

Department of Forestry
Lao PDR



Centre
de coopération
internationale
en recherche
agronomique
pour le
développement

INCEPTION REPORT

CIRAD-Forêt - MIDAS - Burapha

Lao-ADB : Industrial Tree Plantation Project - Loan No. 1295 (SF)

August 1996

LIST OF ABBREVIATIONS & ACRONYMS

ADB	Asian Development Bank
APB	Agricultural Promotion Bank
AV	Audio visual
BME	Benefit Monitoring and Evaluation
BOL	Bank of Lao
DOF	Department of Forestry
GIS	Geographic Information System
GOL	Government of Lao
MCTPC	Ministry of Communication, Transport, Post and Construction
MAF	Ministry of Agriculture and Forestry
PAM	Project Administration Memorandum
PBP	Pilot Block Plantation
PCU	Project Co-ordination Unit
PFP	Pilot Farm Plantation
PPCU	Provincial Project Co-ordination Unit
R&D	Research and Development
STP	Socio Technical Profile
TA	Technical Assistance (consultancy for institutional strengthening)

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- ຈຳແນກຫຼີໄຈ່ແຍກໜ້າວຽກດັ່ງກ່າວ ວ່າໃຜຈະປະຕິບັດໜ້າວຽກອັນໃດ.
- ຕອບສະໜອງຕາຕະລາງປະຕິບັດວຽກຂອງແຕ່ລະໜ້າວຽກນັ້ນ ທັງນີ້ ເພື່ອຄ້ຳປະກັນວ່າ ການປະຕິບັດນັ້ນ ໄປຕາມແຜນການແລະເວລາທີ່ຄາດໄວ້.

ການຈັດຕັ້ງປະຕິບັດໂຄງການແມ່ນໄດ້ລິເລີ່ມມາແຕ່ ທ້າຍປີ 1994 ໂດຍແມ່ນໜ່ວຍປະສານງານ ຂອງໂຄງການ ເປັນຜູ້ດຳເນີນກ່ອນໜ້າ ທີ່ທາງຊຽວຊານດ້ານການຈັດຕັ້ງປະຕິບັດໂຄງການມາ ປະຈຳໜ້າ ທີ່ປົກກະຕິ ນັບ ແຕ່ເດືອນ ກໍລະກົດ ປີ 1995 ເປັນຕົ້ນມາ. ແຜນການຊຸກຍູ້ການຈັດຕັ້ງປະຕິບັດໂຄງ ການ ຂອງຊຽວຊານ ໃຫ້ແກ່ກິນປ່າໄມ້ ແມ່ນກຳນົດຮອດປີ 2.000 ກ່ອນໂຄງການຈະສຳເລັດລົງໃນຕົ້ນປີ 2001. ການມາ ປະຕິບັດໜ້າທີ່ຂອງ ຊຽວຊານ ປະກອບມີທັງໝົດ 79 ເດືອນ/ຄົນ ໂດຍ 5 ຊຽວຊານ, ໃນນີ້ ມີ 2 ຄົນ ແມ່ນຊຽວ ຊານພາຍນອກ ແລະ 3 ຄົນ ແມ່ນຊຽວຊານພາຍໃນ.

ພາຍຫຼັງການມາປະຈຳການຂອງບັນດາຊຽວຊານແລ້ວ, ໃນໄລຍະຕົ້ນ ແມ່ນໄດ້ ທຳຄວາມເຂົ້າໃຈກັບ ບັນດາພະນັກງານພາຍ ໃນໂຄງການ ແລະ ສຶກສາຂອບເຂດເນື້ອທີ່ຂອງໂຄງການ, ເພື່ອທົບທວນຄືນ ກ່ຽວ ກັບເອກກະສານ ແລະ ຂໍ້ມູນອື່ນໆ, ເພື່ອຈັດຫາດ້ານການເງິນ ແລະ ການບໍລິຫານວຽກງານໃຫ້ແກ່ຊຽວຊານ, ເພື່ອສ້າງແຜນດຳເນີນວຽກງານຂອງໂຄງການ ແລະ ເພື່ອໃຫ້ສອດຄ່ອງ ແລະ ແທດເໝາະກັບ ຜົນຂອງການຈັດຕັ້ງປະຕິບັດບົດລາຍງານສະບັບນີ້.

ແຜນການປະຕິບັດວຽກຂອງໂຄງການ ແມ່ນເພື່ອສ້າງສວນສາທິດ(ທິດລອງ) ແລະ ສວນຕົວແບບຂອງຊາວກະສິກອນ ດັ່ງຄາດໝາຍຢູ່ລຸ່ມນີ້ :

ປີ	ສວນທິດລອງ	ສວນຕົວແບບ	ຕໍ່ປີ
1995	49	-	49
1996	144	90	234
1997	47	230	277
ໂຄງການ	240ຮຕ	320ຮຕ	560ຮຕ.

ວຽກງານປູກໄມ້ຂອງໂຄງການແມ່ນຕັ້ງຢູ່ 4 ແຂວງ ຄື : ແຂວງກຳແພງນະຄອນ, ແຂວງວຽງຈັນ, ແຂວງບໍລິ ຄຳໄຊ ແລະ ແຂວງສະຫວັນນະເຂດ.

ໜ້າວຽກທີ່ສຳຄັນໃນການຈັດຕັ້ງປະຕິບັດຢູ່ໃນ ປີ 1995 ແມ່ນ ເພື່ອ ສ້າງ ສວນປູກໄມ້ ທິດລອງ ຢູ່ໃນ ສວນຕົວເມືອງຂອງແຕ່ລະ 4 ແຂວງ ແລະ ກະກຽມສ້າງແຜນດຳເນີນວຽກງານໃນປີ 1996. ສະນັ້ນ ໜ້າວຽກຕົ້ນຕໍສຳລັບປີ 1995 ແມ່ນ : ສຶກສາແລະວິເຄາະສະພາບເຕັກນິກ ເສດຖະກິດສັງຄົມ ຢູ່ໃນ ຂອບເຂດ ເນື້ອທີ່ຈະປູກໄມ້, ສຳຫຼວດ ເຂດແດນຂອງເນື້ອທີ່ຈະປູກໄມ້, ແຕ້ມແຜນທີ່, ສ້າງຮູບແບບຂອງການ ສ້າງສວນປູກໄມ້, ສັງລວມຄືນ ເອກກະສານເຕັກນິກກ່ຽວກັບ ການສ້າງສວນກ້າເບ້ຽໄມ້ ແລະ ສ້າງສວນປູກໄມ້, ສ້າງແຜນ ແລະ ເຮັດສັນຍາ ແລະ ເປີດບັນຜິກອົບຮົມ ໃຫ້ແກ່ ພະນັກງານໃນໜ່ວຍປະສານງານຂອງໂຄງການຂັ້ນແຂວງໃຫ້ເຂັ້ມແຂງກ່ຽວກັບວຽກງານການຜະລິດເບ້ຽໄມ້ ແລະ ປູກໄມ້ ຢູ່ໃນ ປີ 1996.

ວິທີການຈັດຕັ້ງປະຕິບັດແມ່ນເພື່ອຕິດຕາມເບິ່ງການດຳເນີນໂຄງການ ກ່ຽວກັບ "ການຄຸ້ມຄອງສະພາບແວດລ້ອມ" ໃນລັກສະນະກວ້າງຂວາງ ເພື່ອໃຫ້ຜົນຮັບດັ່ງກ່າວມີການດຸ່ນດຽງ, ມີຜົນປະໂຫຍດສູງ ແລະ ແບບຍືນ

1. EXECUTIVE SUMMARY

The purpose of this Inception Report is to provide a framework for the implementation of the LAO-ADB Industrial Tree Plantation Project by the Project Inception Specialists assisting the Department of Forestry of Lao PDR

The objectives of the policy of the GOL relating to plantation forestry are summarised as follows ;

- Protect the natural forest by conservation therefore requiring plantation timber to partly replace natural timber.
- Stop shifting cultivation by establishing permanent occupations for rural people and improving their economy.
- Improve farming productivity by integration with forestry through agro-forestry.
- Provide productive uses for degraded non agricultural land of which there is a large area.
- To supply economic timber as additional raw material to the wood processing industry.

The GOL developed the following measures in order to implement these new policies ;

- To stabilise most of the estimated 250,000 families practising shifting agriculture through allocation of permanent locations. Integration of agriculture with forestry through agroforestry promoted to improve productivity.
- Protect the remaining natural forest areas, primarily for preservation of catchment values.
- Establish, conserve and regenerate barren land which includes, degraded forest land, denuded forest land, grassland, and unstocked forest land. 2 million ha of forest land to be converted to plantation development including agroforestry options.

Following and supporting the GOL objectives the broad objectives of the project are;

- Re-establishment of tree cover on unstocked and degraded forest lands and converting these to productive use,
- Production of wood for industrial use, construction materials and fuelwood from industrial tree plantations; and
- Establishment of a policy and institutional framework for development of sustainable industrial tree plantations.

The scope of this project is;

- Part A : Provision of a credit facility for smallholder farmers and private enterprises to finance the establishment of tree plantations on about 9,000 ha of unstocked and degraded forest land. This will be executed by the Bank of Lao and thus not covered by this report.

- Part B : Establishment of pilot block and pilot farmer plantations on 560 ha. This will be executed by the Department of Forestry.
- Part C : Improvement of about 60 km of plantation access roads. This will be executed by the Department of Forestry.
- Part D : Project management support including nursery improvement, public awareness programs, incremental staffing and logistical support. This will be executed by the Department of Forestry.

Referring to the Contract for Consultants Services between the Government of Lao PDR and CIRAD-Forêt in association with MIDAS Agronomics Co. Ltd. and Burapha Development Consultants Ltd. which is dated 17 April 1995. The Implementation Consultants assistance is to be funded under the terms of ADB Loan No. 1295 - Lao (SF) : Industrial Tree Plantation Project. This Inception Report is prepared under the Terms of Reference of this contract during the first two months of the commencement of this Consultancy, which was effectively on 4 July 1995 with the arrival of the Team Leader in Vientiane.

This Inception Report describes;

- The project background.
- A brief statement of the project status at the start of implementation phase.
- Mobilisation activities of the Implementation Consultant Specialists.
- The project Specialists' approach to the work programmes for implementation.
- A program of activity to provide for positive management and protection of the environment.

This report outlines the project implementation along three points;

- The sequence of activities that are required to carry out the project according to the Terms of Reference.
- Defines who will be required to do those activities.
- Provides a time schedule when those activities are to be done so as to ensure a co-ordinated and timely result.

Project implementation was started in late 1994 by PCU prior to the full mobilisation of the Implementation Consultants in July 1995. The implementation assistance to the Department of Forestry is scheduled through till the year 2000 just before project completion in early 2001. It comprises a total of 79 man months by five specialists, three local and two international.

Following the arrival of the specialists the initial period has been used for familiarisation with the project areas and staff, to review documents and other information, to make financial and administrative arrangements for the consultancy, to devise a project operation schedule and approach to implementation, resulting in this report.

The project plan is to establish the pilot block and pilot farmer plantation in the following sequence;

<u>Year</u>	<u>Pilot Block</u>	<u>Pilot Farmer</u>	<u>per Year</u>
1995	49	-	49
1996	144	90	234
1997	47	230	277
Project	240 ha	320 ha	560 ha

The project planting activities will be located in Vientiane Prefecture, Vientiane Province, Bolikhamsay Province and Savannakhet Province.

The implementation priority in 1995 is to finalise the Pilot Block Plantation sites in two districts in each of the four provinces and prepare for the establishment operations of 1996. Thus the main activities for 1995 will be; confirmation of planting sites by Socio-Technical Profile, boundary survey, mapping, plantation design, review of nursery and plantation prescriptions, schedules and contracts and finally a number of training courses to strengthen the Provincial Project Co-ordination Units to start the 1996 nursery and plantation operations.

The implementation approach chosen is to view the project operations as "management of the environment" in a broad sense to result in equitable, beneficial and sustainable result. It places importance on consultation with rural people and the various authorities, promotes training in the suitable techniques required at all project levels, to demonstrate various plantation options as examples and to encourage participation in plantation activities by provision of extension services and promotions and finally to assist with the technical requirements of those wishing to get credit for planting

Terms of reference of the Implementation Specialists appear as Appendix 2 of this report. These Terms of have been summarised into nine project functions, they are; Nurseries, Pilot Block Plantations, Pilot Farmer Plantations, Extension, Roding, Benefit Monitoring and Evaluation, Environmental Monitoring, Training and Reporting. For each function there is a note on approach, a mention of any problem that may need to be addressed, then followed by a work program and also an implementation schedule chart.

The goals of the Project Co-ordination Unit are as follows ;

- The sustainable development of fast growing tree plantation systems based on enterprises and farmers.
- Successful establishment and management of Pilot Block Plantation activities using appropriate best practices.
- Improve the institutional capacity of the Project Co-ordination Unit and Provincial Project Co-ordination Units and capability of the staff working in the Project Co-ordination Unit and Provincial Project Co-ordination Unit in order to support private plantation forestry in Lao PDR.

The Project Co-ordination Unit is responsible for the following tasks ;

- Preparation of selection criteria for plantation sites, with special reference to environmental considerations.

- Preparation of tender documents for the establishment and management of Pilot Block Plantations.
- Planning and supervision of the implementation of Pilot Block Plantations using best management practices and the results from Nam Suoung Forest Research Centre
- Design and implementation of extension programs to promote commercial tree plantations.
- Select sites and farmers groups for the Pilot Farmer Plantation.
- Secure the sale of the products from the Pilot Block Plantations and Pilot Farmer Plantations
- Recruit and local extension workers and surveyors and ensure the quality of the Benefit Monitoring and Evaluation activities.

2. BACKGROUND

2.1 Broad Project Objectives

The objectives of the policy of GOL relating to plantation forestry can be summarised as follows;

- Protect the natural forest by conservation therefore requiring plantation timber to partly replace natural timber.
- Stop shifting cultivation by establishing permanent occupations for rural people and improving their economy.
- Improve farming productivity by integration with forestry through agro-forestry.
- Provide alternative productive uses for degraded non agricultural land.
- To supply economic timber as additional raw material to the wood processing industry.

The GOL developed the following measures in order to implement these new policies ;

- To stabilise most of the estimated 250,000 families practising shifting agriculture through allocation of permanent locations. Integration of agriculture with forestry through agroforestry promoted to improve productivity.
- Protect the remaining natural forest areas, primarily for preservation of catchment values.
- Establish, conserve and regenerate barren land which includes, degraded forest land, denuded forest land, grassland, and unstocked forest land. 2 million ha of forest land to be converted to plantation development including agroforestry options.

The broad objectives of the project follow and support the GOL objectives, they are ;

- Re-establishment of tree cover on unstocked and degraded forest lands and converting these to productive use,
- Production of wood for industrial use, construction materials and fuelwood from industrial tree plantations; and
- Establishment of a policy and institutional framework for development of sustainable industrial tree plantations.

2.2 Project Scope

The project is located in the eight of the thirty four districts which comprise Vientiane Prefecture, and the provinces of Vientiane, Bolikhamsay and Savannakhet. It's scope is comprised of four parts ;

- Part A : Provision of a credit facility for smallholder farmers and private enterprises to finance the establishment of industrial tree plantations on about 9,000 ha of unstocked and degraded forest land;
- Part B : Establishment of pilot block and pilot farmer plantations on 560 ha;

- Part C : Improvement of about 60 km of plantation access roads; and
- Part D : Project management support including nursery improvement, public awareness programs, incremental staffing and logistical support.

The project must be implemented in the next five and one half years as implementation started in July 1995 and is scheduled to finish in early 2001. It is planned to allow two years for establishment of pilot plantations and the improvement of plantation access roads and five years for the establishment of plantations by the private sector, including farmers.

2.3 Development Vision

PBPs, PFBs and plantations established under the loan will use simple, economically viable methods which have proved effective elsewhere and are socially and environmentally friendly and gender equitable. The plantations must be properly established, using highest quality nursery stock. Simple but accurate records need to be kept. Within one year there will begin to be obvious confirmation which provenances are better for short rotations and what silvicultural operations need fine tuning to reduce costs or improve growth. A practical, operationally based R&D programme directed by plantation development requirements will produce results for use in the field.

Plantation forestry can be developed as an environment management vehicle to make a positive contribution to the economy and environment of the rural people. It will encourage them to plant trees as part of normal agricultural activities and to participate in the revitalisation of degraded unproductive areas which have very little use for food production. In the future such small scale activity by a large proportion of rural people will provide an economically important raw material resource for existing and future wood processing industry within Lao PDR.

Department of Forestry

The project also has a major aim of assisting a group of professionals in DOF to experience the commercial plantation sector through training and operations. They will have the responsibility of transferring this knowledge to others so the sector can grow by having a supply of capable personnel. Prior to this project commercial plantation technology has been little developed.

Socio Technical Profile, Benefit Monitoring & Evaluation

Effective STP, BME and the monitoring of changes from the Baseline Environmental Survey by the project will give DOF ample opportunity to ensure that the plantation sector develops in an environmentally sustainable way and will provide early warning of any required policy or operational changes.

2.4 Executing Responsibilities

DOF and APB will be the executing agencies.

Agricultural Promotion Bank

- APB will be responsible for Implementing Part A .
- DOF will be responsible for implementing Parts B, C and D of the project and also for project co-ordination and management through the PCU.

The goals of the Project Co-ordination Unit are as follows ;

- The sustainable development of fast growing tree plantation systems based on enterprises and farmers.

- Successful establishment and management of Pilot Block Plantation activities using appropriate best practices.
- Improve the institutional capacity of the Project Co-ordination Unit and Provincial Project Co-ordination Units and capability of the staff working in the Project Co-ordination Unit and Provincial Project Co-ordination Unit in order to support private plantation forestry in Lao PDR.

The Project Co-ordination Unit is responsible for the following tasks ;

- Preparation of selection criteria for plantation sites, with special reference to environmental considerations.
- Preparation of tender documents for the establishment and management of Pilot Block Plantations.
- Planning and supervision of the implementation of Pilot Block Plantations using best management practices and the results from Nam Suoung Forest Research Centre
- Design and implementation of extension programs to promote commercial tree plantations.
- Select sites and farmers groups for the Pilot Farmer Plantation.
- Secure the sale of the products from the Pilot Block Plantations and Pilot Farmer Plantations
- Recruit and local extension workers and surveyors and ensure the quality of the Benefit Monitoring and Evaluation activities.

3. MOBILISATION

3.1 Implementation Status

In the absence of the Implementation Specialists due to delays in fielding of the team the implementation activities for this project were started in late 1994 by PCU assisted by the TA Specialists. During the time prior to the arrival of the Implementation Specialists the following implementation activities had been achieved;

Technical assistance

- Establishment of PCU and PPCU including staffing arrangements and training program for operational staff.
- Extension responsibilities have been assigned to 4 members of each PPCU. They have received preparatory training. Extension activities have been started.
- Some PBP sites were selected and plantings established on 5 of these averaging 8-10 ha each with a combined area of 49 ha planted in accordance with the plantation plans.
- Seedlings were produced for the PBPs including tree production training.

GIS mapping specialist training sessions will be arranged in November 1995. This program is supported by a grant from the New Zealand Government through it's Board of Trade.

3.2 Implementation Specialists

The Implementation Team is fully mobilised and the following activities carried out since;

- Plantation Operations Specialist was mobilised on 8 May 1995 to assist with the planting, of PBPs, drafted silvicultural prescriptions, PBP work schedules and draft works contracts.
- Team Leader was able to spend 9 days orientation starting 7 June 1995 and was fully mobilised on 4 July 1995. He has; visited the project areas, PBP areas and plantings of other farmers and enterprises, completed administration and financial claim arrangements for the consultancy, made a report of project operations to PCU, made contacts with BOL and APB, studied project documents, liaison with the TA Specialists and devised a project operation schedule.
- Road Specialist mobilised on 1 July 1995. Contacts with MCTPC in Vientiane and at provincial and district levels, established roading design standards, site assessments, access road descriptions, data collection, technical specifications for survey /design contract and a works schedule.
- Nursery Operations Specialist mobilised on 24 July 1995 with the assessments of tree quality in PBPs and nurseries available to supply the project.
- Environmental Specialist will begin to establish the Baseline Survey in about mid December 1995.

Ministry of Communication, Transport, Trade and Construction

The TOR for each of the Implementation Specialists appears in Appendix 2.

3.3 PCU and PPCU

The PCU is in a new division of DOF called Planning, Finance, and Co-operation Division headed by Deputy Director Mr. Silavanh. This division has five units, the Lao-ADB Plantation Project unit is headed by Mr. Xeme Samontry who is DOF Project Director and Director of the PCU. Mr. Oudomsack Vilaylack is Deputy Project Director.

PCU and Implementation Team headquarters are located at the offices of DOF in Vientiane City.

The PCU is organised into five Sections, each under the management of a Section Head, these are;

- Monitoring and Evaluation Section
- Training and Extension Section
- Plantation Development Section
- Administration Section
- Marketing Section (this section is not functioning yet)

The project is to be implemented and administered on a provincial level by the PPCU. These units are based in the following provincial locations;

- Vientiane Prefecture Forestry Section office in Vientiane City, with some staff at the Naxathong district office.
- Vientiane Province Forestry Section in Phonehong, and some staff at the Phonehong and Toulakhom District offices.
- Bolikhamsay Province Agriculture and Forestry office in Paksane and some staff at Bolikhamsay Forestry Section office in Paksane and at Phabath District office.
- Savannakhet Province Forestry Section at Savannakhet and some staff at the Khanthabouly and Xaibouly District offices.

The PPCU is trained, assisted and supervised by the PCU.

Some PPCUs have experienced personnel transfers out to the traditional and more attractive positions which are sought, but to this time it has not been a serious problem.

3.4 Specialist Personnel and Work Programs

The project specialist Implementation Team fielded by the CIRAD - MIDAS - BURAPHA consulting association comprises of five people. Their combined consultancy is allocated a total of 79 man months. The Specialists are;

- Thomas Brummer (36 mths.) - Plantation Management Specialist / Team Leader
- Anthony Zola (7 mths.) - Environmental Specialist
- Khamsay Hongsouvanh (12 mths.)- Road Upgrade and Maintenance Specialist
- Keu Moua (14 mths.) - Plantation Operation Specialist
- Keo Nanthasack (10 mths.) - Nursery Operation Specialist

A variation to the PAM is planned. It is proposed that the Plantation and Nursery Operation Specialists be utilised for the 2 years of PBP and PFP establishment rather than have their time divided out over the next 6 years of the project. This is required because of the high

level of implementation activity at this time, during which they will assist PCU to train PPCU, new planters and nursery people in field operation work mainly. This is considered useful in view of the requirement to plant PBPs and PFBs in all 8 Districts in 1996 and 1997.

The following is the Specialist Team's proposed timing schedule for the project:

Specialist	Start Date	Finish Date	
T. Brummer <i>Plantation manager Team leader</i>	7 June 1995	31 September 1997	28 mos
	1 April 1998	30 July 1998	4
	1 May 1999	30 June 1999	2
	1 May 2000	30 June 2000	2
			<u>36 mos</u>
A. Zola <i>Environmental specialist</i>	15 November 1995	15 February 1996	3
	15 January 1997	15 February 1997	1
	15 January 1998	15 February 1998	1
	15 January 1999	15 February 1999	1
	15 January 2000	15 February 2000	1
			<u>7</u>
K. Hongsouvanh <i>Roops</i>	1 July 1995	18 August 1995	1.5
	1 September 1995	31 May 1996	9
	19 October 1996	30 November 1996	1.5
			<u>12</u>
K. Moua <i>Plantation</i>	8 May 1995	12 August 1995	3
	1 November 1995	31 January 1996	3
	1 June 1996	31 August 1996	3
	1 January 1997	29 February 1997	2
	1 June 1997	31 August 1997	3
			<u>14</u>
K. Nanthasack <i>Nursery</i>	24 July 1995	31 July 1995	8
	1 December 1995	31 May 1996	6
	7 February 1997	31 May 1997	4-8
			<u>18 mos</u>

Detailed work sheets for the implementation specialists are contained in Appendix 3.

4. APPROACH, PROBLEMS & WORK PROGRAMS

Schedules for the following work programs are contained in Appendix 1.

4.1 Priorities

Starting the Implementation Consultancy at the time the PCU is finishing the first year's planting means that work priorities of the Implementation Specialists will firstly focus on maintenance of existing plantings but the main work load will be next year's planting site selection with consequent; planting plans, work schedules, operation prescriptions, contracts, training and seedling production plans. All to be done in a timely fashion so that land preparation and subsequent operations will be on time for 1996 planting.

The Implementation Specialists will therefore concentrate on priority activities and follow through on these first then filling in other activities as need dictates.

After visiting the project operations and discussions with project personnel it is seen that the main priorities for this project for the next 12 months are;

- Maintain existing PBPs and protect them from cattle and fire.
- Confirm PBP and PFP sites with local people by STP process for rational land use.
- Then get approval from district administration and provincial government as required.
- Implement access roading survey and design in PBPs in the first year and do construction over two years.
- Survey, demarcate and map planting areas for the 1996 planting season.
- Analyse PBP and PFP sites and then put to immediate use the appropriate species and silviculture practices that have proven effective locally and in other regions similar to the Lao site types to formulate plantation concept and design.
- Provide appropriate silviculture schedules for the requirements of the PBP and PFP planting plans.
- Strengthen and develop the extension ability of PPCU to recruit and then service farmers and rural community.
- Review and redraft nursery and plantation prescriptions and contracts as required.
- On the job training on economic principles for commercial plantations. Training courses for plantation establishment methods and nursery systems.
- Production of high quality trees from selected nurseries.
- Training in appropriate management methods used in the commercial plantation sector. Particularly in the area of contract formulation, management, payments and control.
- Plan and execute the first annual Environmental Baseline Survey.

The above will culminate in the planting of agreed PBPs and PFPs in 1996.

Other priorities for established PBPs are ;

- Establish Permanent Sample Plots for monitoring stand growth development.

- Develop management systems for PBPs including management plans.

4.2 Nurseries

The approach will be for PCU Plantation Development Unit to analyse and evaluate nursery operations including tree transport for the 1995 plantings with assistance of the specialists. Followed by a review of production methods, transport details, contracts, growing schedules and training requirements. These will then be detailed and approved. A training program incorporating all the above details will be devised by Plantation Development Unit and specialist with assistance of the Training and Extension Unit and then will be delivered to each PPCU and their project nurseries in turn in January.

The nurseries will be contractors to provide quality seedlings on time, at agreed cost and transported to planting site as specified. The PPCU will be responsible for tree production supervision using the schedules and methods provided. The PCU Plantation Development Section and specialist will be responsible to carry out frequent visits of all nurseries during tree production and ensure targets and quality standards are met and to help solve the problems that will arise. The project will provide high quality seed from Australia to the nurseries, other materials will be the contractors' responsibility.

Seedling quality is a problem in the early years of all plantation operations. Good seedlings are critical for successful plantations. Good training at the start of each growing season combined with very frequent prescribed nursery supervision by PPCU and continuing overview including corrective training and problem solving by Plantation Development Unit and specialist combined with demonstration of good plantations resulting from good seedlings will provide the best method of achieving quality seedlings.

The nursery target will be to produce a healthy robust seedling of 20-25 cm in height which is; uniform, free of malformation in stem and root system and has experienced no check in it's growth. Specifically that means the following practices must be implemented: raise or drain tree beds to prevent wet potting media that slows growth; introduce extensive culling at transplanting and before delivery; correct transplanting technique to eliminate the kinked root systems; on time delivery to avoid the oversize stems, curled tap roots and moribund trees; careful implementation of quality control standards in each nursery operation. Experience shows that real acceptance of the importance of seedling quality takes a few years it can not be forced.

Transportation damage over difficult roads and handling damage through hand carrying over tracks impassable to vehicles has been an important factor in the 1995 plantings. This situation will be improved by improved access. Less remote or isolated planting sites are also being sought where possible.

After 3 years clonal propagation techniques from Plus Trees will be able to improve quality of planting stock. Preparation for it's introduction will be done by Plantation Development Section with assistance of Plantation Management Specialist.

Nursery Annual Activity Schedule

Time	Activity
Oct	-Order seed, -Select contract nurseries and discuss.
Dec	-Analyse production methods and contracts with specialist. -Sign contracts. -Contractors order materials.

		-Devise training with Training Section and specialist.
	Jan-Feb	-Train PPCU & nursery staff at province. -Contractors prepare nurseries, receive supplies.
	March	-Soil preparation & bag filling.
<i>in percent</i>	April-May	-Sow seed, transplant and tend seedlings.
	June	-Transport to plantations.
	July	-Transport replanting seedlings to plantations.
	Aug	- Nurseries close.

4.3 Pilot Block Plantations

The rationale for the use of the PBPs is that they are a long term trial to demonstrate the effect of plantations on the environment, the rural people and their economy. They are also a vehicle to gather local experience in the many aspects of plantation establishment, maintenance, protection, harvesting, transport and marketing and to experiment in fine tuning these to better fit local needs and conditions.

Planting will be in 2 districts in each of the 4 selected provincial areas; Vientiane Prefecture, and the provinces of Vientiane, Bolikhamsay and Savannakhet. Each PBP will average 30 ha with a total planted area of 240 ha. The plantations will be established over 3 years 1995 to 1997. In 1995 there were 49 ha planted, In 1996 there will be about 144 ha planted leaving the balance of 47 ha to be completed in 1997.

Initial land search is being done to identify potential areas by the PPCU. The site will then be assessed with an operational and economic appraisal followed by systematic STP by a combined team of PCU, PPCU, villagers and Plantation Management Specialist. If the results are positive then agreement of the district authorities and provincial government is sought by PPCU.

All plantation operations will be carried out on a contract basis. But contracts will preferably be given to local village groups rather than to a contracting enterprise. Though this policy will make PBP establishment more difficult to supervise it has a number of advantages; to give villagers a stake in these plantations, to let them learn the methods of plantation operations under the supervision of PPCU, to establish tree plantations at the farmer / villager level rather than the large private enterprises as has happened in some other counties and also to enrich the village economies.

Plantation establishment will take place in all districts in 1996. To ensure adequate quality in all operations and in all areas the responsibility for daily operation supervision will be delegated to PPCU. Preparation for planting will begin with the formulation of a plantation plan for each PBP and an operations schedule by PCU assisted by the Plantation Management Specialist.

Then contracts for all operations that planting year will be assessed and amended, if required, to enable the plan to be carried out. This will be the responsibility of PCU assisted by Plantations Operations Specialist with invited input by PPCU. Prior to contract work starting there will be training of PCU by the Training and Extension Section assisted by Administration Section and the Plantation Management and Operations Specialists. This will be in the work schedules and standards of the operations prescribed in the contracts, also

contractor supervision, contract administration and environmental protection. This training will then be given to each PPCU in turn by Training and Extension Section with Plantation Development Section and assisted by the Operations and Plantation Management Specialists.

Trials in PBP shall be conducted to provide answers to operational requirements. Therefore the research topic should be instigated by requirements of PCU and PPCU. It is not intended that PBPs become research areas but that they will provide demonstrations of the result that various treatment options will give the grower. Practical trials will be planned by PCU and PPCU with the assistance of Plantation Management Specialist. The Nam Souang Silviculture Research Centre will be consulted at the trial formulation stage to provide comment and input as required by their specialist staff. Trials will be fully described and prescribed in the Trial Work Plan by the Plantation Development Section. Trials will be implemented, measured and analysed according to the plan by PPCU, PCU, Nam Souang and Plantation Management Specialist. The PCU Training and Extension Section will be responsible for preparing the trial results in a form suitable for dissemination through the Extension Units of PPCU.

There are enough research results in Laos and experience in other areas with similar climatic and soil conditions to confidently begin plantation and nursery operations. But there are some cases where an optimal solution requires trial work in the PBPs and PFPs. The main ones are; fertiliser types and rates, land preparation methods, soil conservation methods and intercropping.

There are also some basic topics that require systematic development. Among these are; determining an economic and marketable species alternative to *Eucalyptus camaldulensis*, fine tuning *Eucalyptus* provenance choices, tree improvement to increase yields, developing methods of cuttings production, rapid provision of quality Lao based seed sources, agro-forestry systems and livestock-forestry systems. Some of these will require some further input extra to the resource persons currently available to the project.

Environmental quality will be stressed in the establishment, maintenance and management of PBPs. These will follow guidelines in Working Papers # 5 and 9. Assistance and training will be provided to the PCU and PPCU to ensure that mitigation measures are strictly enforced for all operations. An environmental consciousness will be developed.

Eucalyptus is capable of high yields and is a necessary and logical choice for plantations but its performance after planting is dependant on three factors: soil cultivation, being weed free until 4 m tall and fertilising. Of these cultivation is the most important and needs to be done before and also after planting. Without cultivation growth is disappointing. Hole digging though of some benefit does not constitute cultivation. This will be incorporated in future PCU / PPCU training and in PBP demonstrations.

Therefore an alternative growing regime must be developed for poor farmers to allow them to participate in tree growing with a financial input level that is realistic for them. There are others who's land type will not allow cultivation methods mentioned above, they also require development of an alternative to utilise these poor land types.

Fencing with barbed wire has been effectively used but is very expensive costing up to 30% of plantation establishment cost. Alternatives will be explored including using natural materials won from the land clearing.

PBP plantation records have been made and will be kept up to date with copies in English and Lao languages at PCU, and in Lao language at PPCU. This information is then accessible to all who may wish to know planting or tending details.

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Frequent field assessment of operations and advice on remedial action, if required, will be an important task for the specialists. In order to make plantation management and field supervision more effective the 4 provinces have been split into North and South Regions with one of the Plantation Development Section officers responsible for each region.

Decree 169/PM requires Management Plans for all forest types including plantations. Implementation and development of an appropriate standard of Management Plan for all PBPs will take a lead in setting an example for the private sector to follow. This is an important task for Plantation Development Section and Monitoring and Evaluation Section. Publicity of this activity is required by the Training and Extension Section.

Requirements of plantation maintenance, methods of harvesting and coppicing after harvest will also be demonstrated and refined.

PBP Annual Activity Schedule

Time	Activity
Sept-Oct	<ul style="list-style-type: none"> -Final weeding of previous plantings. -Finalise PBP areas by STP, boundary survey, mapping. -Prepare the planting plan for each PBP. -Input from PCU /PPCU for trial topics and formulate needs.
Nov	<ul style="list-style-type: none"> -Maintain fences, fire protection operations in previous plantings. -Review plantation prescriptions, contracts, procedures. -Plan supervision & reporting procedures, schedules. -Plan plantation training with Training Section and specialists. -Discuss trial plans.
Dec	<ul style="list-style-type: none"> -Training course for PPCU by PCU, Training Section with specialists in 4 provinces. -Contractors selection & signing. -Update tending operations in the Planting Records.
Dec-April	<ul style="list-style-type: none"> -Land preparation. -Detail trial plans and methods in Work Plan, train PPCU and implement according to operation timing. -Measure and assess trials as required.
April-May	<ul style="list-style-type: none"> -Cultivation. -Fence construction. -Distribute trial results through PPCU extension units.
June	<ul style="list-style-type: none"> -Planting according to soil moisture.
July- Sept	<ul style="list-style-type: none"> -Weeding, fertilising etc. -Make planting and land preparation data in the Planting Records.

4.4 Pilot Farmer Plantations

No PFPs have been established to date. The project will be required to establish 40 PFPs averaging about 1 ha each in each district in the region of the PBPs. In total 320 ha of PFPs

will be established during 1996 and 1997. The 1996 plan calls for 90 ha with the balance of 230 ha in 1997.

The PPCU Extension Groups will visit farmers in the areas surrounding the PBPs promoting plantation forestry in general in a village meeting format. A farmer survey will be undertaken to classify farmers as willing, unsure and not willing to join the project and plant PFPs. During future visits the willing and unsure farmers will be concentrated on by discussing the project more fully with them and hopefully recruiting them. PPCU will chose participating farmers in consultation with village committees.

The project will supply the farmers seedlings and technical assistance, free of charge, on all aspects of tree growing, such as site selection, selection of species, site preparation, planting and maintenance techniques, harvesting methods, marketing, selective agro-forestry, as well as obtaining credit. But all other inputs will be the farmers responsibility. An agreement letter will be signed clearly specifying each party's responsibilities after the successful conclusion of a mini, purpose designed, farmer's STP.

Assessment of already established farmers' plantings by the specialists clearly demonstrates the concerns stated previously about *Eucalyptus* needing cultivation to a minimum depth of 25-30 cm. There is a low probability that farmers or others who can not adequately plough will be able to repay loans taken to grow this crop. However growing of another biologically suitable species for such circumstances like *Acacia* entails the risks of reduced marketability and lower price. It is recommended that this project must stress information on the growth requirements of *Eucalyptus* and carefully advise people of the likely yield outcome in their particular circumstances. We must take care not to over-recommend this species. There will be a search for alternatives to cultivation to solve this problem. It is critical to find a way to support the farmers in this.

A separate tree growing regime for smallholders who can only afford a lower level of financial inputs will be investigated and developed. Using alternative species with a very low requirement for financial inputs will result in lower wood yields than a well established *Eucalyptus* plantation, but there is also a very low risk of uneconomic yields and there is the additional advantages of other products in addition to wood. This regime will need to be integrated with other farming activities.

In some districts it may be very difficult to find 40 willing farmer participants for various reasons. Though participation in PFP has been focused on farmers they are not the only rural groups to have access to land. PFP participation will also be encouraged in the following target groups; pagodas, schools, hospitals, army, police, youth groups and other institutions. These will be encouraged to plant part of their compounds which are unused and available, funds generated from plantations will be a valuable addition to their normal income and can support worthwhile community development. Having such groups taking the lead in PFP development will encourage local farmers to follow.

Local species will be investigated and plans made for supply of seedlings to rural community for planting around their farms, roads, houses and institutions .

PFP Annual Activity Schedule

Time	Activity
Sept	Village meetings, farmer survey.
Oct-Nov	-Find participants, do STP, make agreement letter and sign. -PCU Plantation Section with Management and Plantation Operation specialists to review methods and instructions. -Making plantation records for previous year's plantings.

Dec	- PPCU Extension Units to be refreshed on extension, plantation techniques and STP in training course held in each province by the PCU Plantation, Monitoring and Training Sections assisted by Management and Plantation Operation specialists. -Technical advice.
Jan-April	-Land preparation advice.
April-May	-Fence construction advice.
June	-Planting advice, time according weather condition.
July-Oct	-Weeding, fertilising advice

4.5 Extension

Extension Groups have been formed by the assignment of four members from each PPCU to work as extension workers in selected districts to assist farmers and private enterprises to establish, manage and market plantations. They are assisted by the representatives of the Lao Revolutionary Youth Organisation and Lao Woman's Union who are co-opted members of PPCU. Adequate refresher training will be done in each province at the end of each year prior to new plantations operations starting.

To become effective the PPCU Extension Units must get close to the farmers and the rural community. This will be achieved by frequent visits combined with good technical advice.

The work for this section for this year will be; recruiting farmers and institutions to join the project and plant PFPs; STP for new PFPs and others wishing to plant plantation trees; continue with plantation promotion activities; seminars and workshops will promote plantations in general during 1996; and to continue training to strengthen the PPCU Extension Units particularly in STP, plantation economics, environmental protection, agro-pastoral-forestry systems, species' site needs, alternative wood products e.g. charcoal, fencing materials and poles.

Assistance in APB loan preparation will begin in mid 1996.

Species and silviculture revisions, discussed previously will be incorporated into the extension message.

Extension Annual Activity Schedule

Time	Activity
Sept	-Village meetings to promote plantation forestry with AV equipment.
Oct-Nov	-Find participants, do STP. -PCU Plantation Section with Management and Plantation Operation specialists to review methods and instructions. -Production of extension and publicity materials. -Distribution of extension and publicity materials.
Dec	- PPCU Extension Units to be refreshed on extension, plantation techniques and STP in training course held in

	each province by PCU Plantation, Monitoring and Training Sections assisted by Management and Plantation Operation Specialists. -Technical advice to farmers and enterprises.
Jan-April	-Land preparation advice.
April-May	-Fence construction advice.
June	-Planting advice.
July-Sept	-Preparation of posters, brochures, calendar, radio and newspaper items.
July-Oct	-Weeding, fertilising advice as required.
July-Dec	-Assistance in APB loan preparation.
All year	-Data gathering and picture making.
April-May	-Seminar in Vientiane and Savannakhet, APB to join.

4.6 Roothing

Preparation work is well under way. The following operations have been completed; data collection, document review, site inspections of finalised PBPs, work descriptions and preparation of works specifications. Co-ordination and responsibilities between DOF, the MCTPC and it's provincial offices has been clarified by discussions and official documents.

In the PCU the roading operations will be the responsibility of the Plantation Development Section assisted by the Road Specialist.

Some minor variations to "Special Roads" standards have been proposed to MCTPC on the basis that actual traffic volumes are clearly predicted to be very much lower during the whole life of the roads than the "Special Roads" standards are designed for. Thus saving 15 - 20% of expenditure is fully justified. These reductions in standards will result in minor width reductions and vehicle speed reduction, there is no reduction in quality, strength or road life. The MCTPC has agreed to this standards reduction only for the branch roads that will not be through roads in the future.

Direct road access to the PBPs will require about 20-30 km of new construction and rehabilitation. This is because the PBPs are close to well formed roads and in some cases require no additional roading.

The Roothing Specialist advises that the PAM requirement for an agreement between MCTPC and MAF is fulfilled in essence by MCTPC Letter # 2226 to MAF and Cabinet Decree # 43. These clearly state that: the access roads are "Special Roads" and as such the design, supervision, building and maintenance are solely the responsibility of the builder; the provincial MCTPC will comment on design and will assist in selection of contractors; the provincial MCTPCs are instructed to co-operate with Part C of this project.

For the proposed new PBPs the inspections, works descriptions etc. for these are ready to proceed as soon as the sites have been finalised.

Roading Schedule

Time	Activity
July-Sept	-Data collection, document review. -Work identification and description.
Aug-Oct	-Preparation of technical specs.
Oct-Nov	-Find survey & design contractors.
Nov-Dec	-Supervise survey & design operations.
Jan	-DCTPC approval of design. -Prepare construction contracts and budgets.
Jan-March	-Bids / award of construction contracts.
March	-Training PCU.
March-May	-Supervise construction.
May	-Supervise maintenance.
Oct-Nov	-Supervise construction. -Training PCU. - Supervise maintenance.
Progress reports will be made at the end of; Oct, Dec1995 and March, May, and November 1996.	

4.7 Benefit Monitoring and Evaluation

BME methodology including STP has been implemented by the Monitoring and Evaluation Section of PCU with support of the TA Specialist. Training and motivation are at good levels resulting in this notably strong section of PCU.

The Team Leader has been briefed on BME activities and has assisted in establishing plantation evaluation and sampling techniques with the section for BME.

STP process will be carried out for each proposed plantation and will form the baseline for future comparisons with BME to determine if the plantation project in particular and the plantation activities in general are resulting in benefit or otherwise to the participants and those who do not participate. It is clearly intended that the plantation process be controlled to result in an economically viable and suitable activity that is beneficial to the rural population in general, be gender equitable and guard against benefiting a select few while imposing difficulties or hardship to others.

The STP process also aims to stop the possibility that plantation activities are used by some people as a means of claiming control of large areas of land and also to ensure that the production of food has a higher priority and is not disturbed. The STP is intended to provide relevant information for CPU recommendation to APB for credit. And finally to be used as an instrument to assist in development, education, training and management for all parties.

The PCU Plantation Development Section assisted by Plantation Management Specialist will make an examination of the commercial and economic aspects of potential PBPs. Then

these require a STP survey conducted by PCU Monitoring and Evaluation Section, PPCU with the participation of the concerned villagers. If the results are favourable after assessment of the questionnaire and maps the permission of district authorities and provincial government will be sought by PPCU. PFPs also require a STP, but because they are much smaller and simpler to survey a shorter, more appropriate, questionnaire and survey will be conducted. A similar STP process will be carried out for all other plantation establishment in the 4 provinces.

PBP costs for establishment, maintenance and harvest by each operation type must be accumulated and summarised for separate PBPs. And also for a sample of PFPs where a record of work day input by families must be also accumulated. This data is required for cost monitoring and for later economic analysis and will need to be correlated with the growth data from Permanent Sample Plots for evaluations of different planting options. This activity will need to be controlled by the PCU Monitoring and Evaluation Section and the Administration Section will responsible for accumulating and providing cost information.

The Monitoring and Evaluation Section of PCU will also compile, maintain and update the Plantation Files which contain the STP, BME and permission documents as a record for each plantation and they will produce copies for the owners.

The section will be also be involved with field work and recording for Baseline Environmental Survey with the Environmental Specialist.

BME Annual Activity Schedule

Time	Activity
Oct-Dec	-STP for project PBPs and PFPs.
Nov	-Training in STP and BME.
Jan-Feb	-BME in 1995 plantings with TA and Plantation Management Specialists.
Jan-June	-Environmental baseline establishment with Environmental Specialist.
Jan-May	-STP survey for others wishing to establish plantations.
April-June	-BME in current land preparation operations for project and for others.
July -August	-BME in current year's plantings for project and for others. -STP for credit applicants of the APB.

4.8 Environmental Monitoring

An important and integral part of the project is the scientific monitoring of the impact of plantations on the environment. This will be done by identification of environmental indicators in mid December - January and the establishment of a baseline environmental survey in each of the districts of the project in January - June 1995-96 by the Environmental Specialist together with PCU and PPCU. Indicators and variables used to monitor environmental changes will be developed in the early phase of project implementation. Following on after the baseline survey will be the monitoring surveys, the results will be compared with the baseline standard to asses if there is any environmental deterioration or

improvement. Reports will be prepared quarterly starting December 1996, there will also be an annual report prepared by the project for GOL available from January 1997.

An additional function of the program is to ensure that mitigation measures proposed in the PAM are being operated. The PCU Monitoring and Evaluation Section and PPCU will conduct the surveys designed by the Environmental Specialist. Training will be provided to them. Data will be analysed by the project. Regular monitoring of indicators will allow for quick reaction if unacceptable impacts occur.

Environmental monitoring will take place in the context of the STP prepared by DOF; the "Environmental Guidelines for Plantation Development" prepared by the TA; the "Environmental Guidelines for Selected Agricultural and Natural Resources Development Projects" of the Office of the Environment, ADB (1991); and the "Project Administration Memorandum" for the this project.

Project operation guidelines will be prepared based on the monitoring results and will be appropriate for protection of the environment. These can only be developed after 2 years of project operations. The guidelines will be produced in late 1997.

Awareness of the environmental impact of this project will be passed on by the PCU and PPCU to participating contractors, farmers and enterprises with assistance from the Environmental Specialist. This will be done by making environmental conservation a major concern of day-to-day operations management, planning, research, training and the extension message as well as in the monitoring process.

Environmental Monitoring Activity Schedule

Time	Activity
Dec-Jan	-Identification of environmental indicators.
Jan-June	-Baseline environmental survey and report.
June-Oct	-Design of environment monitoring system.
Jan-Dec	-Training of PCU and PPCU by Environmental Specialist.
Dec 1997	-Training of PCU and PPCU by Environmental Specialist. -Guidelines for environmental protection.
1997-2001	-Annual supervision visits of 1 month to monitor results and indicate any matters for action. -Annual Environment Monitoring Reports starting at the end of Dec 1996 and then at the end of each year.
Reports	-Summary Monitoring Reports : starting at the end Dec 1996 and then at the end of each 3 month quarter.

4.9 Training

Training methods and systems have been well established by the TA Training Specialist in the Training and Extension Section of PCU. The Section is able to provide assistance and support for project training requirements. Training will be co-ordinated, assisted and facilitated by the Training and Extension Section, they will also supply the hardware such as overhead projector, audio-visual input etc. They will advise on presentation and assist with

displays and publications. The technical input will be the responsibility of the concerned PCU Section with the assistance of the specialist assisting them.

On-the-job training for PCU / PPCU and particularly the strengthening the PPCU will be an important Implementation activity. The most pressing requirements for training are in the priority areas of; nurseries, plantation techniques, contracts management, planting records, management plans, economics of plantations, environmental protection, road maintenance, operation quality standards and plantation design - establishment - silviculture. These are required for both PCU and PPCU. Booklets will be produced on required topics, those planned so far are; road maintenance, environmental protection, credit procedures and plantation techniques and species information.

PCU have advised that structured on the job training in the trainees own work location has given better results than the class room lecture style, future training will follow this. There have been some staff changes and there is also a general need for refresher training for particular operations by PPCU. Some new and specific skill requirements will be supplied by specialists in tailor made courses.

Toward the end of each year during there will be a number of three day training secessions. These will be on; STP-BME survey and analysis; plantation methods and extension; nursery techniques. Each session will be initially with PCU for about 9 persons, and then separately in each province with PPCU for a total of about 30 persons. Included will be field visits to PBPs to discuss the resulting plantations, also practical exercises. These courses will form the annual in-house follow up training program. Courses on plantation credit are planned to start mid 1996 in time for planting in 1997. It is too late now for the APB credit program to be implemented for the 1996 planting year.

Three specialist training sessions will be arranged by various consulting specialists in the fields of; tape and compass survey, environmental protection and monitoring road maintenance. These will be designed for staff with these responsibilities. Timing is scheduled between November 1995 to mid 1996.

Training Annual Activity Schedule

Time	Activity
Nov	-STP-BME, annual training. -GIS mapping, special course, 1995.
Dec	-Plantation technique, contract management, supervision annual training.
Jan	-Nursery techniques and supervision, annual training.
Jan-Dec	-Environmental protection special training and on-the job training.
March	-Road maintenance and scheduling special training, 1995-6.
May	-Credit for plantations, annual training.

4.10 Reporting

The Implementation Specialists have undertaken to prepare a number of reports, their timing is planned as being ;

Reports Schedule

Report	Time
• Inception report	August 1995
• Annual Progress Reports	January 1996 & 1997
• Annual Work Programme	Sept. 1995-97
• Reports	
Baseline Environmental Survey .	June 1996
Environmental Protection Guidelines	December 1997
Environmental Annual Report .	each January 1997 - 2000
Roading Construction Report .	April, December 1996

TERMS OF REFERENCE FOR IMPLEMENTATION SPECIALISTS

A. INTERNATIONAL

1. Plantation Management Specialist / Team Leader (36 months)

- i) Assist the PCU to establish and manage the PBPs and PFPs in accordance with the plantation design.
- ii) Assist in the establishment of the PCU and PPCUs, including work plans, annual programmes and staffing arrangements for the units as well as training program for the operational staff. Assist the PCU and PPCU to implement the work plan.
- iii) Assist the PCU and PPCU in the selection of the PBP sites, based on proper land use survey and identification of farmer participants. Assist the PCU to organise land surveys for other plantation sites.
- iv) Assist the PCU to recruit and train the COs. Participate in extension activities, in particular in the technical aspects of tree plantations.
- v) Assist the PCU to undertake BME activities.
- vi) Assist the PCU to incorporate practical research and development trials into the design of PBPs. Advise in the implementation and follow up of the trials.
- vii) Assess regularly the PBPs and PFPs to ensure proper management and maintenance. Recommend remedial action if required and prepare necessary progress reports.

The plantation management specialist will have relevant academic qualification and at least 15 years work experience with a minimum of 5 years in developing countries. Previous experience as team leader will also be necessary.

2. Environmental Specialist (7 months)

- i) Review the environmental aspects of the project area and carry out a baseline environmental survey. Prepare a comprehensive baseline survey report.
- ii) Prepare guidelines for environmental protection in industrial tree plantations.
- iii) Assist the PCU to include environmental aspects in the training program for staff and COs, and in the extension service to farmers.
- iv) Strengthen awareness among the project staff and COs of the importance of environmental protection in effective implementation of the project.
- v) Prepare a detailed program and reporting format for the monitoring and evaluation of environmental impacts of tree plantations.
- vi) Assist the PCU and PPCUs to co-ordinate activities with NGOs, village committees and other organisations to achieve the necessary level of community involvement in environmental protection.

The environmental specialist will have relevant academic qualification and at least 10 years experience (including environmental impact analysis of tree plantations and environmental protection measures in tropical conditions). Previous experience in Southeast Asia will also be necessary.

B. DOMESTIC

1. Plantations Operations Specialist (14 months)

- i) Assist national counterparts in the PCU and PPCUs to manage the field operations in the establishment of PBPs and PFPs.

- ii) Assist the PCU and PPCUs to provide technical support in plantation establishment, management and maintenance to PFP participants. Also assist in the provision of an extension service.
- iii) Assist in the implementation of the fire protection and control measures for each PBP and assist in preparation of appropriate field manuals.
- iv) Assist in the preparation of the training program for PCU and PPCU staff, and in the provision of training of all aspects of plantation establishment and management. Assist in the preparation of maintenance schedules and their monitoring and implementation.
- v) Assist in the designing simple extension materials for farmers.
- vi) Assist in the training of COs in all aspects of the project.

The plantation operations specialist will have relevant academic / technical level qualifications and at least 10 years relevant work experience.

2. Nursery Operations Specialist (10 months)

- i) Assist and advise PCU and PPCUs in nursery upgrading and seedling production.

The nursery operations specialist will have relevant academic / technical level qualifications and at least 10 years relevant work experience.

3. Roading Construction and Maintenance Engineer (12 months)

- i) Assist the PCU to implement the plantation access roads component. Advise on the applicability of national design standards to the roads and ensure required design standards are met.
- ii) Draw up a phased schedule of road upgrading and maintenance activities.
- iii) Assist in the preparation of tender documents for road works, assignment of tenders and selection of contractors.
- iv) Assist in the supervision of road works, budgeting, and financial management of this component.
- v) Train relevant officers of the PCU in the planning, design and preparation of road maintenance schedules. Assist in the monitoring of road maintenance activities.

The road construction and maintenance engineer will have relevant academic / technical level qualifications and at least 10 years relevant work experience.

SPECIALISTS WORK SHEETS

INTERNATIONAL SPECIALISTS

Team Leader / Plantation Management Specialist (Tom Brummer) : Phase 1

Duration : Phase 1, 28 months

Phase 2, 8 months

1995	June	Orientation to project and review of project documents. (1 week)
	July	Establishment of administrative arrangements for consultancy. Field visits to all PBP sites, assess PBPs, nurseries, road requirements, report. Visit farmer plantings and others. Inception planning. Meeting with APB, BOL. Assess planted PBPs. Discuss with TA specialists.
	Aug	Discussion meetings with implementation specialists to plan implementation. Preparation of inception report. Check on planted PBPs. Survey of new PBP sites.
	Sept	Review species and provinces for project. Map new PBPs. PBP planting records for 1995 plantings. Assist in preparation of publicity material. Check on final fertilising and weeding in PBPs.
	Oct	Survey of new PBP sites. Review planting plans for new PBPs and trials to be incorporated. Plantation operations for 1996. Order seed. Prepare seed registration and records procedure. Preparations for fire protection. Prepare plantation designs. Formulate trial requirements.
	Nov	Survey of new PBP sites. Review and preparation of plantation prescriptions and contracts. Prescribe supervision and reporting requirements for plantation operations and extension. Prepare for annual training. Fire protection and fences check. Discuss PBP trial plans.
	Dec	Plantation, extension and STP related training course in 4 provinces. Assist with selection of nurseries for tree production. Prepare trial plans. 2 weeks leave.
1996	Jan	Inspect land clearing operations, check environmental aspects. Prepare 1995 annual progress report.
	Feb	Assist with BME in 1995 plantings. Management plan preparation. 2 weeks leave.
	March	finalise plans for trials in PBPs. Review cultivation plans in PBPs. Management plan preparation. Prepare for extension seminar. View nursery operations
	April	Check fence construction. Management plan preparation. Inspect cultivation in PBPs. Assist with trial implementation. Assist with extension seminar in Savannakhet. View nursery operations
	May	Assist with extension seminar in Vientiane. Review tree distribution plans, inspect readiness of PBPs and PFPs for planting. View nursery operations. BME in land preparation.

	June	Inspect tree transport methods and planting operations. Assist with trial implementation.
	July	Inspect weeding and fertilising. Assist with trial implementation.
	Aug	Inspect weeding and fertilising. BME in tree maintenance operations. 2 weeks leave.
	Sept	Review species and provinces planted by project. Check mapping of new PBPs and PBP planting records for 1996 plantings. Assist in preparation of publicity material. Check on final fertilising and weeding.
	Oct	Review planting plans for new PBPs and PFPs. Large number of PFPs to locate and plan for extension back up. Review trials to be incorporated into PBPs. Plantation operations for 1997. Order seed. Assist with preparations for fire protection.
	Nov	Review and preparation of plantation prescriptions and contracts. Prepare for annual training. Fire protection and fences check. Formulate PBP trial plans.
	Dec	Plantation /extension training course in 4 provinces. Assist with allocation of nurseries for tree production. Check updating of planting records. 2 weeks leave.
1997	Jan	Inspect land clearing operations, check environmental aspects. Prepare 1996 annual progress report.
	Feb	Assist with BME. Management plan preparation. PSP establishment and measurement.
	March	Measure and review trials of previous year, prepare plans for trials in PBPs. Review cultivation plans in PBPs. Management plan preparation.
	April	Check fence construction. Management plan preparation. Inspect cultivation in PBPs. Assist with trials. Assist with extension seminar in Savannakhet.
	May	Assist with extension seminar in Vientiane. Review tree distribution plans, inspect readiness of PBPs and PFPs for planting.
	June	Inspect tree transport methods and planting operations. Assist with trials.
	July	Inspect weeding and fertilising. Assist with trials. Operations plans for 1998. BME in 1997 plantings.
	Aug	Inspect weeding and fertilising. Prepare final report for phase 1 of implementation consultancy.
	Sept	Review species and provinces planted by project. Check mapping of new PBPs and PBP planting records for 1996 plantings. Check on final fertilising and weeding.

Phase 2

In the second phase the during the two month long visits the main focus will be on three functions;

1. Assess PBPs and PFPs for management and maintenance operations, also assess quality of nursery tree stocks to recommend any remedial action if required. This is part of a long term effort to continually improve on these.
2. Further development of plantation and nursery techniques which are required as the plantations age. E.g. management of seed stands to provide local high quality seed supply; tree improvement through plus tree selection and use of cuttings; analyses of data from permanent sample plots (PSPs) and correlating it with cost data of various plantation options.
3. Prepare progress report.

Environmental Specialist (Tony Zola)

Duration : 7 months

Indicative timing for work sheet is as follows, but it may be more convenient to break up the visits into smaller blocks.

1995	Nov	Orientation, document review. Review of site selection process. Prepare work plan for environmental monitoring.
	Dec	Schedule for baseline environmental survey, design, installation and operation of environmental monitoring system. Discussions on inputs and outputs for environmental monitoring and environmental indicators.
1996	Jan	Finalise indicators. design the environmental baseline survey (EBS) form. Pre-test in field, adjust or revise form, EBS of 2 sites. Training PCU to conduct EBS. Analyse data from EBS and train PCU in this. Preparation of report.
	Feb	Design of environmental monitoring system (EMS) Train PCU to prepare monitoring reports
1997-2000		Each Jan-Feb over a one month period. In 1997 provide environmental protection guidelines. Prepare annual environmental monitoring report. Provide training and awareness material.

DOMESTIC SPECIALISTS

Road Construction and Maintenance Engineer (Khamsay Hongsouvanh)

Duration : 12 months

1995	July	Collect and review documents. Reconnaissance survey for existing PBPs.
	Aug	Existing road description and identification. Preparation of design standards and technical specification for road survey and design (S&D). Prepare budgets. Prepare progress report.
	Sept	Reconnaissance survey for additional PBPs. Existing road description and identification.
	Oct	Call for and award S&D contractors. Train PCU staff in planning, design and preparation of road maintenance schedule. Prepare progress report.

- Nov Prepare bid documents, evaluate bids and award construction package # 1. Implementation and supervision of S&D package # 1.
- Dec Prepare bid documents, evaluate bids and award construction package # 1. Implementation and supervision of S&D package # 1.
- 1996 Jan Prepare bid documents, evaluate bids and award construction package # 2. Prepare semi annual roading report.
- Feb Prepare bid documents, evaluate bids and award construction package # 3 and # 4. Rehabilitation / construction of roads of package # 1. Supervision of road construction package # 1.
- March Rehabilitation / construction of roads of package # 1. Rehabilitation / construction of roads of package # 2. Supervision of road construction package # 2. Train PCU staff in planning, design and preparation of road maintenance schedule. Prepare progress report.
- April Rehabilitation / construction of roads of package # 1. Rehabilitation / construction of roads of package # 2. Supervision of road construction package # 1 and # 2.
- May Rehabilitation / construction of roads of package # 1. Rehabilitation / construction of roads of package # 2. Supervision of road construction package # 1 and # 2. Monitoring road maintenance activities. Prepare semi annual roading report. Prepare progress report.
- Oct Rehabilitation / construction of roads of package # 3 and # 4. Supervision of road construction package # 3 and # 4.
- Nov Rehabilitation / construction of roads of package # 3 and # 4. Supervision of road construction package # 3 and # 4. Monitoring road maintenance activities. Prepare final report.

Plantation Operations Specialist (Keu Moua)

Duration : 14 months

- 1995 May Assist with establishment operations in PBP.
- June Assist with establishment operations in PBP.
- July Assist with establishment operations in PBP.
- break
- Nov Assist PCU to review plantation techniques, prescriptions, operation schedules, contracts, supervision requirements, and reporting. Assist in fire protection and control measures. Preparation for plantation /extension training.
- Dec Assist in plantation /extension training courses of PPCU in 4 provinces.
- 1997 Jan Assist in contractor selection, contract signing and starting plantation contracts. Assist in design of extension materials.
- break

June Assist in tree transport and planting operations in PBPs and PFPs.

July Assist in fertilising and weeding operations in PBPs and PFPs.

Aug Assist in fertilising and weeding operations in PBPs and PFPs.

break

1997 Jan - Feb: Provide technical support for land preparation in extension to APB applicants.

break

June - Aug : Provide technical support for planting and maintenance in extension to APB applicants. In service training.

Nursery Operations Specialist (Keo Nanthasack)

Duration : 10 months

1995 July One week for orientation, visit to project areas and discussions to plan implementation with other specialists.

break

Dec Assist PCU to revise nursery techniques and contracts and prepare for 1996 season; including contract procedure, supervision and reporting schedules also tree cartage contract. Chose nurseries to contract grow trees including prequalification checks. Implement project seed control system.

1996 Jan Train PPCU and nursery staff in 4 provinces in nursery techniques.

Feb Assist nurseries to plan, upgrade and prepare.

March - May: Provide technical support and in service training for nurseries and PPCU to produce seedlings.

break

1997 Feb Training of staff from new nurseries who are joining project and refresher for those with previous experience. Assist nurseries to plan, upgrade and prepare for new season.

March - May: Provide technical support and in service training for old and new nurseries and PPCU to produce seedlings.