stakeholder roundtable discussions, would be to determine which government agency will be the sponsor and supporter the development process. This would be followed by several preliminary, largely informal, workshops including a broad range of participants, so as to discuss and agree on a strategy and timetable.

Table of Contents

Annexes – Volume II

- Annex 1 Terms of Reference “Industrial Tree Plantations in Lao PDR: Principles for Environmental and Social Standards.”
- Annex 2 List of Persons and Organisations Consulted.
- Annex 3 Relevant and Legally Binding International Treaties and Agreements to which Lao PDR is a Signatory.
- Annex 4 Summary of Legal Issues Relevant for the Development and Management of Tree Plantations.
- Annex 5 What are Forests, Planted Forests and Plantations?
- Annex 6 FAO Illustration of Different Types of Forest.
- Annex 7 Summary of Results of “Forest Certification: A Review of Impacts and Assessment Frameworks.”
- Annex 8 Forest Stewardship Council Principles.
- Annex 9 Basis of the PEFC Procedures and Standards.
- Annex 10 Roundtable on Sustainable Biofuels – [Draft] Standard for Sustainable Biofuels.
- Annex 11 “ITTO Guidelines for the Establishment and Sustainable Management of Planted Tropical Forests – 1993.”
- Annex 12 Summary of CIFOR “Code of Practice for Industrial Tree Plantation Development in the Tropics.”
- Annex 13 FAO (2006) “Responsible Management of Planted Forests: Voluntary Guidelines.”
- Annex 14 Guide to Overseas Sustainable Silviculture by Chinese Enterprises.
- Annex 15 Common Code for the Coffee Community – 4C – Matrix.
- Annex 16 UTZ Code of Conduct Criteria.
- Annex 17 Recommendations for Investments in the Plantation Sector.

ADB	Asian Development Bank
ASEAN	Association of South East Asian Nations
CEPI	CEPI-matrix - Confederation of European Paper Industries
CIFOR	Centre for International Forestry Research
CoP	Code of Practice
4C	Common Code for the Coffee Community
CSR	Corporate Social Responsibility
DoF	Department of Forestry
FERN	Forests and the European Union Resource Network
EIA/SIA	Environmental Impact Assessment / Social Impact Assessment
EU	European Union
FAO	Food and Agriculture Organisation (of the UN)
FSC	Forest Stewardship Council
FDI	Foreign Direct Investment
GTZ	German Technical Cooperation
ITP	Industrial Tree Plantation
IFC	International Finance Corporation
ILO	International Labour Organisation
ITTO	International Tropical Timber Organisation
IUCN	International Union for the Conservation of Nature
LIWG	Land Issues Working Group
MAF	Ministry of Agriculture and Forestry
MPI	Ministry of Planning and Investment
NGO	Non Government Organisation
NLMA	National Land Management Authority
OHS	Occupational Health and Safety
PEFC	Programme for the Endorsement of Forest Certification schemes
RSB	Roundtable on Sustainable Biofuels
RSPO	Roundtable on Sustainable Palm Oil
STEA	Science, Technology and Environment Agency
TFD	The Forest Dialogue
TFT	Tropical Forest Trust
UTZ	UTZ CERTIFIED Code of Conduct
WWF	World Wide Fund for nature

Annexes

Annex 1

Terms of Reference

Industrial Tree Plantations in Lao PDR: Principles for Environmental and Social Standards

Introduction and Rationale

The plantation sector is a relatively new feature of the Lao economy. In the past 10 years, an estimated 200,000 hectares of land concessions have been granted to foreign companies who have started to establish plantations for tree crops including rubber, teak eucalyptus, jatropha, agarwood and oil palm. Rubber plantations account for at least half of this area. Despite the recent fall in commodity prices, the interest in new land concessions in Laos remains high among Asian investors.

Government policy makers have raised a number of concerns about the social and environmental impact of large land concession. Both in public and private, officials have acknowledged that they are worried about a range of issues, including: loss of biodiversity, unsatisfactory levels of compensation, disruption of rural livelihoods and a possible influx of foreign workers. Most recently, the Prime Minister called for a “clearer agricultural land policy” to ensure that the commodity production did not undermine food security¹.

Although the Government of Lao PDR has a number of laws and regulations aimed at protecting the natural environment and the interests of rural communities, in practice there have often been low levels of compliance.

These problems have been faced in other countries where the plantation sector has existed for a longer period. Laos has an opportunity to learn from that experience. One measure that has been used to reduce negative social and environmental impacts of plantations in other parts of the world is a ‘Code of Practice’.

A Code of Practice *is a set of rules or guidelines aimed at maintaining an acceptable standard of behaviour and decision-making in a specified situation.* These guidelines may be drawn up by Government bodies, industry associations and/or investors. They can be legally enforced or adopted on a voluntary basis, and they are sometimes used in conjunction with the concept of ‘corporate social responsibility’ (CSR).

Examples include:

- The RSPO Principles and Criteria for Sustainable Palm Oil Production²
- The Common Code for the Coffee Community³
- UTZ CERTIFIED Code of Conduct for Tea⁴
- The IFC Environmental, Health, and Safety Guidelines for Plantation Crop Production⁵

¹ ‘PM urges clearer agriculture policy’, Vientiane Times, 30 March 2009

² www.rspo.org/resource_centre/RSPO%20Principles%20&%20Criteria%20Document.pdf

³ www.nescafe.com/NR/rdonlyres/CA26CACB-CE8A-4F5A-BCFF-8C908DF55B77/67169/4c_common_code_en1.pdf

⁴ http://www.utzcertified.org/index.php?pageID=227&showdoc=227_1_3

⁵ www.ifc.org/ifcext/enviro.nsf/AttachmentsByTitle/gui_EHSGuidelines2007_PlantationCropProd/%24FILE/Final%2B-%2BPlantation%2BCrop%2BProduction.pdf

Despite the doubts that have been raised about the effectiveness of CSR, particularly when this involves self-regulation⁶, the process of creating a Code of Practice can be a useful means for raising awareness, building consensus, and improving accountability among the stakeholders in a particular type of enterprise. The benefits, in terms of wider application of acceptable social and environmental standards, is potentially very high.

The forthcoming ASEAN Rubber Conference, to be held in Vientiane between June 18-20⁷, is an excellent opportunity to launch a process for creating a code of conduct for the plantations sector in Laos. Not only will key government and industry stakeholders be present, but the donor community has shown a strong interest in making sure that social and environmental issues are addressed.

Scope of Work

Immediate Objective

Produce a short report on the potential for creating a Code of Practice for industrial tree plantations in Lao PDR, including recommendations for environmental and social standards. The recommendations will include the following species: rubber, teak eucalyptus, jatropha, agarwood and oil palm.

Specific tasks

- a) Collect relevant documents, consult with members of the INGO Land Issues Working Group, and finalise Table of Contents ;
- b) Visit potential government and industry partners;
- c) Produce a draft report of no more than 20 pages, following the approved Table of Contents;
- d) Get feedback on draft from LIWG, finalise report and prepare a powerpoint presentation of no more than 1 hour; and
- e) Organise the production by a third party of one poster which illustrates the results and recommendations.

The consultant may additionally be requested to make the presentation at a meeting in Vientiane, tentatively scheduled for the period 15-17 June.

Draft Table of Contents for the Report

1. Summary of environmental and social concerns relating to ITPs in Laos
2. Examples of 'Codes of Practice' relating to ITPs in other countries (incl. those mentioned above).
3. Recommendations for principles for environmental and social standards to be included in an ITP Code of Practice for Laos.
4. Options for future implementation of the Lao Code of Practice.
5. Recommended next steps to establish a Lao Code of Practice.

⁶ For example: <http://empowerngo.com/node/76>

⁷ <http://www.aseanrubberconference.com>

Annex 2

List of People Contacted

Name	Institution / Occupation
Florian Rock,	GTZ
Michael Victor	NAFRI
Peter Jones	Consultant
Manivong Viravong	President Lao Tree Plantation Association
Bouatha Khatthiya	Deputy DG Investment Promotion, MPI
Sisavanh Didravong	Deputy Chief Economic Planning, MPI
Ouphakhone Alounsavath	DoF, CoP FocalPoint
Tom Callender	Earthsystems Laos
Bounsouane Phongphicith	Deputy Dir, Planning, DoF
Peter Jensen	SEM II/WREA
Jean-Noel Duff	SEM II/WREA
Inthavy Akkharath	Ex-Do, CoP Focal Point
Saykham Voladet	NERI, Research Staff
Leeber Leebouapa	NERI, Deputy Director
Souphith Darachanthara	NERI, Deputy Director
Assoc. Prof. Lathsamy Bouapha	NUoL
Peter Fogde	Burapha Agroforestry / Stora Enso
Piers Harper	Birla Lao Pulp & Plantations Company
Roger Steinhardt	Oji Lao Plantation Holdings Limited
Todd Sigaty	Legal Advisor
Andrew Bartlett	LEAP
Russell Haines, ACIAR	Canberra, Australia (visiting)

Annex 3

Relevant and Legally Binding International Treaties and Agreements to which Lao PDR is a Signatory

The ASEAN Charter (ASEAN, 2007) is an agreement between ten nations in SE Asia covering many important issues, including environment; in this context its main relevance is to the commitment to good governance and respect for human rights (<http://www.aseansec.org/>)

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, 1975) is an agreement between governments to ensure that international trade in specimens of wild animals and plants does not threaten their survival (www.cites.org).

International Plant Protection Convention (FAO, 1951, revised 1997) outlines actions to prevent the introduction and spread of pests and diseases of plants and plant products across national borders and promotes measures for their control (www.fao.org).

Convention on Biological Diversity (CBD, 1992) details the principles governing the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising from the use of genetic resources (www.biodiv.org).

United Nations Framework Convention on Climate Change (UNFCCC, 1992) aims to stabilize greenhouse gas emissions in the atmosphere, and the Kyoto Protocol to the UNFCCC (1997) provides for mechanisms allowing countries to offset greenhouse gas emissions through afforestation, reforestation and forest management activities (<http://unfccc.int>).

Cartagena Protocol on Biosafety (CPB, 2000) promotes biosafety through practical rules and procedures for the safe transfer, handling and use of genetically modified organisms, with a specific focus on regulating their movement between countries (<http://www.cbd.int/biosafety>).

Indigenous and Tribal Peoples Convention, No. 169 (ITPC, ILO, 1991) provides international standards to protect the rights of indigenous and tribal populations in independent countries (www.ohchr.org).

International Treaty on Plant Genetic Resources for Food and Agriculture (FAO, 2006) supports the conservation and sustainable use of plant genetic resources for food and agriculture and the fair and equitable sharing of benefits derived from their use, in harmony with the Convention on Biological Diversity (www.fao.org).

Under Negotiation:

World Trade Organization Principles (WTO, 1955–present) promote free trade through non-discrimination, reciprocity and transparency, with special treatment of trade from developing countries (www.wto.org).

Ramsar Convention on Wetlands (RAMSAR, 1971) is an intergovernmental treaty that provides a framework for national action and international cooperation for the conservation and wise use of wetlands and their resources (www.ramsar.org/key_conv_e.htm).

New UN Rights

Declaration on the Rights of Indigenous Peoples (DRIP, 2007) sets out the individual and collective rights of indigenous peoples, as well as their rights to culture, identity, language, employment, health, education and other issues. It is not legally binding on countries but is on UN agencies and project, e.g. CDM and REDD (<http://www2.ohchr.org>)

Annex 4

Summary of Legal Issues Relevant for the Development and Management of Tree Plantations

This summary is extracted from a larger study “Report on Legal Framework of Forestry Sector for Forestry Strategy 2020 Lao PDR.” (Sigaty 2003), and briefly reviews the legislation relevant to tree plantations in Lao PDR.

The two tables at the end of the discussions summarise legal requirements governing plantations and identify legal issues to be addressed.

1. Background on Policy and Legal Framework on Tree Planting and Tree Plantations

Beginning with the initial forestry legislation, CM Instruction 74 (1979) on Forest Protection, GOL policies have expressly promoted the development and management of tree plantations in order to reduce pressure on natural forest, supply wood processing factories and provide villages with an alternative to shifting cultivation. Despite this support, the GOL target of 500,000 ha of tree plantations and 70% forest cover by 2020 may be difficult to reach considering less than 100,000 ha of trees have been planted since 1975. However, recent economic and legal reforms combined with donor projects focused on creating a domestic supply of plantation timber may be able to establish a comparative advantage for Lao PDR as was predicted by the FORTECH Report (1999).

2. Major Legislation Relevant to Development and Management of Tree Plantations

The Forestry Law, Articles 33-38, outlines the comprehensive framework for management of tree plantations and mandates MAF to issue standards and regulations to promote proper techniques for tree planting. To implement the Forestry Law, MAF issued Regulation 196 on Development and Promotion of Tree Planting (2000) and Instruction 1849 on Registration of Tree Plantations (1999). Other legislation has been issued recently promoting development of tree plantations to supply domestic wood-processing factories. PM Order 18 on Forest Resource Management Policy for 2002-03 bans the export of unprocessed logs and sawn timber from natural forest and requires each wood-processing factory to have a tree plantation for internal factory use and PM Decree 46, Art. 2, fn 17 bans the issuance of new foreign investment licenses to wood-processing factories intending to use natural timber as raw material.

3 Legal Issues Regarding Development and Management of Tree Plantations

In Lao PDR, a tree plantation is broadly defined as an operation approved by the State to plant trees on an area of degraded forestland > 1600 m² resulting from labor and funds (MAF Reg 196, Art. 2). One issue facing a plantation operator is to understand the land tenure system and to secure user rights to land eligible for tree planting. The Constitution (1991), Land Law (1997) and Forestry Law (1996) recognize land and forest resources as State property whereby the State assigns the right to individuals and organizations to use, manage and transfer land in accordance with legislation. In

Lao PDR, the State may only allocate, lease degraded forestland for tree planting (LL, Art. 21; FL, Art. 13).

Type of Land	Eligibility for Tree Planting and Plantation
Private Land	No approval needed for small-scale tree planting provided that planting standards are followed (MAF Reg 196, Articles 3, 5) and permit requirements to harvest, transport and export (MAF Reg 196, Articles 12-14 and MAF Instruction 1849).
Land within village boundaries	Trees shall be planted on degraded forest not suitable for agriculture allocated to individuals and households under a TLUC (FL, Art. 13; MAF Reg 535, Art. 8; MAF Instr. 822) and not in forest zones under village management agreement.
State Forestland	Tree planting shall be limited to degraded forestland, vacant land or areas previously harvested not suitable for regeneration. (FL, Articles 21, 36).
National Protected Area (NBCA)	Tree planting may occur in specific zones within national protected areas established under PM Decree 64 (1993). (MAF Reg 524, Art. 10).
National Production Forest Area	Tree planting may occur in specific zones in production forest areas established under PM Decree 59 (2002). (MAF Reg on PFAs to be issued in 2003).
Natural Dense Forest	In all cases it is strictly prohibited to plant trees within natural dense forest or to clear dense forest cover on State land for tree planting (FL, Art. 13). ⁸

Foreigners do not qualify for land titles in Lao PDR, but are eligible as foreign investors to lease degraded land from the State for tree planting (LL, Art. 65; FL, Art. 56) usually for a 50-year term approved by various authorities based on land size (LL, Art. 64):

- District authorities for forest area <3 ha with approval of PAFO;
- Provincial authorities for forest area 3 to 1,000 ha with approval of MAF;
- MAF for forest areas 1,000 to 10,000 ha with approval of Government; and GOL for forest area >10,000 ha with approval of National Assembly.⁹

An investor has the right to transfer, inherit or use as collateral their interest in a lease, land and improvements (planted trees) during the term of the lease (FIL, Art. 10; LL, Articles 5, 57, 65; FL, Articles 49, 56). If the GOL cancels a lease for other State purpose, the investor is entitled to compensation based on a formula in MAF Reg 196, Art. 23.

Individuals and households at the village level allocated degraded forestland under a 3-year TLUC to plant trees do not have the right to transfer, sell or use as collateral their land interest (LL, Art. 48). However, villagers do have the right to transfer their interest in trees planted with their own labor and expense since it is a private improvement on land under TLUC (MAF Reg 535, Art. 7). Such transfers are risky and the contracts, if any, should guarantee an equitable benefit for the farmer and require the buyer to harvest the trees in a reasonable time to prevent encumbrances on the villager's future land use.¹⁰

⁸ Concession Agreements with tree plantation operators have permitted harvest of existing trees, upon payment of royalty, in order to construct buildings, fences, and bridges within the concession area.

⁹ Approval of the NA for a land lease may be burdensome and not practiced by the GOL.

¹⁰ Reports from Luang Prabang Province are that farmers are selling teak trees within the first three years

A related issue is who owns the property rights to trees planted by villagers on their land, but at the expense of a plantation operator with a lease that overlaps the village boundary. Normally, the villager has private rights to trees they plant on their own land, but by paying for the seedlings and labor, the rights are held by the plantation. This situation raises the potential conflict between large land leases issued at the central level covering land allocated to villagers through FLUPLA. At a minimum, plantation owners should consult with villages appropriate areas for planting and if necessary provide sufficient benefits for tree planting and maintenance.

Another constraint for foreigners intending to develop a tree plantation is the requirement to obtain an investment license from the FIMC in addition to the business license from MAF and concession agreement and land lease from the GOL (FIL Articles 2, 10; PM Decree 46, Art. 2; PM Order 3, Art. 6; MAF Reg 196, Art. 7). Article 2 of the Foreign Investment Law (1994), which governs the registration of foreign investors, permits foreigners to invest in the agro-forestry sector upon specific approval and a MOU with the GOL, but this negotiation may be time consuming and uncertain.

Approval from the government is not required for individuals and organizations who plant trees on their private land with their own funds and labor (MAF Reg 196, Art. 6), but they may need to comply with planting standards and harvest, transport and export permits (see table). Approval for tree plantations located on State land is required from the various authorities based on size of the leased area (MAF Reg 196, Articles 4, 6).¹¹

A Plantation operator is required to prepare a management plan and impact assessment prior to issuance of harvest and transport permits (MAF Reg 196, Articles 11, 15) even though no guidelines exist on preparation of these documents. These requirements should be streamlined, based on lessons from Social Technical Procedures, whereby small-scale planting (less than 5 ha) is exempt and requirements are scaled for plantations based on size from small (5 to 200 ha), medium (200 to 2,000 ha) to large (above 2,000 ha).

According to MAF Reg 196, Art. 12, all tree plantations over 1,600 m² must register with the relevant authorities as stated in MAF Instruction 1849 (1999). In fact, tree plantations, even those on private lands, do not qualify for land tax exemptions until they have been duly registered by the State upon a showing of an 80% survival rate for the initial three years of operation (MAF Instruction 1849, Art. 4).

¹¹ MAF Reg 196 requires approval from DAFO (less than 100 ha); Provincial Governor, with recommendation of DAFO and PAFO, (101 ha to 500 ha); Minister of MAF (501 ha to 1000 ha); and GOL (over 1,000 ha).

Table - Permit and Tax Requirements for Tree Plantations

Activity	Plantation Timber
Harvest by villagers for customary use	Harvest of trees planted by villagers shall be approved by village authorities and reported to DAFO (FL, Art. 27; MAF Reg 196, Art. 14). Note: MAF Reg 535, Article 7 states that trees planted by villagers with their own funds and labor shall be their own property with the right to possess, use, benefit, transfer and inherit.
Harvest by registered plantations for commercial purposes	Harvest of planted trees for commercial purposes by a registered plantation shall be approved by DAFO (MAF Reg 196, Art. 14) or PAFO (FL, Art. 27) consistent with a plantation management plan (MAF Reg 196, Art. 14). Note: Existing concession agreements have timber harvest, upon royalty payment, only for construction use.
Transport between districts in one province	Transport of plantation timber from between districts in one province shall be authorized by village authorities and confirmed by DAFO (FL, Art. 27; MAF Reg, 196, Art. 14).
Transport between provinces	Transport of plantation timber between provinces shall be approved by DAFO and reported to PAFO (MAF Reg 196, Art. 14). In practice, custom authorities at provincial checkpoints also require the transporter to complete a B-10 application form.
Export	<p>The Forestry Law states that the approval to export of plantation timber shall be covered in implementing regulations (FL, Art. 29).</p> <p>MAF Reg. 196, Art. 14 require PAFO approval to export plantation timber as logs, sawn timber, semi-finished and finished products. Article 22 requires payment of export duties as required by Ministry of Finance. Ministry of Trade has not issued regulations on the export of plantation timber, but they state that the following practice is required:</p> <p>The export of finished products from plantation require:</p> <ul style="list-style-type: none"> ➤ Letter issued by MAF; and ➤ Customs B-10 application at border check point. <p>The export of timber from plantations require:</p> <ul style="list-style-type: none"> ➤ Letter issued by MAF; and ➤ Permit issued by Ministry of Trade <p>PM Decree 187 (1994) abolished export tax duties for certain agricultural products as raw material and finished goods as listed in MOF Instruction 230 (1995) which states that timber from industrial plantations shall not be exempt from export duties. However, in practice, customs and operators have verified that export duties are not collected.</p>
Land Tax – general rule	The general rule is that the land tax for tree plantations ranges from 6,000 to 10,000 kip/ha depending on type of land (PM Decree 150, Art. 8).
Land Tax for villagers planting trees on TLUC	Villagers are required to pay land tax for land under TLUC (3 years) and do not receive an exemption for planting trees unless they register under MAF Instruction 1849.
Land Tax for unregistered and registered commercial tree plantations	Tree plantations duly registered under MAF Instr. 1849, after 3 years of operation with 80% survival rate, are exempt from land taxes (PM Decree 150, Art. 16). Note: Plantations qualify if they use more than 1600 m2 of land with more than 800 trees/ha in lowland or 600 trees/ha in upland (MAF Reg 196, Art. 19; MAF Inst. 1849, Art. 4).
Natural Res. Use	Lao individuals/villagers and organizations are exempt from maintenance,

Tax for Lao villagers, companies	resource use tax and royalties from planted trees (MAF Reg. 196, Art. 20; MAF Inst. 1849, Art. 4).
Natural Resource Use Tax for Foreign Investors	Foreign investors in natural resource exploitation shall pay taxes as stated in a project agreement/MOU with the GOL (FIL, Art. 16). Note: Existing concession agreements between the GOL and tree plantations include resource tax and royalties.
Business Turnover Tax	Lao and foreign operated industrial fruit and tree plantations are exempt from business turnover tax (Tax Law, Art. 9).
Profit Tax	Profit tax for foreign investment in forestry businesses set at 20% unless discounted in the agreement with the GOL (FIL, Art. 16; Tax Law Articles. 27, 31, 38). Note: Existing concession agreements do provide for a tax holiday for initial years and scaled thereon.
Personal Income Tax for villagers	Villagers are exempt from income tax for customary use of forest products, but must pay income tax for sale of planted trees (MAF Reg. 196, Art. 20).
Personal Income Tax for foreign investors	Foreign Investors pay 10% income tax rate if in Lao PDR over 180 days/yr. (FIL, Art. 12; MAF Reg. 196, Art. 20).

Legal Issues to be Addressed

Findings	Recommendations
<p>1.1 Land Issues</p> <ol style="list-style-type: none"> 1. TLUCs issued to villagers for tree planting are only valid for three years and do not provide sufficient incentive or opportunity to receive land tax exemption since registration as a tree plantation is not applicable until three years after planting; 2. Potential conflict/overlap between central level land lease to foreign investors for tree plantations and allocation of TLUCs at district level to villagers to plant trees; 3. Article 65 of the Land Law states that leases for State land must be approved by the GOL (PM Office) and further requires the National Assembly to approve leases over 10,000 ha. 4. Villagers have full rights to trees planted with own labor and expense on land under TLUC (MAF Reg 535, Art. 7). Villagers have sold rights to these trees within three- year term of TLUC. 	<ol style="list-style-type: none"> 1. Amend the LL, Art. 22, FL, Art. 13 and MAF Instruction 822 in order to extend the duration of a TLUC beyond three years or ensure that they will be extended automatically if not converted to private title. Consider streamlining the process for villagers to register as a tree plantation (MAF Instruction 1849) in order to receive tax exemption. 2. Prior to zoning a plantation, operators should be aware of TLUCs and zoning restrictions within village boundaries resulting from land use allocation approved by district and village authorities. In areas where land use allocation has yet to occur, plantation operators should support and collaborate with authorities, villages to complete the process in an equitable manner. 3. Clarify level of authority to approve lease for tree plantation and consider increasing threshold (10,000 ha) for NA approval to promote more efficient foreign investment in this sector. 4. For trees planted on village land under TLUC, but at the expense/support of a plantation operator, the interests of both parties should be clarified either in the TLUC or a separate agreement.
<p>Harvest, Transport, Export Permits and Export Duties</p> <ol style="list-style-type: none"> 1. Regulations require several permits to harvest, transport and export plantation timber and products. 2. Based on interviews with MOF and MOT, no export duties are charged for plantation timber or products although MOF Instruction 230 expressly does not exempt plantation timber and products from export duties. 3. Based on interviews with customs officials, the current practice requires B-10 and B-80 forms at border check points for transport and export. 	<ol style="list-style-type: none"> 1. To encourage development of tree plantations, the permit system should be streamlined by one or more of the following: <ul style="list-style-type: none"> ➤ amend FL, Art. 27; MAF Reg 196, Art. 14; ➤ include an exemption in concession agreements with tree plantation operators as provided by the FIL; or ➤ allow an approved management plan to waive the need for specific permits. 2. Amend MOF Instruction 230 to exempt plantation timber and products from export duties in order to reflect current practice and concession agreements. 3. MOF should simplify, clarify existing customs procedures and reflect reform in regulations.

<p>Foreign Investment and Approvals</p> <ol style="list-style-type: none"> 1. The delays in negotiating and obtaining foreign investment license and concession agreements would likely apply to tree plantation investment (see Table 6). 2. Foreign investors are required to obtain an investment license from FIMC, a business license from MAF and a land lease and concession agreement from the GOL. 	<ol style="list-style-type: none"> 1. In order to assist speeding up the process, foreign investors in tree plantations should be aware of new legislation, for example CPC Decision 13 (2002) canceling registration fees and streamlining approvals as well as other incentives for tree plantations in PM Order 18 (2002); PM Decree 46. 2. Review FIL Article 2, PM Order 3, Art. 6; PM Decree 46 and MAF Reg 196, Art. 7 in order to make necessary amendments to simplify approval system.
<p>Plantation Management Plan</p> <p>MAF Reg 196, Articles 4 and 14 require both a STP and a plantation management plan, but do not include any specific guidelines.</p>	<ol style="list-style-type: none"> 1. Develop guidelines to implement mandate under MAF Reg. 196 to prepare a STP and plantation management plan possibly scaling the requirement based on the size of the plantation (small, medium, large) and exempting villagers and plantations under 5 ha.
<p>Registration</p> <p>Confusion over level of tree planting required to be registered and receive land tax exemption. MAF Reg 196, Art. 19 states that Plantations > 1600 m² are exempt from land tax if they plant more than 800 trees/ha in low land and 600 trees/ha in uplands, whereas, PM Decree 150, Art. 16 states that plantations covered with at least 1,100 trees per hectare shall be exempt from land tax.</p>	<p>Amend PM Decree 150, Art. 16 or MAF Reg. 196, Art. 19 to clarify planting levels that qualify for registration under MAF Instruction 1849, Art. 4 and accompanying land tax exemption.</p>

Annex 5

What are Forests, Planted Forests and Plantations?

Rather than offer my non-expert opinion it is better to offer what Meine van Noordwijk, has to say in discussing the problems that are being caused by the definitions of forest that FAO, CIFOR and ITTO use, and which they have encouraged governments to adopt.

Meine's contribution was made in the context of discussions about definitions used by the UNFCCC for current CO₂ emission reduction schemes (CDM/JI) and potential future schemes such as REDD (reduced emissions from deforestation and degradation).

His last paragraph is particularly relevant, in terms of the urgent need for non-foresters, including farmers and local people, to have a larger voice in discussions about what are forests and plantations, and how they should be managed.

What is a Forest?

By Meine van Noordwijk, ICRAF Regional Coordinator based in Bogor, Indonesia.

A submission to the UNFF Secretariat Online Forum on Forests and Climate Change, 11 July 2008

A major issue in the efforts to single out forests in the discussion on climate change is that of its scope — linked to the definition of forest that is used. The internationally accepted definition of forest has two components: one that specifies canopy cover and tree height, and one that refers to the institutional framework of forestry, as it includes “areas normally forming part of the forest area which are temporarily un-stocked as a result of human intervention such as harvesting or natural causes but which are expected to revert to forest”.

The tree height/crown cover part qualifies any oil palm or fastwood plantation as forest. The second phrase, intended to allow clear felling - replanting to occur within the forest realm, makes the intent of recovery of woody vegetation enough for an area to remain forest. In Indonesia, for example, this means that the 63% of the land indicated as permanent forest estate still is forest — even though 50% of the area does not currently meet the crown cover definition. It allowed officials to state that ‘there is no deforestation’ in the country that has the highest global emissions from change in terrestrial carbon stocks. Interestingly, the forest definition also allows ‘shifting cultivation’ as activity within the forest, as long as the woody fallow is expected to reach 5 m height and 30% crown cover — so up to fallow periods of say 5 years. The forest definition also allows large-scale destruction of mixed tropical forest and its replacement by fastwood monocultures to be touted as forest improvement — despite the considerable carbon debt that this change incurs. The forest definition also means that many intended A/R CDM [Afforestation and Reforestation Clean Development Mechanism] projects in Indonesia failed to get approval because they are planned for parts of the ‘forest domain’ that lost their tree cover before 1990 but still are, institutionally, forest.

In fact in Indonesia there is as much chance that a unit of land meets the crown cover definition of forest whether it is inside or outside the forest domain. If REDD and

similar mechanisms become de facto restricted to the ‘forest domain’, large volumes of (potential) emission are missed, many stakeholders are left out of the discussion. Based on our engagement with the debate so far, I can see only a landscape-wide carbon accounting, that includes all peatlands and trees whether they do or do not belong to an institutional forest category or not, be effective. It should be managed and monitored at the landscape scale by government entities that have responsibilities for livelihoods of the people as well as the environmental quality.

With due apologies to the many well-intended foresters in the tropics and elsewhere, the forests and trees of the world are too important to be left into foresters’ hands and existing forest institutions are not able to effectively deal with the climate change consequences in changes in the woody cover of the world. Trees managed by farmers and all forms of agroforestry and community forest management should not be excluded from the discussion. Realistic, conditional and voluntary arrangements should be based on changes in C stocks (accounted for in the comprehensive AFOLU [Agriculture, Forestry and Other Land Uses] framework).

The Rainforest Foundation (2005) makes the following comments about FAO’s definitions of forest:

- Using FAO’s definition of forest, monoculture plantations, highly degraded forests and even clear-cut areas “expected” to regenerate, are all counted as forests.
- The definition of “forest”, including all vegetation types with tree canopy cover over 10%, is too broad, making the data of limited value to scientists, forest managers and policy makers.
- The inclusion of forest plantations within FAO’s “total forest” estimates is illogical and misleading, obscuring our understanding of the status and values of both natural forests and of plantations.

The term ‘planted forest’ just adds to the confusion and miscounting of the actual areas of ‘natural forest’ and ‘plantations’.

Annex 6

FAO Illustration of Different Types of Forest

Forest						Non-forest
Primary	Modified natural	Semi-natural		Plantation		Trees outside forests
				Productive	Protective	
Forest of native species, where there are no clearly visible indications of human activities and the ecological processes are not significantly disturbed	Forest of naturally regenerated native species where there are clearly visible indications of human activities	Assisted natural regeneration through silvicultural practices for intensive management <ul style="list-style-type: none"> • weeding • fertilizing • thinning • selective logging 	Planted component Forest of native species, established through planting, seeding or coppice of planted trees	Forest of introduced species and in some cases native species, established through planting or seeding mainly for <i>production of wood or non-wood goods</i>	Forest of native or introduced species, established through planting or seeding mainly for <i>provision of services</i>	Stands smaller than 0.5 ha; trees in agricultural land (agroforestry systems, homegardens, orchards); trees in urban environments; and scattered along roads and in landscapes

“Planted forests are now defined as those forests predominantly composed of trees established through planting and/or deliberate seeding of native or introduced species.” This definition specifically recognized the planted component of semi-natural forests comprised primarily of native species, and forest plantations of primarily introduced species. The broadening of the definition to include the planted semi-natural forests not previously reported *doubles* the area that will have a substantial impact on the yields of forest products and social and environmental services.” (FAO 2008b) (emphasis added). The actual area of land that has forest-like characteristics remains unchanged, but by a definitional change FAO has made it appear that there is now twice as much ‘planted forest’ as there was previously. In the real world nothing has changed, but from FAO’s perspective their ‘empire’ has just doubled!

Annex 7

Summary of Results of “Forest Certification: A Review of Impacts and Assessment Frameworks” (Nussbaum, R. and Simula, M. (2004:6-11))

The TFD Assessment examined four frameworks:

1. Confederation of European Paper Industry (CEPI) Matrix;
2. International Forest Industry Roundtable (IFIR) Framework;
3. World Bank - WWF Alliance Questionnaire for Assessing the Comprehensiveness of Certification Schemes (QACC) and;
4. (FERN) report 'Footprints in the Forest'.

First, the commonalities and differences found by the analysis are summarised, followed by the range of suggested indicators that can be used for making such an analysis.

Key commonalities and differences

The analysis of the four frameworks indicated that there are many areas of overlap or commonality between the frameworks as well as a number of areas of difference.

Commonalities

Two types of commonalities between the frameworks were identified: explicit and implicit. The analysis carried out indicated that some of the most important commonalities are:

Standards

1. Standard-setting procedure publicly available: In order to ensure credibility and participation it is widely agreed that the procedure for standard-setting should be public knowledge. Though the International Standards Organization (ISO) Guide 59 (Code of Good Practice for Standardization) is not mentioned explicitly by all the frameworks, it seems likely that there would be broad agreement that the type of guidance it provides should serve as common guidance on the minimum requirements for standard setting.
2. Wide involvement of stakeholders in the standard-setting process : There is general agreement that a range of different stakeholder groups should be involved in the standard- setting process. However, there are significant differences in the requirements for how this should be achieved (see Differences No.1).
3. Stakeholder influence over the standard-setting process: There is a common view that all stakeholders should have the possibility to influence the outcome of the standard-setting process, including the aim to work by consensus. However, there are also some differences in the requirements for how to proceed in the absence of consensus.
4. Standard publicly available: There is agreement that the standard against which certification is carried out should be publicly available.
5. National standards based on international principles or criteria of SFM: There is broad agreement that national standards should be locally defined but based on an accepted set of international principles or criteria defining SFM (sustainable forest management) covering economic, environmental and social aspects. There is less clarity about which

international definitions should be used.

6. Performance-based standards: There is broad agreement that standards must contain performance requirements.
7. Legal compliance: There is broad agreement that the standard should include a requirement for legal compliance.

Certification and Accreditation

8. ISO Guides: There is agreement that there should be compliance with the type of guidance set out in the ISO guides as a baseline or minimum by both certification bodies and accreditation bodies - Guides 62, 65 or 66 for certification bodies and Guide 61 for accreditation bodies.
9. Absence of conflict of interest: All certification bodies and accreditation bodies should have measures in place to ensure that they are free of all actual and potential conflicts of interest.
10. Competence of certification and accreditation auditors: While there is little detail about exactly what training or experience should be required, there is agreement that auditors, whether undertaking certification or accreditation audits, should be properly trained and experienced.
12. Procedures of certification and accreditation bodies: Information on the procedures, structure and financing of certification and accreditation bodies should be publicly available.
13. Accreditation: There is a common view that certification bodies should be accredited, though there are differences in view of whether this should be done exclusively by national bodies or can also be undertaken by international bodies (see Differences No. 10).

Chain of custody and claims

14. Chain of custody: There should be requirements for a robust, independently audited chain of custody from certified forest to final product if claims are made linking the product to certified forest. However, there are differences in the type of approach favoured (see Differences No. 15).
15. Control of claims and logos: There should be rules for, and proper control of, claims and use of logos and labels which are consistent with laws, standards and existing guidelines.

Scheme

16. Non-discrimination and cost effectiveness: The scheme should not discriminate between forest types, sizes or ownerships. Certification should be as cost-effective as possible to minimise costs to forest owners.

In summary, it is clear that there are significant areas of agreement relating to the processes, procedures and requirements which a certification scheme should include.

Differences

In addition to the many commonalities discussed above, there are also a number of differences. These fall into two categories. Explicit differences where an attribute is included in one or more frameworks but excluded from others and differences of interpretation where the same issue is being addressed but there are differences in the precise requirements which each framework sets out.

Standards

1. Participation in the standard-setting process: All the frameworks agree that it is important to have wide participation in the standard-setting process (see Commonalities No.2), but there is a significant difference between the precise requirements. Some frameworks require that the scheme should invite the full range of stakeholders to participate, while others require that there must be involvement of the full range of stakeholders in the process.
2. Decision-making in the standard-setting process: All the frameworks agree that there should be clear rules and procedures, that all parties should be able to influence decision-making and that decision-making should not be dominated by a single stakeholder group. However, some frameworks go beyond this to specify that the process should ensure that no decision can be made in the absence of agreement from a stakeholder group.
3. Performance standards: All the frameworks require standards based on performance requirements. However, FERN and QACC explicitly require defined performance thresholds to be included in national standards.
4. Management system standards: It is unlikely that any interest group would disagree with a requirement for some management systems requirements in forest standards as they are almost always included. However, the CEPI matrix recommends that all certified operations should comply with an environmental management system (EMS) which is compatible with internationally recognised EMS standards (ISO 14001 or EMAS).
5. Specific requirements: Only the QACC has much detail of the performance requirements which must be included in a standard, though the scope of requirements is implied by both the IFIR and CEPI frameworks through reference to international Criteria & Indicator sets. There are a number of specific QACC requirements which may not have broad support among all stakeholders, including the prohibition on the use of GMOs, forest conversion (both of which are also in the FERN requirements), protection of the legal and customary rights of indigenous people and the requirement to apply the precautionary principle. This level of specificity represents a different philosophy from the other two frameworks where these issues are left for stakeholders to decide in national standard-setting processes.

Certification

6. Regional certification: Regional certification is explicitly encouraged by CEPI and IFIR. Both FERN and QACC support group certification but are explicit in excluding certification which allows forests to be certified without the owner or manager actively seeking or agreeing to certification.
7. Field visits: There is broad agreement between the frameworks on the need for assessors to collect information on both forest management systems and procedures and, through field visits, from the forest itself. However, QACC and FERN explicitly require the field element to be adequate to demonstrate that the performance element of the standard is being met.
8. Consultation: An important difference between the frameworks is the explicit requirement for consultation during the assessment process in both the FERN and QACC frameworks, while it is not required by either the CEPI or IFIR frameworks. This, together with public reports (see 9 below), is seen as fundamental to credibility by the FERN and QACC frameworks.
9. Public information on certified operations: Both QACC and FERN require public summaries of the results of certification assessments as an additional element of transparency and thereby credibility, while CEPI and IFIR require only information on

the name, location and forest type to be publicly available as required by ISO guidelines.

Accreditation

10. National vs international: The CEPI matrix specifies that accreditation should be undertaken at the national level. In contrast, the Forest Stewardship Council (FSC) system is based on international accreditation.
11. Information: There is agreement that public information should be provided on procedures, systems and certification bodies which are accredited. However, the QACC framework also requires public summaries of the results of accreditation audits which is not specified by other frameworks.
12. Affiliation: CEPI and IFIR both specify that accreditation bodies should be affiliated to the International Accreditation Forum (IAF) or European Accreditation (EA), both of which only accept national accreditation bodies as members. QACC, in addition to IAF, specifies the International Social and Environmental Accreditation and Labeling (ISEAL) Alliance which accepts international accreditation bodies such as the FSC.

Chain of custody and claims

13. Approaches to chain of custody: The IFIR framework makes provision for wood flow accounting as one of the means to establish the chain of custody, while the other three frameworks do not refer to such an option implying tracking of wood and fiber throughout the various phases of the chain of custody.

Schemes

14. Participation in scheme development and governance: Both the QACC and IFIR are explicit in listing the range of stakeholders who should be involved in developing and running a certification scheme including owners, industry, government, environmental NGOs and social NGOs. CEPI is explicit only in requiring the involvement of forest owners.

Conclusions

Despite the continuing controversy which surrounds the different forest certification schemes, there appear to be many areas where there is broad agreement between different stakeholder groups on the way in which certification schemes should be designed and run.

Nevertheless, there remain significant differences which need to be addressed if progress is to be made in resolving some of the current discussion and polarisation. It is possible to identify what some of the most important of these are, providing a rational basis for further discussion between different groups.

Potential assessment indicators for certification impacts

Impact area	Examples of possible indicators
1. Forests, biodiversity and forest management	
<i>1.1 Forests and biodiversity</i>	
FMU and stand level	- Conservation areas set aside in production forests within FMUs - Species habitat conditions
Landscape level	- Landscape level status of biodiversity in areas with certified forests
<i>1.2 Forest management practices</i>	

Impact area	Examples of possible indicators
Management system	- Area covered by inventories and management plans
Silviculture and harvesting	- Recording and monitoring systems - EIAs carried out - Area under reduced impact harvesting - Silvicultural measures carried out - Soil and water conservation measures carried out
<i>1.3 Forest productivity/flow of forest produce</i>	- Allowable Annual Cut in the long run
2. Social impacts	
<i>2.1 Land and use rights</i>	- Land tenure established - Recognition of multiple use rights - Recognition of rights to traditional knowledge
<i>2.2 Workers</i>	- Occupational safety and health conditions - Workers' living conditions - Nutrition - Workers' organization
<i>2.3 Employment and income</i>	- Employment generated among forest workers and owners - Income generated from forest activities by forest owners, workers, communities and other beneficiaries
<i>2.3 Cultural sites</i>	- Protection of cultural, spiritual sites
<i>2.4 Dispute settlement</i>	- Procedures of dispute settlement on forest use
<i>2.5 Social services</i>	- Social services provided to workers and communities
3. Market impacts	
<i>3.1 Supply</i>	
Potential supply	- Area certified by forest type and ownership category - Share of certified forests in all forests - Potential wood production
Actual supply	- Actual supply of certified timber from certified forests - Volume of supply sold as certified - Certified share of total supply - Relative cost impacts of certification in FMUs with varying size and ownership category, particularly non-industrial private forest owners and community forests
Cost-competitiveness	- Financial sustainability of certified FMUs
<i>3.2 Demand</i>	
Consumption	- Volume of consumption of certified products - Market share of certified products
Buying behavior	- Buyers' (private and public) policies specifying certified products - Certification as a consumer/buyer purchasing criterion
Substitution effect	- Willingness to pay for certified products/price premium actually paid - Increased consumption of forest products through substitution thanks to certification
4. Policies and governance	
<i>4.1 Policies</i>	- National legislation and policy specifying certification as a policy tool - Adjustment of national regulations for compatibility with certification standards
<i>4.2 Institutions</i>	- Effectiveness of forest owners' organizations - Capacity of forest communities

Impact area	Examples of possible indicators
<i>4.3 Governance</i>	<ul style="list-style-type: none"> - Change in institutional capacities - Extent of illegal harvesting and trade - Adjustment of enforcement rules in certified forests - Establishment of tracking and CoC verification systems induced by certification
5. Values, beliefs and stakeholders	
<i>5.1 Values and beliefs</i>	<ul style="list-style-type: none"> - Change in core values and beliefs on forests and sustainability - Change in secondary values and beliefs
<i>5.2 Awareness and perceptions</i>	<ul style="list-style-type: none"> - Change in awareness and perception by stakeholder group - Forest owners, managers and communities - Forest industries - Civil society - Government agencies - Public perception of environmental and social acceptability of forest products (as a result of availability of certified products)
5.3 Stakeholder power relations	<ul style="list-style-type: none"> - Change in the decision-making structures related to forest management and forest management standards

Annex 8

Forest Stewardship Council Principles

The FSC standards were initially established in 1993 and most recently amended in 2002. The complete “FSC Principles and Criteria for Forest Stewardship” and definitions of key terms can be found at www.fsc.org.

The 10 Principles and Criteria are:

- Principle #1: Compliance with laws and FSC Principles
- Principle #2: Tenure and use rights and responsibilities
- Principle #3: Indigenous peoples' rights
- Principle #4: Community relations and worker's rights
- Principle #5: Benefits from the forest
- Principle #6: Environmental impact
- Principle #7: Management plan
- Principle #8: Monitoring and assessment
- Principle #9: Maintenance of high conservation value forests
- Principle #10: Plantations

Principle 10, specifically for plantations, is cited in full below.

Principle #10: Plantations

Plantations shall be planned and managed in accordance with Principles and Criteria 1 - 9, and Principle 10 and its Criteria. While plantations can provide an array of social and economic benefits, and can contribute to satisfying the world's needs for forest products, they should complement the management of, reduce pressures on, and promote the restoration and conservation of natural forests.

- 10.1 The management objectives of the plantation, including natural forest conservation and restoration objectives, shall be explicitly stated in the management plan, and clearly demonstrated in the implementation of the plan.
- 10.2 The design and layout of plantations should promote the protection, restoration and conservation of natural forests, and not increase pressures on natural forests. Wildlife corridors, streamside zones and a mosaic of stands of different ages and rotation periods, shall be used in the layout of the plantation, consistent with the scale of the operation. The scale and layout of plantation blocks shall be consistent with the patterns of forest stands found within the natural landscape.
- 10.3 Diversity in the composition of plantations is preferred, so as to enhance economic, ecological and social stability. Such diversity may include the size and spatial distribution of management units within the landscape, number and genetic composition of species, age classes and structures.
- 10.4 The selection of species for planting shall be based on their overall suitability for the site

and their appropriateness to the management objectives. In order to enhance the conservation of biological diversity, native species are preferred over exotic species in the establishment of plantations and the restoration of degraded ecosystems. Exotic species, which shall be used only when their performance is greater than that of native species, shall be carefully monitored to detect unusual mortality, disease, or insect outbreaks and adverse ecological impacts.

- 10.5 A proportion of the overall forest management area, appropriate to the scale of the plantation and to be determined in regional standards, shall be managed so as to restore the site to a natural forest cover.
- 10.6 Measures shall be taken to maintain or improve soil structure, fertility, and biological activity. The techniques and rate of harvesting, road and trail construction and maintenance, and the choice of species shall not result in long term soil degradation or adverse impacts on water quality, quantity or substantial deviation from stream course drainage patterns.
- 10.7 Measures shall be taken to prevent and minimize outbreaks of pests, diseases, fire and invasive plant introductions. Integrated pest management shall form an essential part of the management plan, with primary reliance on prevention and biological control methods rather than chemical pesticides and fertilizers. Plantation management should make every effort to move away from chemical pesticides and fertilizers, including their use in nurseries. The use of chemicals is also covered in Criteria 6.6 and 6.7.
- 10.8 Appropriate to the scale and diversity of the operation, monitoring of plantations shall include regular assessment of potential on-site and off-site ecological and social impacts, (e.g. natural regeneration, effects on water resources and soil fertility, and impacts on local welfare and social well-being), in addition to those elements addressed in principles 8, 6 and 4. No species should be planted on a large scale until local trials and/or experience have shown that they are ecologically well-adapted to the site, are not invasive, and do not have significant negative ecological impacts on other ecosystems. Special attention will be paid to social issues of land acquisition for plantations, especially the protection of local rights of ownership, use or access.
- 10.9 Plantations established in areas converted from natural forests after November 1994 normally shall not qualify for certification. Certification may be allowed in circumstances where sufficient evidence is submitted to the certification body that the manager/owner is not responsible directly or indirectly of such conversion.

Annex 9

Basis of the PEFC Procedures and Standards

As noted in the main text, PEFC standards are based on those developed by ITTO, so the same comments apply with regard to technical issues.

The procedures PEFC follows are based on a range of ISO standards, which cannot be accessed without paying a CHF 124 fee per standards. The ISO standards referred to in the PEFC documentation are as follows:

ISO Documents

- ISO 19011:2002: Guidelines for quality and/or environmental management systems auditing
- ISO/IEC Guide 17021:2006: Requirements for bodies providing audit and certification of management systems
- ISO/IEC Guide 61:1996 (EN 45 010:1998): General requirements for assessment and accreditation of certification/registration bodies
- ISO/IEC Guide 65 (EN 45 011:1998): General requirements for bodies operating product certification systems

Annex 10

Roundtable on Sustainable Biofuels – [Draft] Standard for Sustainable Biofuels

‘Version Zero’ for global stakeholder feedback

August 2008

Legality

1. Biofuel production shall follow all applicable laws of the country in which they occur, and shall endeavour to follow all international treaties relevant to biofuels’ production to which the relevant country is a party.

Key guidance: Includes laws and treaties relating to air quality, water resources, soil conservation, protected areas, biodiversity, labor conditions, agricultural practices, and land rights, including for instance ILO, CBD, UNFCCC, and the Universal Declaration of Human Rights. This standard can go beyond national law, but cannot contradict or contravene national law.

Consultation, planning, and monitoring

2. Biofuels projects shall be designed and operated under appropriate, comprehensive, transparent, consultative, and participatory processes that involve all relevant stakeholders.

Key guidance: ‘Biofuel projects’ refers to farms and factories producing biofuels. The intent of this principle is to diffuse conflict situations through an open, transparent process of stakeholder consultation and acceptance, with the scale of consultation proportionate to the scale, scope, and stage of the project, and any potential conflicts. The RSB will develop a scoping process to help determine the extent of the stakeholder consultation based on key criteria. Where many farmers are engaging in the same activity in the same area, there should be flexibility for a group of farmers to combine their work.

- 2.a For new large-scale projects, an environmental and social impact assessment, strategy, and impact mitigation plan (ESIA) covering the full lifespan of the project shall arise through a consultative process to establish rights and obligations and ensure implementation of a long-term plan that results in sustainability for all partners and interested communities. The ESIA shall cover all of the social, environmental, and economic principles outlined in this standard.

Key guidance: The ESIA shall include the identification of High Conservation Value areas, biodiversity corridors, buffer zones, and ecosystem services; shall evaluate soil health; shall identify potential sources of air, water and soil pollution; shall evaluate potential impacts on water availability; shall cover a baseline social indicator assessment; shall include an economic feasibility study for all key stakeholders; shall identify potential positive and negative social impacts including job creation and potential loss of livelihoods; shall establish any existing water and land rights.

Small-scale producers or cooperatives unable to perform ESIA’s will need support and/or modified ESIA’s. ‘Large-scale producers’ and ‘relevant

stakeholders' will be defined in the indicators.

- 2.b For existing projects, periodic monitoring of environmental and social impacts outlined in this standard is required.
- 2.c The scope, length, participation and extent of the consultation and monitoring shall be reasonable and proportionate to the scale, intensity, and stage of the project and the interests at stake.
- Key guidance: The focus of this principle shall be on mitigating any potential negative impacts of large-scale projects in regions where stakeholder conflict is potentially high.
- 2.d Stakeholder engagement shall be active, engaging and participatory, enabling local, indigenous, and tribal peoples and other stakeholders to engage meaningfully.
- 2.e Stakeholder consultation shall demonstrate best efforts to reach consensus through free prior and informed consent. The outcome of such consensus-seeking must have an overall benefit to all parties, and shall not violate other principles in this standard.
- Key guidance: 'Free prior and informed consent' and 'consensus' will be carefully defined. Consensus-seeking will be used to find the best solutions and iron out any potential problems that may arise over the lifetime of the project. Consensus can be sought from a group selected from stakeholders, to prevent decision-blocking by any one group or individual.
- 2.f Processes linked to this principle shall be open and transparent and all information required for input and decision-making shall be readily available to stakeholders.

Key guidance: Good practices for stakeholder consultation will be developed. Smallholders will need support for complying.

Greenhouse gas emissions

3. Biofuels shall contribute to climate change mitigation by significantly reducing GHG emissions as compared to fossil fuels.
- Key guidance: The aim of this principle is to establish an acceptable standard methodology for comparing the GHG benefits of different biofuels in a way that can be written into regulations and enforced in standards. The overriding requirement is therefore a methodology that is not susceptible to subjective assumptions or manipulation.

The fossil fuel reference shall be global, based on IEA projections of fossil fuel mixes.

- 3.a Producers and processors shall reduce GHG emissions from biofuel production over time.
- Key guidance: The RSB shall investigate incentive mechanisms to promote those biofuels with significantly higher reductions than others, for instance by introducing performance categories based on percentage reductions as compared to fossil fuels.
- 3.b Emissions shall be estimated via a consistent approach to lifecycle assessment, with system boundaries from land to tank.

Key guidance: The scope shall include carbon embedded in the fuel but exclude vehicle technology. Carbon sequestered in the soil and plant matter and carbon emissions from direct and indirect land use change shall all be accounted for whenever accepted methodologies are available – per 3d and 3e. Lifecycle assessment tools that go beyond this scope (for instance that include vehicle technology) shall be recognized as long as any extra elements can be isolated to facilitate comparisons.

3.c At the point of verification, measured or default values shall be provided for the major steps in the biofuel production chain.

Key guidance: The RSB will develop criteria for the quality of acceptable default values and measurements, and work with other institutions to develop default values for typical supply chains in different regions to help small producers comply with this criterion.

3.d GHG emissions from direct land use change shall be estimated using IPCC Tier 1 methodology and values. Better performance than IPCC default values can be proven through models or field experiments.

3.e GHG emissions from indirect land use change, i.e. that arise through macroeconomic effects of biofuels production, shall be minimized. There is no broadly-accepted methodology to determine them. Practical steps that shall be taken to minimize these indirect effects will include:

- Maximising use of waste and residues as feedstocks; marginal, degraded or previously cleared land; improvements to yields; and efficient crops;
- International collaboration to prevent detrimental land use changes; and
- Avoiding the use of land or crops that are likely to induce land conversions resulting in emissions of stored carbon.

Key guidance: The use of residues and waste shall not violate Principle 8 on Soil. Careful definitions and guidelines for identifying preferred land (marginal, degraded, underutilized, etc.) will be needed. The RSB will work with key international and national agencies and experts to try to provide a methodology to measure the indirect impacts of biofuels production for inclusion in the assessment of compliance with this standard, and to give guidance to producers.

3.f The preferred methodology for GHG lifecycle assessment is as such:

- The functional unit shall be CO₂ equivalent (in kg) per Giga Joule [kgCO₂equ/GJ].
- The greenhouse gases covered shall include CO₂, N₂O and CH₄. The most recent 100-year time horizon Global Warming Potential values and lifetimes from the IPCC shall be used.

Key guidance: The RSB will develop guidelines for how substitution, allocation by energy content, and allocation by market value should be used, as there is a risk of mistakes and variability in results. Waste products (defined by the IPCC as having no economic value) will have zero allocation of historical emissions. It is possible that the definition of ‘waste’ will be expanded beyond the IPCC definition.

Human and labour rights

4. Biofuel production shall not violate human rights or labor rights, and shall ensure decent work and the well-being of workers.

Key guidance: Key international conventions such as the ILO 's core labor conventions and the UN Declaration on Human Rights shall form the basis for this principle. Employees, contracted labour, small outgrowers, and employees of outgrowers shall all be accorded the rights described below. 'Decent work', as defined by the ILO, will be the aspirational goal for this principle.

- 4.a Workers will enjoy freedom of association, the right to organise, and the right to collectively bargain.

Key guidance: In countries where the law prevents collective bargaining or unionisation, special measures must be developed within the framework of the project implementation plan to ensure that workers can engage with the project owners or partners while being protected from breaking the law.

- 4.b No slave labour or forced labour shall occur.
- 4.c No child labour shall occur, except on family farms and then only when work does not interfere with the child's schooling.
- 4.d Workers shall be free of discrimination of any kind, whether in employment or opportunity, with respect to wages, working conditions, and social benefits.
- 4.e Workers' wages and working conditions shall respect all applicable laws and international conventions, as well as all relevant collective agreements. They shall also be determined by reference to, at a minimum, the conditions established for work of the same character or offered by comparable employers in the country concerned.
- 4.f Conditions of occupational safety and health for workers and communities shall follow internationally-recognised standards.

Key guidance: Applicable standards will be referenced by the RSB in the full guidance.

Rural and social development

5. Biofuel production shall contribute to the social and economic development of local, rural and indigenous peoples and communities.

- 5.a The ESIA carried out under 2a and monitoring required under 2b shall result in a baseline social assessment of existing social and economic conditions and a business plan that shall ensure sustainability, local economic development, equity for partners, and social and rural upliftment through all aspects of the value chain.

Key guidance: Small producers will need support or reduced requirements for this criterion. Large producers and processors shall work with local governmental and non-governmental agencies to ensure the proper application of this criterion. There should be measured improvements in the social and economic indicators as set against the baseline and targets, in proportion to the scale and extent of the project and the region in which it is located. The ILO 's Decent Work Agenda is a recommended tool for assessing local impacts. The following best practices should be aimed for in the projects: Local ownership,

local employment and livelihood opportunities, opportunities for the labour force in the off-season to ensure stable local communities, diversification of crops if shown to improve local economic conditions of communities, training, value added products, credit facilities for local communities and small outgrowers (e.g. through micro credit schemes supported by buyers and/or financial institutions), and/or provision of biofuel or bioenergy to local communities to promote energy security. Appropriate institutional structures should be developed, such as co-operatives that encourage and maximize local involvement and management.

- 5.b Special measures that benefit women, youth, indigenous communities and the vulnerable in the affected and interested communities shall be designed and implemented, where applicable.

Key guidance: Large producers and processors shall work with local governmental and non-governmental agencies to ensure the proper application of this criterion in proportion to the scale of the project.

Food security

6. Biofuel production shall not impair food security.
- 6.a Biofuel production shall minimize negative impacts on food security by giving particular preference to waste and residues as input (once economically viable), to degraded/marginal/underutilized lands as sources, and to yield improvements that maintain existing food supplies.

Key guidance: Clear definitions are needed for waste, residues, and degraded/marginal/ underutilized land. ESIA should ensure that these lands were not used for livelihoods support, or that benefits of use for biofuels outweigh any loss of livelihoods. All of these definitions are time-dependent; unused land might come into production anyway given climate change as well as population and wealth growth. These criteria and definitions should be periodically re-assessed.

The RSB will examine different tools for incenting the use of these preferred sources of biofuels.

- 6.b Biofuel producers implementing new large-scale projects shall assess the status of local food security and shall not replace staple crops if there are indications of local food insecurity.

Key guidance: The RSB will work with other actors to develop tools for assessing local food insecurity. To mitigate local food security impacts, the biofuel project could, for instance: take the maximum food value from the crop and use the remainder as an energy stock, offset impacts via economic instruments, and/or intercrop food and fuel.

Conservation

7. Biofuel production shall avoid negative impacts on biodiversity, ecosystems, and areas of High Conservation Value.

Key guidance: HCV areas, native ecosystems, ecological corridors and public and private biological conservation areas can only be exploited as far as conservation values are left intact and can in no case be converted. Definitions of these terms and an appropriate cut-off date will be developed by the RSB.

- 7.a High Conservation Value areas, native ecosystems, ecological corridors and other public and private biological conservation areas shall be identified and protected.

Key guidance: Identification and mapping of HCV areas should be undertaken by governmental, inter-governmental, and conservation organizations, as part of larger processes involving non-biofuel sectors. Where such mapping is occurring, the results shall be respected by producers. Where such maps do not exist, large-scale producers shall use existing recognized toolkits such as the HCV toolkit or the IBAT. Producers or cooperatives unable to perform an environmental impact assessment and/or a land management plan will need support. The use of native crops shall be preferred. Hunting, fishing, ensnaring, poisoning and exploitation of endangered and legally protected species are prohibited on the production site.

- 7.b Ecosystem functions and services shall be preserved.

Key guidance: Ecosystem (ecological) functions are described in other systems, for instance FSC criterion 6.3. Ecosystem services are provisioning, regulating, cultural and supporting services obtained by people from ecosystems, as described in the Millennium Ecosystem Assessment. Specific ecosystem functions and services relevant to an area of production shall be locally defined.

- 7.c Buffer zones shall be protected or created.

- 7.d Ecological corridors shall be protected or restored.

Soil

8. Biofuel production shall promote practices that seek to improve soil health and minimize degradation.

- 8.a Soil organic matter content shall be maintained at or enhanced to its optimal level under local conditions.

Key guidance: The optimal level of organic matter is to be defined through the consultation of local experts, communities and producers, taking into account local climatic, geologic and ecologic conditions. Realistic targets should be set, in accordance with the producers' capacities and on a reasonable timeline. Follow-up indicators should focus on the implementation of recognized good practices. The use of agrarian residual products, including lignocellulosic material, must not be at the expense of other essential functions for the maintenance of soil organic matter (e.g. compost, mulch).

- 8.b The physical, chemical, and biological health of the soil shall be maintained at or enhanced to its optimal level under local conditions.

Key guidance: Soil erosion must be minimized through the design of the plantation or production site and use of sustainable practices (where possible: use of perennial crops, no till, vegetative ground cover, side-hedges of trees, etc.) in order to enhance soil physical health on a watershed scale. WHO class Ia and Ib pesticides are prohibited. Risks to health related to the application of pesticides are covered under 4.f.

- 8.c Wastes and byproducts from processing units shall be managed such that soil health is not damaged.

Water

9. Biofuel production shall optimize surface and groundwater resource use, including minimizing contamination or depletion of these resources, and shall not violate existing formal and customary water rights.
- 9.a The ESIA outlined in 2a shall identify existing water rights, both formal and customary, as potential impacts of the project on water availability within the watershed where the project occurs.
- 9.b Biofuel production shall include a water management plan appropriate to the scale and intensity of production.
- 9.c Biofuel production shall not deplete surface or groundwater resources.

Key guidance: The use of water for biofuel production must not be at the expense of the daily basic water needs of local communities. Water-intensive biofuel crops and biofuel production systems must not be established in water-stressed areas. The most efficient use of water must be sought through the use of crops that fit the local conditions.

- 9.d The quality of surface and groundwater resources shall be maintained at or enhanced to their optimal level under local conditions.

Key guidance: Adequate precautions must be taken to avoid run-off and contamination of surface and ground water resources, in particular from chemicals. Waste water must be adequately managed.

Air

10. Air pollution from biofuel production and processing shall be minimized along the supply chain.
- 10.a Air pollution from agrochemicals, biofuel processing units, and machinery shall be minimized. Key guidance: the use of ground or aerial pesticides must comply with the FAO 's codes of conduct.
- 10.b Open-air burning shall be avoided in biofuel production.

Key guidance: Open-air burning of leaves, straw and other agricultural residues must be minimized, with the aim of ultimately eliminating burning practices. In specific situations such as those described in the ASEAN guidelines and other appropriate policies, or if workers' health and safety is at stake, limited open-air burning practices may occur.

Economic efficiency, technology, and continuous improvement

11. Biofuels shall be produced in the most cost-effective way. The use of technology must improve production efficiency and social and environmental performance in all stages of the biofuel value chain.
- 11.a Biofuel projects shall implement a business plan that reflects a commitment to economic viability. Key guidance: Biofuel projects should seek to be economically viable without distortive public support (for instance, tariffs and production subsidies).
- 11.b Biofuel projects shall demonstrate a commitment to continuous improvement in energy balance, productivity per hectare, and input use.
- 11.c Information on the use of technologies along the biofuel value chain must be

fully available, unless limited by national law or international agreements on intellectual property.

Key guidance. The focus shall be on technologies that might pose a hazard to people or the environment.

- 11.d The choice of technologies used along the biofuel value chain shall minimize the risk of damages to environment and people, and continuously improve environmental and/or social performance.
- 11.e The use of genetically modified: plants, micro-organisms, and algae for biofuel production must improve productivity and maintain or improve social and environmental performance, as compared to common practices and materials under local conditions. Adequate monitoring and preventative measures must be taken to prevent gene migration.
- 11.f Micro-organisms used in biofuel processing must be used in contained systems only.

Land rights

- 12. Biofuel production shall not violate land rights.
- 12.a Under the ESIA described under criterion 2a, land use rights for the land earmarked for the biofuel project shall be clearly defined and established, and not be legitimately contested by local communities with demonstrable rights, whether formal or customary.

Key guidance: The term ‘land use’ means any land use, whether it be for commercial, industrial, agricultural, customary, leisure use, right of way, or any land rights. Methods for establishing ownership and land use should include advertising, communication with local leaders, and locally-established methods of data collection. Lack of a legal deed shall not hinder the inclusion of local communities in biofuel projects.

- 12.b Local people shall be fairly and equitably compensated for any agreed land acquisitions and relinquishments of rights. Free prior and informed consent and negotiated agreements shall always be applied in such cases.

Key guidance: Coercion by investors or authorities to change or adapt land use is not allowed. Compensation should be at the value of the land for the community or household, based on existing land uses and livelihood needs.

- 12.c Appropriate mechanisms shall be developed as part of the ESIA to resolve disputes over tenure claims and use rights.

Annex 11

“TTTO Guidelines for the Establishment and Sustainable Management of Planted Tropical Forests – 1993”

Summary of Principles

1. INTRODUCTION

Planted forests are an important element of land use in the tropical world. Planted forests can fulfill many of the productive and protective roles of the natural forest. When they are adequately planned, planted forests can help stabilize and improve the environment. However, conservation of local plant and animal species and ecosystems and ensuring ecological stability at the landscape level require complementary action within integrated land-use and development plans.

2. Policy and Legislation

2.1 Forest Policy

Principle 1:

The forest sector offers major opportunities for sustainable socio-economic development and the improvement of the quality of life in tropical countries. All countries therefore need to understand both the existing and future demands for all benefits, goods and services from all types and categories of forests. Governments and people must clearly judge and understand the capacity of their forests and forest lands to provide these benefits, goods and services. In particular, studies of both the domestic and export sectors are required to define the country's need for planted forests to complement and supplement their natural forests in all respects, including as a resource base in a long-term wood production strategy.

Principle 2:

Provisions for the establishment and sustainable management of planted forests must be considered in the context of an integrated land-use plan for national economic and social development. Thus, planted forests should normally only be established on lands which are known to be capable of supporting all aspects of their long-term management and utilization without land degradation. The creation of plantations must be balanced with the needs for protection of the site and the environment, the conservation of biological diversity of all types, the needs and aspirations of the present people and the potential demands of future generations.

In particular, any larger-scale plantation scheme must incorporate provisions to meet the needs for site conservation and protection of the environment, customary and statutory land rights and the subsistence needs of local communities.

Principle 3:

Strong and continued political commitment at all levels is indispensable for the successful establishment and management of planted forests at the national, management unit and local levels.

Principle 4:

Institutional capacities must be established to allow for the development and implementation of the integrated land-use plans necessary for effective forest establishment and management.

Principle 5:

Effective community consultation procedures are an essential component of these institutional

planning processes.

2.2 Legislation

Principle 6:

The national forest policy must be supported by appropriate legislation which, in turn, should be in harmony with laws concerning related sectors. Sufficient resources must also be allocated on a continuing basis to ensure that legislation and policies are effectively implemented, both through the provision of financial incentives and the development of appropriate conditions for investment security.

Principle 7:

There must be mechanisms for the regular revision of policy and legislation in the light of new social, economic and environmental circumstances and/or the availability of new information.

2.3 National Forest Inventory in Relation to Land Assessment Surveys

Principle 8:

A national forest growing stock and land inventory should establish the status of all forests, independent of ownership status. Land tenure, the land development plans of other agencies and customary rights will frequently be a key item in forest land inventory data in many tropical countries. The national forest inventory should provide a clear picture of the legal and ecological status of forests under various forms of land tenure and customary rights. The results of such inventories should be evaluated with the results of broader land-use studies to determine the potential opportunities for and constraints on the development of planted forests. Forest land and growing stock inventories must apply techniques which ensure reliability, continuity, accuracy and sufficiency of data.

Principle 9:

There should be flexible provisions for such inventories to be broadened to include information not previously covered, if and when the need and opportunity for the collection of such additional information arises.

2.4 Permanent Forest Estate

Principle 10:

Certain categories of land, whether public or private, need to be kept under permanent forest cover to secure their optimal contribution to national development and environmental protection - see Appendix 1.

Principle 11:

Land allocation for the establishment of planted forests must consider the interests, legal rights and long-term plans of all sectors concerned with or affected by their development. Particular attention must be given to the interests of the local residents and communities who will experience most closely any changes brought about by particular planted forest proposals. There will therefore be a need for specific planning activities at the national, regional and local levels.

Principle 12:

Natural forest should not be cleared for the establishment of planted forests unless this is proved to be essential to justify retaining the land under forest cover.

The feasibility, desirability and necessity of replacing existing natural or secondary forest by planted forest should be expertly assessed in a manner which ensures independence of judgment. This assessment should include the full range of ecological, environmental, economic and social implications and their long-term consequences. The advantages and disadvantages of natural forest regrowth, enriched natural regrowth and planted forests respectively, should

always be comprehensively compared before forest allocation and management decisions are taken. These issues should also be subject to wide community consultation and discussion to ensure that forest management decisions meet community needs and are socially acceptable - key pre-requisites for sustainable forest establishment and management.

Principle 13:

Notwithstanding the provisions of Principle 12, where natural forest areas have been so severely degraded by past land-use practices that their effective recovery and survival as forests is in doubt, consideration should be given to conversion of suitable sections of these highly degraded areas to more productive planted forests.

In cases where careful assessment has proved that conversion of severely degraded natural or secondary forests to planted forests is justified, fully considering environmental, economic and social factors, such highly degraded areas may be transformed to forests or to suitable forms of agroforestry systems with improved and sustainably high levels of productivity. This would contribute to the overall forest and agricultural productivity and thereby can reduce pressures on remaining natural forests. The overall benefits the community and the nation gains from the forest estate would thereby increase in the long run.

2.5 Land Ownership

Principle 14:

The principles and recommendations outlined in these guidelines for planted forests should be equally applied to publicly and privately-owned lands and to lands controlled by customary rights.

Principle 15:

The principles and recommended actions outlined in these guidelines can only be implemented if there is secure and long-term tenure of the land, and acceptance of suggested land-use changes and land allocations by the local communities. In particular, claims based on legal titles or on statutory or customary rights in all types of forest lands must be duly considered, including claims to ancestral territories and cultural sites. These and other local claims recognized under national law require also consideration in relation to environmental protection, sustainable economic development and compensation for being displaced or otherwise impaired by the establishment of planted forest areas.

2.6 National Forest Service

Principle 16:

There should be a national agency capable of effective, integrated management of the public forest estate. Such an agency must also be capable of assisting in the establishment and management of all types of forest on communal and private lands, according to the objectives and principles laid down in the national forest policy.

3. FEASIBILITY ASSESSMENT

3.1 Environmental Considerations

Principle 17:

Planting trees will usually induce changes in the local biological and physical environment. These changes can be potentially beneficial or harmful, or both.

Principle 18:

In many environmentally important areas such as steep slopes, catchment areas and degraded watersheds, the establishment of a well-managed forest cover offers many environmental, social and economic advantages. Similarly, well-designed and well-managed planted forests can provide appropriate protection and help to stabilize and restore fragile and degraded areas.

Principle 19:

Replacement of natural vegetation by planted forest can simplify existing ecosystems. Although plantations can be designed to contribute to the conservation and enhancement of genetic resources of given target species, their possible negative impacts on ecosystem conservation and overall biodiversity must be carefully assessed. The risks of deterioration of biodiversity should be reduced by appropriate silvicultural management. Important management considerations include the appropriate siting of planted forests and setting aside other land areas primarily for the conservation of regional biodiversity. It should be remembered that planted forests which are designed to provide a diverse habitat, such as mixed, multi-storied forests, are richer in animal and plant species which regulate them whereas uniform, simple monoculture designs create forests which require constant human inputs to maintain viability and productivity.

Principle 20:

Potential planting sites can have attributes that have archeological, cultural or spiritual significance at the local, national and global levels that may be adversely affected by forestation activities.

Principle 21:

Natural and planted forests store carbon and exchange a multitude of trace gases with the atmosphere. They thereby affect micro- and meso-climate and, to a smaller measure, macro-climate. The on-going climate change and warming of the surface water of the tropical oceans will make tropical climate more variable and extreme events more severe. Forest trees and whole forest ecosystems may therefore be expected to suffer increasingly from stress and damage. Precautionary adaptation appears prudent and should be considered in site selection and crop designing.

3.2 Socio-Economic Considerations**Principle 22:**

Planting trees can decisively affect social and economic conditions at the national as well as regional and local levels. These effects can be either positive or negative.

Positive effects can range from enhancement of social and economic development through provision of local access to resources; employment generation and the creation of investment opportunities; increased potential for industrial development; the possibility of increasing and stabilizing export earnings; and the subsequent improvement of rural life through better access to enhanced infrastructures, educational opportunities and medical care.

Negative socio-economic impacts can range from disruption of traditional land rights and patterns of land use, reduction of cultural values, inefficient use of investment funds through the development of forest resources not sufficiently targeted to market demands, and possible extra-regional impacts through economic displacement of competing forest enterprises. Local communities experience the most direct beneficial or detrimental impacts. Their views and needs should receive particular attention because their acceptance and cooperation is essential for success.

3.3 Institutional Considerations**Principle 23:**

To succeed at the social, technical and economic levels, and to be environmentally sustainable, planted forest programmes must be supported by strong national and local institutions to ensure integrated planning, community involvement and monitoring of the economic and technical feasibility and performance of all management activities.

The strength of these institutions depends on the strength of the political support they receive. Government institutions must receive adequate financial support, adequate staff, stable

employment and attractive career opportunities. The staff should be structured to cover all necessary fields of development, research and extension.

Principle 24:

Efficiency must be maintained by adequate in-service and special training. Continuous interchange of information and experiences within and between national institutions and with foreign institutions is necessary to maintain expertise at sufficiently high levels.

Principle 25:

Non-governmental organizations (NGOs) can play important roles in forest development programmes as partners of government and local communities in feasibility studies and the planning process, as source of information and often as innovating elements. Their participation should provide information and other resources which constructively contribute to balanced land-use planning.

4. PLANTED FOREST ESTABLISHMENT

4.1 Management Plan Preparation

4.1.1 The Importance of Management Planning

Principle 26:

Integrated planning at all levels reduces private and public economic and environmental costs. A management plan is therefore an essential component of the establishment and sustainable management of any planted forest, and must complement other relevant plans in related sectors.

Principle 27:

Management of planted forests should implement traditional multiple-use principles in order to produce multiple benefits. Management objectives should therefore consider all forest values determined by comprehensive evaluation. Objectives for particular areas will have to be specific to the site and environmental, economic and social circumstances. The objectives must relate appropriately to the goals of the plantation programme and the interests of the local communities. During planning and establishment, these communities should be actively involved in order to motivate them to continued cooperation and eventually increase their income and quality of life. Such involvement could take the form of allowing local people to cultivate agricultural crops between tree plantation for a certain number of years and of continued employment in forest operations.

4.1.2 Soil and Site Considerations

Principle 28:

In general, the better the soil and site conditions are, the lower the risk will be of land degradation from all forms of land use. This generalization is particularly applicable to intensive cultivation of single-species plantation forests. Unfavorable sites, such as steep slopes, fragile or deficient soils, carry high rates of risk and low rates of productivity and should be reserved for protection and conservation forestry.

Principle 29:

The establishment of a productive forest plantation on degraded land usually requires either a prior phase of a sown or planted pioneer vegetative or a usually expensive artificial amelioration of soil fertility. After afforestation, repeated biological or artificial replenishment of nutrient stock may be necessary in the course of time, to prevent impoverishment of the soil through nutrient losses from leaching, erosion and harvesting. The natural process of restoring soil fertility by secondary forest growth during well-managed fallow periods such as in the various forms of the taungya (agrosilviculture) systems and the traditional systems of shifting swidden cultivation can serve as a model for sustainable silvicultural methods. The degradation of soil

and vegetation in short-rotation swidden also demonstrates the consequences of overexploiting the site potential.

Principle 30:

The activity of soil fauna, flora and microbes is an essential element of soil fertility which requires careful maintenance. The maintenance of adequate conditions of soil biology is a key element of sustainability in the humid tropical forest management.

Principle 31:

Together with litter supply and humus formation, the interaction of soil porosity and texture with other physical conditions is a most important factor affecting the effective fertility and biological activity of tropical soils. The use of appropriate technology and careful planning is essential to maintain an appropriate soil environment for sustainable forest management.

Principle 32:

Non-crop species of trees and shrubs may have important ecological functions such as fostering the development of symbiotic relationships, improving soil cover and litter diversity and providing habitat for other members of the trophic network. As such, they should not automatically be considered as weeds that have to be immediately eliminated. Rather, their potential benefits should be carefully balanced against the cost of possible competition effects, so that investments in weed control can be focused onto crucial stages of the forest's development. This will help to ensure that funds are used efficiently and tending does not become counter-productive.

4.1.3 Research Needs

Principle 33:

Basic scientific and application-oriented research is the fundamental source of the information needed for sustainable timber production and other forms of forest use. The performance of the forest crop, the impact and effectiveness of forest management operations and the status of soil and site conditions all need to be continuously monitored so that timely corrective measures can be taken in response to any long-term trends of change. Research is also needed to monitor changes in community needs and expectations at the local, regional and national levels together with other aspects of the socio-economic environment in which forest managers must operate.

4.2. Technical Requirements

4.2.1 Choice of Site, Tree Species and Planting Material

Principle 34:

The selection of sites must fully and comprehensively consider natural site conditions, logistic and economic features of the site as well as the social and political environment. In principle, production forests should be as close to the existing markets as other competing land users permit. Once the site is determined, the selection of species and genotype must be carefully matched with the site conditions. Besides considering soil type and average climatic conditions, consideration must also be given to ecological risk factors and extreme events such as excessive rainfall, floods, droughts, cyclonic or convective storms and biotic hazards. These site conditions and risk factors, and competing vegetation should influence the choice of the most suitable type of planting material. In any case, the origin of the seed, plants or cuttings must be identified, certified and labeled. Plantations must only be established with source-identified genetic material.

Principle 35:

Exotic species often have initial superior performance and management advantages as they can grow in the absence of a suite of locally adapted crop predators. However, through the processes

of natural selection, domestic tree and shrub species may have developed adaptations to the local edaphic, climatic and biotic conditions which may give them long-term advantages over exotics. Proof of such long-term adaptation is usually either lacking or restricted to a few, short-term examples for exotic species in most areas. Forest managers and planners should therefore not assume that the initial growth advantages of exotic species will be able to be maintained without additional management inputs over time.

In the comparative assessment of the potential of native species, it must be considered that when these species are planted in the open and grown in single-species uniform plantations, they often may behave and perform quite differently than in their original habitat. It must also be remembered that practical experience with native species in the past usually has been gained under specific and often unique circumstances of site and conditions for growth. Such experience therefore can be very misleading. Colloquial experience cannot replace the systematic knowledge gained from well-designed scientific research.

Considerable improvement of growth, yield, produced quality, adaptability to sites, and resistance to pests and diseases are possible through tree breeding. Such improvements are especially important to industrial plantations when economic returns can be demonstrated to outweigh the additional cost of genetically improved material.

4.2.2 Roads and Site Protection

Principle 36:

The planning, location, design, and construction of roads, bridge structures and other forest management infrastructure should be done so as to minimize erosion and other forms of damage to the site and the wider environment, and allow easy access for all forest operations, including fire management. However, roads constructed to facilitate access and management of planted forests may provide undesirable access to adjacent areas of the natural forests.

Principle 37:

Sufficiently broad completely protected buffer strips along stream banks and adjacent riparian areas should be kept under special management to reduce sediment and nutrient inflow into adjacent water courses.

Recommended Action 38:

Prevent soil disturbance and maintain an appropriate width of undisturbed vegetation along all water courses and riparian zones to maximize the absorption of overland water flow, nutrients and sediment from disturbed sites in adjacent production forest areas.

Principle 38:

Fire can be a serious threat to the productivity, ecological stability and social and environmental quality of planted forests and their growing stock. Fire risks may increase as both living and dead biomass accumulates during the course of planted forest's development. In some areas, fire risk may also increase during the life of a single rotation of the planted forest in response to climate change associated with global warming. Fire risks and fire management requirements will also generally increase with the size of the planted forest estate.

Principle 39:

There is a growing body of knowledge about both the significance and behavior of fire in forest ecosystems. This knowledge provides a basis for minimizing fire risks and planning fire management strategies.

4.2.3 Site Preparation

Principle 40:

Appropriate site preparation can enhance the early growth and development of planted forests

through amelioration and improvement of soil physical conditions and reductions in competition from other vegetation occupying the site during the establishment phase. However, the long-term effects of cultivation, drainage and other intensive forms of site preparation need to be carefully evaluated as they have a significant potential to lead to site decline and unwanted side effects.

Principle 41:

Site preparation can also improve access for forest management, fire protection and eventual forest harvesting activities. It can also greatly simplify the re-establishment of subsequent forest crops in future rotations. However, poorly planned or inadequately supervised site preparation can cause serious environmental damage through soil compaction, erosion, loss of top soil nutrients and other forms of land degradation.

4.2.4 Approach to Planting

Principle 42:

Planting technology is species and site specific, with the choice of technique being significantly influenced by the nature of the soil and the degree of site preparation. For example, in some cases seedling stock may be the best choice, while in others direct sowing or the use of cuttings may be more appropriate.

4.2.5 Fertilization

Principle 43:

Some nutrient supplements are usually necessary during the establishment phase to enhance growth, or in extreme cases, to ensure the survival of planted forests. This is particularly true on seriously degraded lands. Also, nutrient supplements may be necessary later in the life of a plantation, to maintain adequate diameter growth and the passing of the trees from one utilization category to the next. However, the inappropriate use of chemical fertilizers in particular can lead to a range of environmental problems ranging from the accumulation of heavy metals in soil profiles to the eutrophication of adjacent streams and water bodies. Therefore, in designing any forest fertilization programme, priority should be given toward employing organic and biological fertilization methods. The long-term consequences of any proposed forest fertilization programme must always be carefully weighed against the short-term advantages.

4.2.6. Tending and Weed Control

Principle 44:

The establishment or failure to establish effective management of competing vegetation is frequently a major determinant of the success or failure of the establishment phase of planted forests in the tropics. However, as discussed in Section 4.1.2, tending prescriptions need to be developed carefully to avoid creating more problems than they solve. Effective weed control should therefore always be developed on the basis of a thorough understanding of the dynamic competition between crop species and other vegetation covers, and a thorough understanding of the short and long-term implications of particular control strategies.

4.2.7 Pest Control and Disease Management

Principle 45:

Pest control and disease management practices often become necessary to ensure the survival and effective growth of planted forests. However, many of the chemicals used for these practices can pose significant hazards to the health of both operational personnel and the wider environment through pollutant drift and reductions in local or even regional biodiversity. This in turn can lead to higher risks of new pest and disease outbreaks. Fortunately, the need to use such chemicals can be greatly reduced through the application of ecological principles in integrated

pest and disease management strategies.

4.2.7. Staff Development

Principle 46:

The success of the establishment of planted forests ultimately depends on having skilled personnel at all levels of planning, management and operational activities. This requires adequate training opportunities and facilities, particularly when staff and labor are recruited locally. Working conditions, in particular safety conditions and pay scales, must be adequate and comply with internationally agreed standards.

5. POST-ESTABLISHMENT MANAGEMENT

5.1 Operational Planning

5.1.1 Preparation of Work Plans

Principle 47:

Sustainable management is concerned with much more than just the establishment phase of the planted forest. It is concerned with management of the whole of the initial rotation and with the maintenance of site productivity for future rotations.

Principle 48:

The plantation management plan should form the basis for all action and forecasts for sustainable management. It should cover at least the full initial rotation and provide a systematic framework from which the forest manager can prepare a detailed work plan. This latter document should outline the operations that have to be carried out, the resources required to undertake them and the time scale involved.

5.1.2. Institutional Considerations

Principle 49:

Achievement of forest management objectives requires continuity in action. As outlined for public forests in Section 2.6, there should be a national forest agency with the financial and human resources that will enable it to effectively carry out its responsibilities. For the private sector, continuity of tenure must be assured.

Principle 50:

Resources should be allocated for basic and applied research programmes aimed at maximizing the efficiency of management operations and improving the productivity of the planted forest enterprise. Forestry research organizations should provide for the continuous feedback of information to forest management agencies.

Principle 51:

Efficient and effective implementation of management plans and associated research programmes requires staff with high professional expertise and the ability to work with rural communities.

5.1.3 Social Consideration

Principle 52:

The long-term success of planted forests and their management for the sustained production of timber, non-timber products and other services and benefits ultimately depends on their compatibility the regional economy and the economic and land-use policies, as well as the interest of the local and regional communities, and particularly the interests of the local people. In many cases, the effectiveness of forest management can be successfully improved by actively involving the local people and by utilizing with care and discrimination local experience.

Principle 53:

Management of planted forests for timber and other benefits can only be sustained in the long-term if it is economically viable. Thus, monitoring the economic performance of the forest is an essential component of sustainable, research-based management. In the socio-economic context, analysis and evaluation of economic costs and benefits must include valuation of environmental services and local subsistence uses of timber and other products, wildlife and services.

5.2 Forest Monitoring, Growth and Yield Prediction**5.2.1 Integrated Resource Inventories****Principle 54:**

Integrated resource inventories are required to provide information on:

- the health of the trees, the forest ecosystem and the forest environment, any serious risk and damage factors;
- the state and potential development of biodiversity;
- the opportunities for wildlife conservation and management;
- the volume assortment of timber types and sizes, and the quality of the timber growing stock suitably qualified by species and management unit;
- the opportunities for outdoor recreation and the production potential of other non-wood forest products and values.

Principle 55:

Forest inventories should obtain information on existing plans affecting land use, land and infrastructural development, land allocation and statutory and customary rights which may affect forest management and forest production. Wherever feasible, this information should be compiled in a Geographic Information System (GIS) to facilitate easy access, retrieval and evaluation of information - see appendix 2. Such access is especially important at the regional land-use level.

Principle 56:

Easy access to comprehensive information is necessary for rational planning and forecasting, as well as for early adjustments of production forecasts, marketing strategies and management practices, so that management can remain realistic and relevant to community and market demands in a rapidly changing world.

5.2.2. Timber Production**Principle 57:**

To achieve a sustained production of timber from each forest management unit, a reliable method for monitoring growing stock condition and increment is required. Similarly, a reliable system controlling timber allocations is also indispensable. Suitable systems of growth and yield prediction by means of simulation should be applied, and where needed be developed, to allow forest managers to respond to changing community and market demands in a manner consistent with the overall objective of sustainable production.

5.3 Silvicultural Operations**5.3.1 Restoration and Maintenance of Soil Fertility****Principle 58:**

The restoration and maintenance of soil fertility is just as important for the long-term management of planted forests as it was for their establishment. It is also fundamentally important for the sustainable management of future rotations established by replanting,

coppicing or conversion to more complex types of mixed forests.

5.3.2 Tending Operations and Weed Control

Principle 59:

While the competition effects of weeds and other non-crop forms of vegetation is generally less critical later in the forest rotation than in the establishment phase, tending and weed control may still be necessary to facilitate access for fire control, harvesting and other management activities. However, as discussed in Section 4.2.6, it is important to approach weed control in a considered manner to ensure that such actions are environmentally and ecologically sound and cost effective.

5.3.3 Thinning and Pruning

Principle 60:

Thinning and pruning planted forests can have a substantial influence on the end use and profitability of their products. The periodicity and intensity of thinning is usually influenced by growing stock conditions, increment responses to stand density, the availability of markets for smaller sized logs and the market incentives for larger sized end-of-rotation logs. Pruning is only usually justified where the accumulated sum of both direct costs and opportunity costs associated with temporary reductions in growth increment after pruning are more than offset by the ultimate increased value of knot free timber.

5.3.4 Roothing

Principle 61:

Good access is essential for all management activities in planted forests. However, inadequately designed, inadequately constructed or inadequately maintained roads can cause problems of access in crucial periods of high demand, increased costs and substantial on-site and off-site environmental damage.

Principle 62:

Forest road and track alignments should be carefully planned and preferably located on stable soils, have appropriately compacted surfaces, be well drained and have sufficient exposure to sun-light to ensure rapid drying after rain. Good drainage is crucial and roads should be located accordingly. Effective drainage must be assured by appropriate road construction and maintenance. Drainage specifications should be designed to ensure that structures are capable of handling peak discharges and that they minimize erosion and sedimentation in adjacent streams. Bridges and culverts should be of adequate capacity and be kept clear of obstructions.

5.4 Forest Protection

5.4.1 Control of Access

Principle 63:

Planted forest areas must be protected from activities that are incompatible with environmental protection and sustainable timber production, such as encroachment by cultivators, illegal wood cutters, and illicit litter collectors. Local communities are often most effective in controlling access, provided that they view the planted forest as a benefit to them, and are given the authority and the means for effective access control.

5.4.2 Protection from Fire

Principle 64:

As discussed previously in Section 4.2.2, fire can be a serious threat to the productivity and environmental quality of any planted forest. Fire risks must therefore be taken seriously and be addressed by active fire management programmes.

5.4.3 Pest Disease and Fire Management

Principle 65:

Pest and disease outbreaks and fire can occur at any stage during the rotation. Managers need to be prepared with well thought out control strategies.

5.5 Harvesting and Planning of the Subsequent Rotation

Principle 66:

Planted forests are highly artificial and in many cases narrowly focused on maximizing single-product functions. Natural and semi-natural forests are more widely focused on multiple use and perform more functions of production and protection.

Annex 12

Summary of CIFOR “Code of Practice for Industrial Tree Plantation Development in the Tropics.”

1 Code of Practice - Purpose

The purpose of the Code of Practice for Industrial Tree Plantation in the Tropics is to provide:

- an expression of plantation managers commitment to SFM;
- a set of minimum standards for improved practices for plantations;
- capacity to fulfill the criteria and indicators for improved management of plantations;
- support for the protection of sites of cultural, historical, archaeological, geomorphological, biological and spiritual significance;
- guidelines for resource areas for local communities;
- guidelines for biodiversity conservation measures for flora and fauna;
- support for promoting plantation productivity;
- support for improvement of the health and safety of forest workers;
- support for maximum economic return from plantations; and
- support for an equitable distribution of benefits from the forest.

In itself, the Code does not ensure sustainable management, however, compliance with its guidelines will move plantation development operations closer to the achievement of SFM.

1 Stakeholder Roles

Issues for Stakeholders

A number of issues need to be considered by the stakeholders for the successful implementation of the Code. Two of the most important issues are:

- plantation development must comply with the relevant land-use planning framework; and
- plantation development must be planned to allow for financial, social biodiversity and other environmental needs.

Roles of Stakeholders

Government

- Provide land-use policies and the appropriate legislative and infrastructural framework to promote sustainable plantation development and maintenance.
- To promote mechanisms for appropriate land-use policy implementation, education and training, and encouragement for the ecologically and socially sustainable use and management of plantations.
- Monitor and evaluate harvesting operations for compliance with the Code.

Plantation owners

- Comply with land-use planning guidelines and the Code.
- Maintain the capacity of the plantation resource to supply a viable financial

return on investment while providing other community and environmental benefits.

- Protect neighbouring and downstream resources.
- Implement effective and safe operations.
- Train and employ local community members in order to increase skill levels that can be used in the future.

Communities

- Assist in educating and training the community members in protection of the plantation resource.
- Employment and income generation.
- Identify multiple use needs of community members.
- Assist in planning for and arranging the equitable sharing of benefits from plantations and associated activities.
- Assist with monitoring plantation management compliance with the Code.
- Provide indigenous knowledge related to the plantation.

Non-Government Organisations

- Education and promotion on the benefits of plantations to communities.
- Promotion of sound principles and practices for plantations (including agroforestry) through the Code of Practice for Industrial Tree Plantation Development in the Tropics.
- Assist with ensuring Code compliance, monitoring and auditing procedures.

2 Plantation Planning

Objective: To ensure sustainable development of plantations meeting production, social and biological requirements.

Planning Levels

Three planning levels will affect the development of plantation estates both for small and large holders. These are :

Land-use planning by Government bodies;

Landscape level planning by an estate/concession holder; and

Stand level planning by an estate/concession holder.

Requirements for Effective Planning

An integrated approach to forest planning requires consideration of three areas crucial to the implementation of sustainable development. These are:

- Biological (includes silvicultural and environmental).
- Market (includes economic and financial).
- Socio-economic (includes social issues, legal framework and institutions).

3 Landscape Level Planning

Objectives:

- To schedule plantation development activity.
- To ensure stakeholder participation in the planning process.
- To identify and protect areas to be excluded from harvesting for environmental/biodiversity and community needs.

- To ensure that all Landscape Level Planning is completed prior to commencement of clearing for planted area development.

4 Stand Level Planning

Objectives:

- Based on the Landscape Level Plan and a ground inspection, development of a plan for land clearing and or establishment prior to commencement of operations.
- To minimise the loss of productive plantation area while protecting any exclusion zones.

5 Roading and Drainage

Objectives:

- To plan a roading system which is safe economical and minimises the loss of productive plantation area.
- To minimise sedimentation of watercourses and disturbance to excluded areas.
- To provide and maintain good surface and side drainage during and after construction of roads to maximise road life.

6 Road Watercourse Crossings

Objectives:

- To provide permanent bridge or culvert crossings, constructed with durable materials over all watercourses crossed by roads.
- To restrict disturbance to watercourses and surrounding buffer areas to that necessary for crossings.
- To minimise sedimentation of watercourses.

7 Quarries

Objectives:

- To provide appropriate material for road/landing/log pond surfacing.

8 Plantation Development at Stand Level

Objectives:

- To maximise the removal of material from the site simplifying plantation establishment.
- To minimise soil compaction, disturbance and erosion.
- To maintain organic material on site.
- To protect water quality, buffers and exclusion zones.

9 Log Pond and Wharf

Objectives:

- To minimise the area for processing and shipping of logs.
- To avoid adverse impact on the marine environment.
- To prevent log off-casts from entering watercourses or the sea.

10 Plantation Establishment

Objectives:

- To prepare the site for planting in the most economical and efficient way while ensuring good tree growth.
- To minimise herbicide, pesticide and fertiliser use.
- To establish successful plantations with the best techniques available.

11. Employee Conditions

Objectives:

- To provide a working environment which complies with or exceeds all national and international labour guidelines for wages, conditions and safety.
- To maximise the opportunity for local employment opportunities and skill base development.

12 Fire Management

Objectives:

- To reduce incidence of forest fires through education and detection mechanisms.
- To protect plantations and other areas both within and outside the concession from fire.

13 Harvesting Equipment Maintenance and Servicing

Objectives:

- To ensure machinery is sound and in safe working condition.
- To prevent pollution of water resources.
- To prevent introduction of non-endemic species and pathogens to new operating areas.

14 Camp Hygiene

Objectives:

- To provide safe and healthy living conditions for camp personnel.
- To minimise pollution from camps.

15 Competency Based Training System for Plantations

Objectives:

- To ensure that all staff engaged in forest planning, harvest planning, harvesting operations and plantation establishment are competent in the use and maintenance of equipment and to carry out the assigned tasks.
- To ensure that staff responsible for particular tasks understands the requirements of those tasks.

Annex 13

FAO (2006) “Responsible Management of Planted Forests: Voluntary Guidelines.”

It is emphasised that these are ‘voluntary guidelines’. Hence they lack the imperative, mandatory strength that FSC’s Principles and Criteria possess. Moreover, there is no organisation

Institutional principles

Principle 1: Good governance

Taking into consideration the time frame and risks in establishing and managing planted forests, as well as their use, marketing and trade, governments should facilitate an environment of stable economic, legal and institutional conditions to encourage long-term investment, sustainable land-use practices and socio-economic stability.

Guidelines include but are not limited to:

- following existing national and international laws, commitments, treaties and agreements;
- encouraging transparency, participation and recognition of the roles of non-governmental stakeholders in decision-making without coercion;
- formulating current, consistent and clear enabling policies, laws, regulations, plans and processes, as well as appropriate monitoring and evaluation systems;
- developing and implementing national and subnational guidelines or codes of practice for the management of planted forests;
- using scientific evidence to weigh the risks, opportunities, costs and benefits of planted forests in relation to conservation and sustainable development;
- providing enabling conditions and procedures that reward sustainable management and responsible practices;
- recognizing just land ownerships (e.g. public and private), the rights and obligations of land and crop tenure, and access for investors (both corporate and smallholder), traditional owners, indigenous peoples, local communities and ethnic minorities;
- distributing benefits on an equitable basis to relevant stakeholders;
- recognizing the rights of workers to organize and to negotiate salaries and conditions to meet their fundamental needs.

Principle 2: Integrated decision-making and multistakeholder approaches

Taking into consideration the multifaceted interfaces of planted forests with communities, agriculture, animal husbandry, naturally regenerating forests and agroforestry land uses, both with and in the landscape, policy-makers should encourage integrated decision-making by stakeholders in planning, managing and utilizing planted forests.

Guidelines include but are not limited to:

- integrating policies, planning and management decision-making related to planted forests into intersectoral and multidisciplinary approaches in order to reflect their role in the wider landscape, both spatially and temporally;
- giving integrated decision-making a scientific, social, environmental and economic basis;
- understanding the varying needs, aspirations, priorities and accountabilities of stakeholder groups, and determining appropriate levels of influence in decision-making in relation to the scale and impact of planted forests;
- encouraging participation in decision-making by corporate and smallholder investors and associations, government and non-governmental organizations, indigenous peoples and local community groups (including women's and marginal groups);
- respecting international law to ensure that local communities and indigenous peoples retain control over their lands, unless they delegate control with free, prior and informed consent;
- finding levels of engagement, dialogue and approval that reflect the real complexity, scale and impact of planted forests, as well as the requirements for timely management decisions;
- recognizing the rights of smallholder investors in planted forests;
- resolving conflicts promptly through mutually agreed conflict management mechanisms involving major stakeholders.

Principle 3: Effective organizational capacity

Governmental, private-sector and other organizations require the capacities and capabilities to deliver knowledge, technology and other support services for sound planted forest management – at all levels.

Guidelines include but are not limited to:

- encouraging decentralization to local levels and devolution of responsibility to improve decision-making;
- providing appropriate and continuing funding mechanisms (for technical support and investment) to ensure the effective capacity and capability of the organizations responsible for development and management of planted forests;
- strengthening institutional capacity to effectively understand and respond to the priority needs and aspirations of major stakeholders;
- improving extension support services and the education and training of staff at all levels in planning, management and technical decision-making;
- strengthening national research capabilities to apply science in policy, management and monitoring of planted forests;
- continuing to learn from science, traditional knowledge and experience;
- sharing knowledge, technology and data through knowledge-management systems, including networking, while respecting intellectual property rights;
- providing support services tailored to the needs of corporate (large-scale) and smallholder (small-scale) investors.

Economic principles

Principle 4: Recognition of the value of goods and services

Planted forests, whether productive or protective, should be recognized for their provision of both market and non-market benefits, including wood and non-wood forest products and social, cultural and environmental services.

Guidelines include but are not limited to:

- weighing the trade-offs between return on investment to the planted forest investor and the costs and benefits to society of goods and services from planted forests in terms of sustainable livelihoods, land use and forest management;
- improving economic and market valuation to better recognize the full range of goods (wood, fiber, bioenergy, non-wood forest products) and environmental services (storage of carbon, conservation of biological diversity, protection of soil and water and provision of ecotourism, recreation and amenity value) from planted forests;
- sharing benefits on an equitable basis among the stakeholders in planted forests, as well as in related land uses in the landscape;
- developing decision-making support tools to help plan and monitor the provision of goods and services from planted forests, spatially and temporally;
- deriving methods to better reflect the full value of planted forests in justifying investments by governments and private-sector investors (both corporate and smallholder);
- applying the full value of planted forest goods and services in planning, management, monitoring and reporting, particularly by governments and local authorities, including in the setting of land-use priorities.

Principle 5: Enabling environment for investment

Governments should create the enabling conditions to encourage corporate, medium- and small-scale investors to make long-term investments in planted forests and to yield a favourable return on investment.

Guidelines include but are not limited to:

- providing stable and transparent investment, land-use and land management policies, laws, procedures and approval systems in order to give investors the confidence to make long-term investments in planted forests;
- providing direct or indirect incentives to encourage long-term investment in planted forests that may be justified where society as a whole will benefit;
- avoiding or removing perverse incentives having adverse trade, social or environmental impacts, including perverse incentives originating in other sectors;
- reviewing incentives at periodic intervals to address evolution in planted forest investment and management;
- avoiding economic distortions that reduce the value of planted forests or limit the opportunities for smallholder investors;
- promoting equity among competing land uses in policies and priorities.

Principle 6: Recognition of the role of the market

To improve the probability of achieving acceptable returns on investment, investors in planted forests, particularly those having productive functions, should design their planning and management to respond to signals from international and national markets. Establishment and management of planted forests should be market- rather than production-driven, unless established for environmental, protective or civic reasons.

Guidelines include but are not limited to:

- providing transparent access to market information and signals;
- monitoring market intelligence on current markets and future trends, changes in the use of forest products and consumer behaviour;
- creating economic and regulatory policies, legislative regimes, guidelines and practices that provide for fair competition and acceptable rates of return for investors, workers and local economies, and that do not discriminate among appropriate resource uses;
- recognizing the emerging carbon trade markets and the increased understanding of the role of afforestation and reforestation in providing carbon sinks to mitigate climate change, whether planted forests are for productive or protective functions;
- recognizing that the marketplace may not account for all the values that society may enjoy in planted forests.

Social and cultural principles

Principle 7: Recognition of social and cultural values

Social and cultural values should be taken into consideration in planning, managing and using planted forests, including the welfare and empowerment of adjacent communities, workers and other stakeholders.

Guidelines include but are not limited to:

- recognizing the local community values, customary rights, traditional knowledge, religious values and tenure of indigenous peoples and ethnic minorities in areas targeted for planted forest investments;
- increasing the opportunities and capacity of indigenous peoples, ethnic minorities, local communities (including women and marginal groups) and smallholder investors to benefit from rights in the planning, management and use of planted forests;
- recognizing the various, multiple-use contributions of smallholder investors (including outgrowers) in planted forests and trees and their unique needs for support in terms of tenurial rights, training, extension, research, access to markets and benefit-sharing;
- providing employment, adequate training, equipment and technology for health and safety, and acceptable mechanisms for promoting good practices, especially in considering neighbouring land uses and communities;
- acting to strengthen education, health care and other social services in areas adjoining planted forests.

Principle 8: Maintenance of social and cultural services

The balancing of competing objectives in planted forest investment causes social and cultural changes. Thus it is necessary to adopt planning, management, utilization and monitoring mechanisms to avoid adverse impacts.

Guidelines include but are not limited to:

- introducing socio-economic baselines and long-term impact assessments prior to establishment of planted forests and monitoring changes periodically thereafter;
- establishing conflict-resolution mechanisms to address stakeholder disagreements over tenurial rights, access, social service provision, employment issues and other rights to social and cultural services that might arise among investors or organizations involved in planted forest investment and management;
- providing a safe, healthy working environment and conditions, in compliance with national or international standards and laws;
- protecting sites and landscapes of archaeological, cultural, traditional, spiritual, scientific, aesthetic or other sociocultural significance;
- respecting community ancestral rights, for example for hunting or the collection of non-wood forest products, when planted forests are not put at risk;
- preventing displacement or resettlement of communities without free, prior and informed consent.

Environmental principles

Principle 9: Maintenance and conservation of environmental services

Planted forest management will impact the provision of ecosystem services. Thus planning, management, utilization and monitoring mechanisms should be adopted in planted forests in order to minimize negative impacts and promote positive ones, as well as to maintain or enhance the conservation of environmental services.

Guidelines include but are not limited to:

- formulating policy, legal and planning frameworks so as to encourage maintenance, conservation and restoration of environmental functions in planted forests;
- adopting integrated watershed management approaches and the protection of soil from erosion, including the use of appropriate technology and equipment on steep slopes;
- preparing environmental impact assessments consistent with existing legal and policy requirements or where justified by scale and anticipated impact;
- establishing baselines to monitor the impact of planted forest management on abiotic environmental services, such as impact on soil (including salinity), water and air quantity and quality, or where justified by scale and anticipated impact;
- managing planted forest crops to minimize the adverse impacts of fire, pests, diseases and adverse weather conditions, including salvage and restoration following major events;

- considering carbon sequestration and the provision of carbon sinks in the planning, management, utilization and monitoring of planted forests;
- applying sound operational standards and field practices, including contractor arrangements, in the establishment, management, harvesting and utilization of planted forests in order to minimize negative environmental impacts;
- recognizing the positive impact that planted forests can have on the provision of environmental services, including rehabilitation of degraded lands, restoration of landscapes, reclamation of sites and combating of desertification;
- considering voluntary certification programmes an acceptable mechanism for addressing environmental issues.

Principle 10: Conservation of biological diversity

Planners and managers of planted forests should incorporate the conservation of biological diversity at stand, forest and landscape levels.

Guidelines include but are not limited to:

- adapting management practices to help maintain diversity of plants and animals and conserve genetic resources;
- recognizing the role that planted forests can play in relieving harvesting pressures on naturally regenerating forests and in providing habitats for indigenous flora and fauna;
- protecting wildlife habitat diversity and the conservation of forest plants and animals (including aquatic species) by implementing measures from stand to landscape levels;
- preparing baseline studies to monitor the impact of planted forest management on the maintenance of plants and animals and the conservation of genetic resources;
- avoiding the conversion of naturally regenerating forests or other ecosystems of significant conservation value into planted forests;
- controlling illegal practices such as hunting or removal of animals, foraging and harvesting of plants;
- selecting indigenous species for the establishment of planted forests if they are equal to or better than introduced species for the purpose intended;
- evaluating the risk that introduced species may become invasive and have adverse effects on local biodiversity.

Principle 11: Maintenance of forest health and productivity

Arrangements are needed at national, subnational and forest levels to ensure that planted forests are managed so as to maintain and improve forest health and productivity and reduce the impact of abiotic and biotic damaging agents.

Guidelines include but are not limited to:

- recognizing the high productivity of intensively managed planted forests in terms of forest products and services;
- promoting reforestation, soil conservation and other measures after the harvest of planted forests;
- minimizing soil compaction by heavy equipment;

- applying sound biosecurity measures (prediction, prevention, monitoring, rapid response to outbreaks and restoration) to reduce the incidence and impact of invasive species;
- adopting integrated-pest-management approaches and the use of biological control of insects and diseases when possible;
- managing the use of herbicides, pesticides, fungicides and other chemicals responsibly, in accordance with legal requirements and best-practice standards;
- disposing of chemical materials, containers and waste materials in accordance with legal requirements and best-practice standards;
- adopting science-based and regulatory policies, risk-management protocols, practices and monitoring in the use of biotechnology (including genetically modified organisms) in reproductive materials;
- selecting species and reproductive materials with the end-use/product objective, site conditions, environmental impact, genetic diversity and risk of invasiveness in mind;
- reducing the incidence and impact of wildfires by improved prediction, prevention, monitoring, rapid response to emergencies and restoration following fires;
- using planned fire for wildfire hazard and fuel reduction, silvicultural purposes and habitat management;
- avoiding the use of planned fire in land clearing and preparation where science indicates conditions that could be adversely affected by fire;
- undertaking site-establishment practices that maintain or enhance productivity potential and forest health, while minimizing environmental impact;
- practicing efficient use of fertilizers, based upon periodic soil, mycoflora and/or foliar analyses and tailored to specific nutrient requirements during the rotation of planted forests;
- supporting education, training, scientific research and networking in forest protection, forest health and the sustainability of site and crop productivity;
- adopting silvicultural management and monitoring practices that balance the trade-offs between maintaining the health and productivity of planted forests and reducing environmental risks, including those from neighbouring land uses.

Landscape approach principles

Principle 12: Management of landscapes for social, economic and environmental benefits

As planted forests interact with and impact local land uses, livelihoods and the environment, integrated planning and management approaches should be adopted within a landscape or watershed to ensure that upstream and downstream impacts are planned, managed and monitored within acceptable social, economic and environmental standards.

Guidelines include but are not limited to:

- recognizing the continuum and the respective roles of naturally regenerating

forests and planted forests having protective and productive functions and of trees outside forests – to varying degrees, they all provide economic, environmental, social and cultural services within a landscape or watershed, both spatially and temporally;

- educating local communities and the public through outreach programmes, so that they better understand the interrelationships in the management of planted forests, naturally regenerating forests, lands destined for conservation, grasslands, croplands and other land uses;
- retaining naturally regenerating riparian reserves or buffers of varying widths on permanent and, where appropriate, non-permanent water courses, depending upon their size and their conservation importance;
- designing planted forests to provide corridors, where appropriate and practicable, between naturally regenerating forest areas with high environmental conservation value;
- reducing the negative soil- and water-conservation and visual impacts of harvesting and other forest operations;
- designating and managing reserves having significant scientific and cultural value, within which planted forest management will be restricted;
- designating and managing buffer zones adjoining local communities and land uses, where appropriate, to reduce adverse impacts resulting from the management of planted forests;
- locating roads and stream crossings and selecting maintenance programmes appropriate to the landscape (social, cultural, environmental and economic);
- monitoring upstream and downstream water quality and quantity as appropriate.

Annex 14

Guide to Overseas Sustainable Silviculture by Chinese Enterprises

Notice of SFA and MOC on Circulating

Provinces, Autonomous Regions, Forestry Departments (Bureau) of Municipalities Directly under the Central Government, Relevant Commercial Authorities, Inner Mongolia Forestry Industrial Co. Ltd, Jilin Forestry Industrial Co. Ltd, Longjiang Forestry Industrial Co. Ltd, Daxing'anling Forestry Industrial Co. Ltd, Forestry Department and Commercial Department of Xinjiang Production and Construction Corps:

To implement the *Decision of the Party Central Committee and the State Council on Speeding up Forestry Development (Zhongfa [2003] No.9)* and the State Council policies of encouraging and regulating overseas investment and cooperation by Chinese enterprises, to implement the strategy of 'going abroad for development' and carry out technological and economic cooperation with foreign countries, and to encourage and regulate overseas sustainable silviculture by Chinese enterprises, State Forestry Administration and Ministry of Commerce have jointly formulated this *Guide to Overseas Sustainable Silviculture by Chinese Enterprises* based on laws and regulations including *Forest Law of the PRC*. The *Guide* is now issued and circulated for implementation. For problems and suggestions during implementation, please contact SFA (Afforestation Department) and MOC.

Annex: Guide to Overseas Sustainable Silviculture by Chinese Enterprises

Annex

2 Guide to Overseas Sustainable Silviculture by Chinese Enterprises

August 27th 2007 Beijing

Contents

1 Scope	1
2 Definitions	1
3 Legal Framework	1
4 Silviculture and Forest Management	2

5 Eco Protection	5
6 Community Development	8
Annex A (Documents for References) Relevant International Conventions, Agreements and Declarations	9
Annex B (Regulative) Wording of the Guide	10

Guide to Overseas Sustainable Silviculture by Chinese Enterprises

1 Scope

- 1.1 The Guide stipulates the fundamental principles of sustainable silviculture, and basic requirements that Chinese enterprises shall meet to realize sustainable silviculture.
- 1.2 The Guide applies to regulating and guiding the entire process of silviculture activities by Chinese enterprises that engage in overseas silviculture and forest management, and applies to evaluation of silviculture-related activities by Chinese enterprises. It may also be used to guide Chinese enterprises providing non-timber forest products and other services, in order to promote rational, effective and sustainable protection and development of global forest resources by Chinese enterprises.

2 Definitions

2.1 Silviculture

Refers to comprehensive culture activities based on set culture targets and objective natural law in the entire culture process from seedlings, nursery stock, and afforestation to trees growing into woods and their maturation.

2.2 Chinese Enterprises

Refers to enterprises with legal person status engaging in silviculture and related activities.

2.3 High Conservation Value Forest

Refers to a tract of forest area needs to be maintained or whose conservation value needs to be improved and with the following features: global, regional or nationwide forest area with considerably rich bio diversity value; global, regional or nationwide forest area with huge landscape; forest area with rare, threatened or endangered eco system or forest area within the system; important forest area that meets basic needs of local communities; and forest area of great importance to traditional local community culture.

2.4 Forest Monitoring

Refers to conducting consistent or regular testing and evaluation of forest conditions, operation activities and their environmental and social impact.

2.5 Forest Fragmentation

Refers to any process causing continuous transformation of forest coverage into forest fragments separated by non forest land.

2.6 Invasive Species

Refer to species with all the following conditions: (1) introduced to a non origin area as a result of intentional or unintentional human activities; (2) formed a self-regenerative capacity in the local natural or artificial eco system; (3) caused considerable damage or impact to local eco system or geographical structure.

3 Legal Framework

- 3.1 Shall abide by relevant international conventions and agreements signed between China and the country involved.
 - 3.1.1 Shall abide by silviculture-related clauses under relevant international conventions and agreements between China and the country involved (see Annex A).
- 3.2 Shall abide by the stipulations of relevant laws, regulations, departmental regulations and documents formulated by competent Chinese government authorities regarding economic and technological cooperation between Chinese and foreign enterprises.
- 3.3 Shall abide by relevant laws and regulations in the country involved.
 - 3.3.1 Shall possess relevant silviculture-related texts of laws and regulations currently in force in the country involved.
 - 3.3.2 Silviculture activities shall meet the requirements of relevant laws and regulations in the country involved.
 - 3.3.3 Management and staff shall familiarize themselves with requirements of relevant laws and regulations.
 - 3.3.4 Shall find out about and pay necessary taxes and fees on time according to law.
 - 3.3.5 Shall fell trees according to law, and prohibit deforestation and other unauthorized activities.
 - 3.3.6 Shall protect forest land according to law, strictly protect high conservation value forest and prohibit illegal transformation of the purposes of forest land.

4 Silviculture and Forest Management

- 4.1 Shall formulate and implement silviculture plan, and determine silviculture targets and measures.
 - 4.1.1 Shall formulate and implement silviculture plan based on long-term forestry programme formulated by local forestry authorities as well as on local conditions.
 - 4.1.1.1 Shall put in place appropriate and effective silviculture plan.
 - 4.1.1.2 Shall formulate silviculture plan based on the latest data of forest resources that the enterprise involved has in hand.
 - 4.1.1.3 Silviculture plan and its subordinate documents shall have the following contents:
 - (1) Targets of silviculture activities, including survey of structure of resources and optimization of culture models;
 - (2) Natural and social economic conditions, including forest in particular high conservation value forest resources, environmental restrictions, land utilization and ownership conditions, social economic conditions, social development and leading demands, evolution of silviculture activities as well as general situation of surrounding land;
 - (3) Overall arrangement of forestry production;
 - (4) Silviculture system and forest management measures, including seedling production, reforestation, nurturing and intermediate cutting, and standing forest transformation, etc.
 - (5) Forest cutting and regeneration plan, including annual cutting area, cutting quantity and intensity, quantity of timber production, cutting method, cutting area arrangement and regeneration operation, etc.
 - (6) Forest and environmental protection plan, including prevention and control of harmful organisms, forest fire prevention, water and soil conservation, control of chemical agents and poisonous substances, and diversion of forest land to other uses, etc.
 - (7) Wild flora and fauna protection plan, in particular rare, threatened and endangered species;
 - (8) Plan design of diversified operation and forest products processing;
 - (9) Operation plan and measures of culture, protection and utilization of important non-timber forest products;
 - (10) Capital construction and forest paths planning;
 - (11) Benefits and risks assessment of silviculture activities;
 - (12) Monitoring measures of forest eco system;
 - (13) Necessary charts related to silviculture;
 - (14) Shall meet other specific requirements of the country involved.

- 4.1.1.4 Shall formulate annual operation plan according to silviculture plan.
- 4.1.2. Shall appropriately amend silviculture plan.
 - 4.1.2.1 Shall familiarize in time with regional silviculture-related scientific and technological development information and policies.
 - 4.1.2.2 Shall appropriately amend silviculture plan based on forest resources monitoring results, new scientific and technological information and policies, as well as changes of environmental, social and economic conditions.
- 4.1.3 Forest operation and operation design shall be kept in line.
 - 4.1.3.1 Shall conduct silviculture activities according to operation design.
 - 4.1.3.2 May make proper adjustments to operation design under the prerequisite of ensuring that silviculture better facilitates the realization of operation targets and ensuring forest eco integrity.
 - 4.1.3.3 Adjustments to operation design shall be put on record.
- 4.1.4 Shall provide forestry staff with necessary training and guidance to ensure they have the capacity to conduct operation correctly.
 - 4.1.4.1 Shall put in place a system of providing training and guidance to staff.
 - 4.1.4.2 Shall ensure that forestry staff are well trained and know operation skills well.
 - 4.1.4.3 Professional technical staff shall provide necessary technical guidance to staff in their fieldwork.
- 4.1.5 Main contents of silviculture plan shall be made public to local communities or relevant circles.
- 4.2 Shall conduct afforestation and forest management activities, nurture, protect and develop forest resources and develop multiple forest products based on the principle of sustainable development.
 - 4.2.1 Silviculture shall strive for steady economic returns, and ensure necessary input to maintain productivity of forest eco system.
 - 4.2.1.1 Shall give full consideration to silviculture cost and the bearing capacity of management and operation cost, and make them economically feasible.
 - 4.2.1.2 Shall ensure a rational investment size and investment structure of sustainable silviculture.
 - 4.2.2 Encourage diversified operation in forest area and sustainable use of timber and non-timber forest products, including fruits and nuts, oilseeds, foods, drinks, medicinal herbs and raw materials for chemical industry, so as to promote local economic development.
 - 4.2.3 Introduction, production and operation of seedlings and nursery stocks shall abide by relevant regulations of the country involved, and ensure the quality of seedlings and nursery stocks.
 - 4.2.3.1 Introduction, production and operation of seedlings and nursery stocks shall meet the requirements of relevant laws and regulations of the country involved, e.g., *Forest Law*, *Seedling Law*, *Plants Quarantine Law*, etc.
 - 4.2.3.2 Enterprises engaging in seedlings and nursery stocks production and operation shall abide by regulations of local forestry administration.
 - 4.2.3.3 Shall conduct quality check according to technical standards of the country involved before seedlings and nursery stocks are removed and transferred from the nursery for transplantation.
 - 4.2.3.4 Introduction of seedlings, nursery stocks and other breeding materials shall get the approval of forestry authorities of the country involved.
 - 4.2.4 Shall select afforestation seedlings based on operation targets and in accordance with local conditions, give priority to those suited to local conditions in particular native varieties, and use with caution non-native varieties. Shall monitor the growth of trees, harmful organisms and the impact on eco environment after afforestation.
 - 4.2.4.1 Shall select afforestation seedlings based on operation targets and in accordance with local conditions.
 - 4.2.4.2 Shall give priority to native seedlings in afforestation.
 - 4.2.4.3 Shall monitor survival rate and preservation rate of non-native species, harmful organisms and impact on environment.
 - 4.2.5 Afforestation design and operation shall be in line with local conditions and operation targets.

- 4.2.5.1 Afforestation design shall meet operation targets and shall stipulate rational afforestation, nursing, thinning, harvest cutting and regeneration plans.
- 4.2.5.2 Shall conduct operation strictly in accordance with afforestation design and conduct whole-course monitoring and control.
- 4.2.5.3 Ought to adopt one or several of the following silviculture measures, promote diversified standing forest structure and strengthen stability of standing forest:
 - (1) Use multiple tree varieties, and rationally build mixed forest;
 - (2) Avoid short-term mass cutting in operation design;
 - (3) Afforestation of different age groups or in different phases;
 - (4) Rational allocation of the percentage of tree species;
 - (5) Build shelterbelt.
- 4.2.5.4 Silviculture activities ought to facilitate diversification of landscape and eco environment.
- 4.2.5.5 Silviculture overall arrangement and programme ought to facilitate the preservation of the value and features of natural landscape.
- 4.2.5.6 Silviculture ought to promote gradual transformation of forest of the same age to forest of different age and a diversified eco environment structure.
- 4.2.6 Shall conduct forest cutting and regeneration according to law, and consumption rate of timber and non-timber forest products must not be higher than regeneration capacity.
- 4.2.6.1 Shall formulate annual cutting plan and quota based on the principle of keeping annual timber forest consumption volume less than annual growth volume as well as the principle of rational operation and sustainable use, and report the annual plan and quota to forestry authorities for approval.
- 4.2.6.2 Shall record annual timber cutting volume and cutting venue.
- 4.2.6.3 Forest cutting and regeneration shall meet the requirements of relevant forest cutting operation rules of the country involved.
- 4.2.6.4 Utilization of non-timber forest products shall not exceed the level allowed by its sustainable utilization.
- 4.2.7 Shall facilitate the protection and regeneration of natural forest.
- 4.2.7.1 Shall adopt effective measures to promote the rehabilitation and protection of natural forest.
- 4.2.7.2 Ought not to transform natural forest into artificial forest.
- 4.2.8 Shall improve as far as possible the effective utilization of forest resources.
- 4.2.8.1 Shall adopt environmentally friendly silviculture operation methods.
- 4.2.8.2 Shall increase comprehensive utilization rate in the process of cutting and growing process.

5 Eco Protection

5.1 Bio Diversity Protection

- 5.1.1 Shall formulate measures to protect rare, threatened and endangered flora and fauna and their habitats.
 - 5.1.1.1 Shall define rare, threatened and endangered flora and fauna and their habitats that need protection in the framework of silviculture, and mark them on the map.
 - 5.1.1.2 Shall designate certain preservation zone as habitat based on specific conditions to protect rare, threatened and endangered flora and fauna. Should preservation zone can't be designated clearly, shall reserve enough area for each type of forest. Designation of the above zone shall give consideration to migration of wild animals in the forest.
 - 5.1.1.3 Shall formulate corresponding protective measures in the preservation zone, and provide staff with relevant training and education.
 - 5.1.1.4 Must protect the natural living environment of protected species as stipulated under laws, regulations of the country involved and international conventions.
- 5.1.2 Must not conduct inappropriate collecting activities.
 - 5.1.2.1 Collecting activities shall comply with laws and regulations regarding protection of wild flora and fauna in the country involved.
 - 5.1.2.2 Collecting activities shall adopt sustainable methods to minimize damage to local resources.
- 5.1.3 Shall protect typical type of forest eco system in silviculture area and maintain its natural

state.

- 5.1.3.1 Shall define through survey typical type of forest eco system in silviculture area.
- 5.1.3.2 Shall formulate measures to protect typical eco system.
- 5.1.3.3 Shall implement protective measures to maintain the natural state of typical eco system.
- 5.1.4 Shall adopt effective measures to rehabilitate, preserve and increase bio diversity.

5.2 Environmental Impact

- 5.2.1 Shall consider environmental impact as a result of silviculture activities.
 - 5.2.1.1 Shall conduct environmental impact evaluation on silviculture operation according to the scale, intensity and resources features of silviculture.
 - 5.2.1.2 Shall adjust silviculture operation methods based on evaluation results, to reduce environmental impact caused by cutting, logging and transportation.
- 5.2.2 Shall adopt various protective measures to maintain natural features of forest land, avoid deterioration of soil fertility, and protect water resources.
 - 5.2.2.1 Shall adopt effective measures to minimize damage to forest land caused by human activities of soil preparation, afforestation, cutting, regeneration and road construction, and maintain the natural features of forest soil and its long-term productivity.
 - 5.2.2.2 Reduce negative impact on quality and quantity of water resources caused by silviculture operation, control soil erosion, and avoid major damage to forest catchment area.
 - 5.2.2.3 Ought to set up buffer zone wide enough by creeks and rivers, to preserve water and soil.
 - 5.2.2.4 Ought to increase soil fertility by using organic and bio fertilizer, and reduce the use of chemical fertilizer.
- 5.2.3 Shall strictly control the use of chemical agents, and reduce environmental impact caused thereof.
 - 5.2.3.1 Must not use pesticide prohibited by laws, regulations of the country involved and international conventions.
 - 5.2.3.2 Shall provide appropriate equipments and technical training, and reduce environmental pollution and hazards to human health caused by the use of chemical agents.
 - 5.2.3.3 Shall adopt environmental friendly methods in disposal of chemical waste and containers.
- 5.2.4 Shall strictly control and monitor the introduction and invasion of alien species, and avoid negative eco consequences caused thereof.
 - 5.2.4.1 Shall introduce alien species after quarantine procedures and upon ensuring that they do not cause damage to environment and bio diversity.
 - 5.2.4.2 Shall record the use of alien species and monitor their eco impact.
 - 5.2.4.3 Shall formulate and implement measures to control the invasion of harmful alien species.
- 5.2.5 Shall maintain forest eco service functions.
 - 5.2.5.1 Shall get familiar with and define forest eco service functions in silviculture area, e.g., forest tourism, education, scientific research, fishery and animal husbandry resources, and headwaters conservation.
 - 5.2.5.2 Shall adopt measures to maintain relevant values and service functions of forest in particular high conservation value forest.

5.3 Forest Protection

- 5.3.1 Shall formulate plan to prevent and control harmful organisms in forest, and adopt environmental friendly bio, chemical and physical measures based on forest management measures to conduct comprehensive control of harmful organisms.
 - 5.3.1.1 Control of harmful organisms in forest shall comply with laws and regulations of the country involved.
 - 5.3.1.2 Shall conduct forecast of harmful organisms if conditions permit, to evaluate potential impact on forest caused by harmful organisms, and formulate corresponding prevention and control plan.
 - 5.3.1.3 Shall adopt comprehensive harmful organisms control measures with forest management measures playing the leading role complemented by bio, chemical and physical prevention and control measures. Restrict the use of chemical pesticide in forest, to avoid or reduce environmental impact caused by chemical pesticide.
 - 5.3.1.4 Shall adopt effective measures to protect various useful organisms in forest and improve forest

health.

5.3.2 Shall establish sound forest fire prevention system, formulate and implement fire prevention measures.

5.3.2.1 Shall set up forest fire prevention system according to relevant laws and regulations of the country involved.

5.3.2.2 Shall designate areas of different forest fire risk levels in silviculture zone.

5.3.2.3 Shall formulate and implement forest fire monitoring and fire prevention measures.

5.3.2.4 Shall build forest fire prevention facilities, set up fire prevention organizations to take care of forest fire prevention and remedy and rescue work of the enterprise.

5.3.2.5 Shall record forest fire statistics and set up forest fire archives.

5.4 Forest Monitoring

5.4.1 Shall set up appropriate forest monitoring system and forest resources archives, and conduct consistent or regular monitoring on forest resources.

5.4.1.1 Shall conduct forest resources survey, set up forest resources archive system.

5.4.1.2 Shall set up appropriate monitoring system and procedures and define the methods, frequency and intensity of forest monitoring according to the scale, intensity of silviculture activities of the enterprise as well as the local conditions.

5.4.1.3 Shall conduct consistent or regular monitoring activities according to monitoring system.

5.4.1.4 Shall compare and evaluate monitoring results.

5.4.1.5 Formulation or amendment of silviculture plan and operation plan shall embody monitoring results.

5.4.2 Forest monitoring shall include such contents as current situation of resources, silviculture situation and monitoring of social and environmental impact.

5.4.2.1 Forest monitoring shall include the following:

- (1) Reserves, output and resource consumption volume of major forest products;
- (2) Forest structure, growth, regeneration and health situation;
- (3) Categories of flora and fauna and their evolution tendency;
- (4) Environmental and social impact caused by cutting and other operation activities;
- (5) Cost and benefits of silviculture;
- (6) Implementation of annual operation plan.

6 Community Development

6.1 Provide as far as possible job and training opportunities and other social service opportunities for residents in forest area and surrounding area.

6.2 Shall safeguard legitimate rights and interests of labors, and encourage community people to take part in decision-making of silviculture activities.

6.3 Must not violate local residents' lawful rights to forest woods and other resources.

6.4 Shall adopt appropriate measures to prevent the fact that silviculture activities directly or indirectly threaten or weaken the resources of local residents and their rights to use resources.

6.5 When local residents voluntarily entrust resources operation right to Chinese enterprises, the two sides shall sign agreements or contracts.

6.6 Shall set up consultation system with local communities. Conduct active consultations with local residents, and designate and protect forest land of special cultural, eco, and economic or religious significance to local residents in particular in settlements of multiple ethnic groups.

6.7 Shall make public the outline of forest monitoring results where necessary and based on the precondition of information confidentiality.

Annex A

(Documents for References)

Relevant International Conventions, Agreements and Declarations

A.1 Convention on Biological Diversity

A.2 The Vienna Convention for the Protection of the Ozone Layer

- A.3 UNFCCC & Convention on Biological Diversity
- A.4 The United Nations Framework Convention on Climate Change
- A.5 International Convention on the Protection of New Varieties of Plants
- A.6 Convention on the Conservation of Migratory Species of Wild Animals
- A.7 Convention on International Trade in Endangered Species of Wild Fauna and Flora
- A.8 RAMSAR Convention on Wetlands of International Importance Especially as Waterfowl Habitat
- A.9 International Convention for the Protection of Birds
- A.10 Agreement Concerning Cooperation in the Quarantine of Plants and their Protection against Pests and Diseases
- A.11 Agreement on the Protection of Migratory Bird and its Habitat
- A.12 International Tropical Timber Agreement
- A.13 Rio Declaration on Environment and Development.

Annex B
(Regulative)
Wording of the Guide

For the purpose of different handling in implementing articles of the Guide, the wording calling for different strictness is explained as follows:

B.1 Indicate extreme strictness and must be done as such:

“Must” is used in positive and “prohibit” is used in negative.

B.2 Indicate strictness and should be done as such under normal situations:

“Shall” is used in positive and “shall not” or “must not” is used in negative.

B.3 Indicate a choice is allowed and should be done as such first when conditions permit:

“Ought to” or “may” is used in positive and “ought not to” is used in negative.

Annex 15

Common Code for the Coffee Community – 4C - Matrix

The Code Matrix

Social Dimension			Criteria			Level of Monitoring
Category	No.	Principle	Green	Yellow	Red	
Freedom of association	1	Workers and producers have the right to found, to belong to and to be represented by an independent organization of their choice.	Resources, information and institutional structures are available to improve representation of workers and farmers by their organization	Right to found, belong to and to be represented by an independent organization of free choice is accepted and easy access to it exists	Organizations exist but are not accepted as valid counterparts / interlocutors.	4C Unit
Freedom of bargaining	2	Workers have the right to bargain collectively	Collective bargaining results are applied to all workers	Trade Unions and / or worker's organizations are bargaining collectively	The right to and the outcomes of collective bargaining are ignored.	4C Unit
Discrimination	3	All actors along the chain implement positive action to secure equal rights with respect to sex, religion, ethnicity and political views.	Positive action programmes to secure equal rights are in place	Awareness to secure equal rights is raised and concrete steps to develop positive action programmes are evident.	No positive action to raise awareness of equal rights is evident.	4C Unit and entire chain
Right to childhood and education	4	Children have effective rights to childhood and education.	Children's rights to childhood and education are implemented.	Deliberate efforts to remove children from work and get them into education are evident.	There are no measures to encourage the education of children.	
Working Conditions	5a	Workers receive a labour contract	All workers receive written and legally registered labour contracts	Informal but transparent contractual agreements are used.	Workers do not receive any kind contractual agreement.	4C Unit
	5b	Working hours comply with national laws / international conventions and overtime work is remunerated.	Working hours comply with national laws / international conventions and overtime working hours are fully remunerated.	Transparent working hour timetables exist and working hours are recorded individually.	Working hours do not comply with national laws / international conventions and overtime working hours are not remunerated.	4C Unit and below
	5c	Wages comply with national laws or sector agreements.	Wages are above existing national Minimum wages or sector agreements, whichever is higher	Wages comply with existing national minimum wages	Wages are below existing national minimum wages	4C Unit and below
	5d	Employer assures proper occupational health and safety conditions for workers.	Proper health and safety conditions are assured by existence of a monitoring system.	Procedures and equipment to avoid unhealthy and unsafe working practices exist.	Unhealthy and/or dangerous practices are used with high frequency.	4C Unit

Social Dimension			Criteria			Level of Monitoring
Category	No.	Principle	Green	Yellow	Red	
	5e	Seasonal and piece rate workers are equitably treated.	Seasonal and piece rate workers are equitably treated.	Seasonal and piece rate workers receive minimum wage but get no other benefit.	Seasonal and piece rate workers do not get the equivalent of minimum wages in normal working hours and have no access to other benefits.	
Capacity and skill development	6a	Workers are entitled to receive training to improve their skills and capacities.	All workers are given access to relevant training and skill development in order to apply good practices in coffee production and post-harvest processing.	Workers are trained in relevant technical skills.	Training to improve technical skills for workers is not provided.	4C Unit
	6b	Cooperatives, Unions and associations work towards skills development and improvement of capacities.	Cooperatives, unions and associations provide access to relevant training and skill development in order to apply good practices in coffee production and post-harvest processing to all their members.	Members of cooperatives, unions and associations are trained in relevant technical skills.	Training to improve technical skills is not provided by cooperatives, unions and associations	4C Unit
Living Conditions and education	7a	Cooperatives, unions and associations work towards improving living conditions and support the basic education of their members.	Cooperatives, unions and associations deliver full services to their members.	Cooperatives, unions and associations deliver limited services to their members.	Cooperatives, unions and associations do not deliver any services to their members.	4C Unit
	7b	Workers are entitled to improve their living conditions and their education	Workers are provided with all defined living conditions and their basic education is supported.	Workers are partly provided with defined living conditions and continuous improvement is visible.	Workers are not provided with any service.	4C Unit

Environmental Dimension			Criteria			Level of Monitoring
Category	No.	Principle	Green	Yellow	Red	
Biodiversity	1a	Conservation of wildlife and endangered species is facilitated and supported	Conservation of wildlife is practiced and endangered species are protected by demarcation and signage on coffee farms.	No hunting, ensnaring, poisoning and exploitation of endangered and protected species is practiced and actors along the chain cooperate to develop a communication strategy for the conservation of wildlife.	Hunting, ensnaring, poisoning and exploitation of endangered and protected species is partly practiced.	4C Unit and below
	1b	Native flora is protected and enhanced.	Native flora including watersheds and biodiversity habitats are protected and enhanced.	According to national legislation, no exploitation of native flora or watersheds on the farm is evident and a strategy to protect and enhance native flora is developed.	Irreversible, destructive exploitation of native flora.	4C Unit and below
Agrochemicals	2	Use of pesticides and the effect on human health and on the environment is minimized.	Crop Management (shadow, fertilization, varieties, plant density) for the prevention of phytosanitary problems is in use. Use of natural enemies and the least toxic pesticides is practiced.	Keep to FAO code recommendations regarding WHO I+II and all pesticides of low acute toxicity (see annexed list). System to minimize spraying is in place.	Use of most Hazardous pesticides is practiced (see annexed list). There is no system in place to minimize spraying.	4C Unit and below
Soil Fertility	3a	Soil conservation practices are in place.	Full implementation and periodical review of a soil management plan is evident.	Assessment of management options with the preparation of a soil management plan is in line with conservation agriculture. Implementation has started with measures of highest priority.	Observable, continuous, severe, degradation of soil resources by erosion.	4C Unit and below
	3b	Fertilizers are used appropriately	Application of fertilizers is in accordance with the needs of the crop (i.e. based on expected yield) derived from monitoring and soil / plant analyses, encouraging the use of organic material without depleting nutrient stocks in other areas.	A monitoring system for soil / plant analyses is in development. Application of fertilizers is based on standardized prescriptions.	Excessive use of fertilizers polluting water systems, streams and aquifers.	4C Unit and below
	3c	Organic matter management is in place.	Proper use of organic matter as fertilizer to replace mineral fertilizers in a specified time period in accordance with the management plan to enhance biological and physical soil properties.	Organic matter is reused and recycled.	Wasteful and improper disposal of organic matter.	4C Unit and below
Water	4a	Water resources are conserved, this applies to both the quality and quantity aspects.	Water replenishment capacity / quality / water saving technologies are enhanced.	Water conservation practices are implemented.	Withdrawal of water beyond replenishment capacity and pollution of water sources.	4C Unit and below

Environmental Dimension			Criteria			Level of Monitoring
Category	No.	Principle	Green	Yellow	Red	
	4b	Wastewater management is in place.	Discharged load of contaminants is minimized.	Treated wastewater is recycled and reused.	Discharge of untreated wastewater.	4C Unit and below
Waste	5	Safe waste (including packaging waste) management is in place.	Waste generation is minimized, reuse and recycling is maximized. Safe disposal of waste is ensured.	Hazardous waste is recovered, segregated and the safety of farmers, municipality and suppliers is assured.	Unsafe disposal of hazardous waste.	4C Unit and below
Energy	6a	Preferential use of renewable energy.	Maximization of renewable energy sources without surpassing their regeneration capacity is evident.	Management options for use of renewable energy are assessed, and implementation according to priority for the replacement of fossil with renewable energy is started.	Extraction of wood fuel beyond regeneration capacity.	4C Unit
	6b	Saving Energy	Energy use is minimized as evident in regular evaluation.	Use of energy is regularly evaluated and first steps of energy efficiency and alternative options are implemented.	Wasteful use of energy as input for coffee production or processing.	4C Unit and below

Economic Dimension			Criteria			Level of Monitoring
Category	No.	Principle	Green	Yellow	Red	
Market information	1	The coffee market is transparent and its information available to Common Code suppliers and buyers.	All actors along the chain provide market information, logistics and access to technical as well as administrative means in order to make the quality demands of the market transparent	Information on market and coffee specifics is available to all actors along the chain.	Market information is not passed along the chain.	4C Unit, above and below
Market access	2	Cooperatives / exporters / associations improve the ability of producers and smallholders to gain adequate market access (e.g. market information, financial credit and supply of inputs).	Cooperatives / exporters / associations provide producers and smallholders with access to adequate services for better market access.	Cooperatives / exporters / associations develop a system for producers & smallholders to gain access to adequate services.	Producers & smallholders do not have access to adequate market information, financial credit or supply of inputs.	4C Unit, above and below
Quality	3a	A transparent product quality refers to best agricultural practices and complies with national and international export standards.	The product quality is measured transparently throughout the supply chain and complies explicitly with good agricultural practices as well as national and international export standards.	Actors along the chain develop and implement a system to measure product quality in compliance with good agricultural practices in coffee production as well as national and international export standards.	Product quality is not measured at export side and / or does not comply with national and international export standards.	4C Unit and above
	3b	Intrinsic and sensorial green coffee quality is improving due to actors along the chain developing their skills in good agricultural practices.	All actors have the necessary knowledge of good agricultural practice in coffee production and good practices in post-harvest treatment in order to produce green coffee in agreement with national and international export standards.	Intrinsic and sensorial green coffee quality is improving with training and skill development on good agricultural practices in coffee production and good practices in post-harvest treatment.	Actors do not improve their skills in order to reduce inadequacies in coffee production.	
Commerce	4	Prices reflect the quality, including the quality of the product and the Common Code quality of sustainable production and processing practices.	The qualification process to establish a relationship between quality and price is established and quality is rewarded by a freely negotiated margin as agreed by the direct business partners.	A qualification process to establish a relationship between quality and prices is developed and tested by direct business partners.	There is no evident relationship between quality (product and production) and prices.	4C Unit
Supply chain	5	The coffee is traceable from 4C Unit to cup (chain of custody).	Identity preservation is ensured by written standardized documentation.	Documentation methods to trace the coffee along the chain have been developed.	Coffee is not traceable below export level.	4C Unit and above

Annex 16

UTZ Code of Conduct Criteria

Good Agricultural & Business Practices

- Monitoring of business processes
- Record keeping of fertilizers & agro chemicals
- Good housekeeping practices
- Proper training of workers
- Accident and emergency procedures
- Hygiene rules and practices
- Traceability of coffee
- Annual internal inspections

Social Criteria

- Application of national laws and ILO conventions regarding wage and working hours Safe and healthy working conditions
- No forced and child labor
- No discrimination, respectful treatment of workers
- Freedom of association and collective bargaining
- Freedom of cultural expression
- Safety training of workers in their own language
- Protective clothing for work with chemicals
- Access to health care for workers and their families
- Access to education for children
- Access to decent housing
- Access to clean drinking water

Environmental Criteria

- Reduction and prevention of soil erosion
- Responsible and minimal use of agrochemicals
- Integrated Pest Management
- Minimized water and energy use
- Optimized use of sustainable energy sources
- Minimized environmental pollution
- Treatment of contaminated water
- Protection of water sources
- No deforestation of primary forests
- Use of native tree species as coffee shade trees
- Protection of endangered species

Annex 17

Recommendations for Investments in the Plantation Sector

“Sustainable Development in the Plantation Industry in Laos: An Examination of the Role of the Ministry of Planning and Investment.” Voladet, IISD 2009

This study explored the organisational and regulatory environment for making and managing investments, foreign and national, in the plantation sector in Laos. It made recommendations both with respect to the management of the investment process – i.e. those for which the Ministry of Planning and Investment (MPI) and Ministry of Finance (MoF) have responsibility, and environmental and social impact assessment and oversight – for which the Water resources and Environment Administration (WREA) has responsibility.

The recommendations from Voladet (2009:15-16) were (emphasis in original):

- *Strengthen collaboration among relevant ministries to enable an effective decision-making process.* The MPI is the lead government agency responsible for managing overseas investment and needs to effectively coordinate a process that mainstreams environmental and social issues into the decision-making process. This can be done by improving coordination among other key agencies such as the WREA, the MAF, the NLMA and the Ministry of Finance (MO F).
- *Strengthen collaboration throughout the environmental decision-making process.* As the overall coordinator of the investment decision-making process, the MPI is in a strong position to drive improvements in the Environmental and Social Impact Assessment (ESIA) process. For example, through the development of the MPI’s sectoral investment strategies, the Ministry has an opportunity to collaborate with the WREA and line agencies such as the MAF and the NLMA to develop sector specific guidelines for environmental study and impact assessment. These guidelines could contain specific environmental standards or categories for the plantation sector, for example, the minimum distance of a plantation from a watershed area; the maximum slope of land; or guidelines on chemical use for different types of plantations.
- *Initiate cooperation among concerned ministries and agencies to set up an environmental monitoring and evaluating system at central and local levels.* The local inspection team should be allowed to monitor and control plantation projects, including large-scale projects approved at the central level, and report regularly to the inspection team at the central level. The central inspection team should concentrate on developing concrete measures for promoting companies with exemplary environmental protection and sustainable development practices and punishing the companies violating regulations and laws.
- *Set up an environmental working group within the MPI and at the Provincial Department for Planning and Investment in accordance with the Environmental Protection Law.* Mainstream environmental and social issues into decisions on investment in the Lao PDR by forming an environmental working group that reviews and monitors environmental and social impacts of projects and programs.

- *Work closely with the Ministry of Finance to ensure adequate human and financial resources are available for improved decision-making around investments in the Lao PDR.* This should also include building capacity of MPI staff to review possible investments based on pre-determined criteria and the Investment Law. Discussions with MPI staff revealed signs of a shift in thinking from a ‘compartmentalised’ approach to environmental decision-making to a more actively engaged, inclusive and coordinated approach. While capacity and knowledge of environmental issues is currently limited, there is a growing acknowledgement of the MPI’s role to ensure environmentally sound investment and an interest within the Ministry’s Department for Investment Promotion and Management to better understand its role and engage more effectively throughout this process.
- *Collaborate with other agencies to support research on sustainable development of the plantation sector.* In collaboration with NERI and NAFRI undertake research work providing sustainable development perspectives in the plantation sector and develop a specific strategy for the plantation sector.
- *Set up an environmental information or data center at the MAF or the NLMA to provide information and data required for consideration and approval of plantation projects.* Information should include background of current investments, land availability, land allocation data, background on current companies investing in the Lao PDR, among others.
- *Cooperate with the WREA to improve the regulations on environmental impact assessments.*