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FINAL REPORT

OF THE

PROJECT CONSULTANT'S LONG TERM PHASE

CIRAD-Forêt - MIDAS - Burapha

Lao ADB Plantation Forestry Project - Loan No, 1295 (SF)

March 1998

LIST OF ABBREVIATIONS & ACRONYMS

ADB	Asian Development Bank
APB	Agricultural Promotion Bank
AV	Audio visual
BOL	Bank of Lao
BME	Benefit Monitoring and Evaluation
DAFI	Development Agriculture & Forest Industry (Gvt. enterprise)
DAFO	District Agriculture & Forestry Office
DOF	Department of Forestry
EMR	Environmental Monitoring Report
EBS	Environmental Baseline Survey
EMS	Environmental Monitoring System
GIS	Geographic Information System
GOL	Government of Lao
MAF	Ministry of Agriculture and Forestry
MCTPC	Ministry of Communication, Transport, Post and Construction
NPCC	National Project Co-ordinating Committee
PAM	Project Administration Memorandum
PAFO	Province Agriculture & Forestry Office
PBP	Pilot Block Plantation
PCU	Project Co-ordination Unit
PFP	Pilot Farm Plantation
PPCU	Provincial Project Co-ordination Unit
PSP	Permanent Sample Plot
R&D	Research and Development
STP	Socio Technical Profile
TA	Technical Assistance consultancy for institutional strengthening

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1. INTRODUCTION

1.1 Introduction to this Report

The Industrial Tree Plantation Project is officially known in the Lao PDR as the Lao-ADB Plantation Forestry Project. The Implementation Consultant's work input will be divided into 2 phases, long term and short term. Implementation started in early 1995 with the long term phase, so called because of the full time participation of the Implementation Team Leader, and will finish on 31 March 1998 after which he will make only short term visits to the Project.

This is the Final Report of the Consultant's long term phase of the Project to GOL and the ADB by the Implementation Team Leader. The purpose of the report is to; present the progress made, indicate problems encountered and solutions employed, offer conclusions and recommendations. It also lists lessons learned that may be useful in formulation of future projects of this nature. With regard to the ADB's consideration of a Stage II of this Project, the report also includes a section on prospects of future expansion in the final chapter.

1.2 Project Background

The Lao-ADB Plantation Forestry Project is funded as a loan from Asian Development Bank to the Government of Lao PDR, Loan No. 1295 (SF).

The project is located in 16 of the fifty four districts which comprise Vientiane Prefecture, and the provinces of Vientiane, Bolikhamsay, Savannakhet, Saravan and Champasak. The project 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.

DOF and the BOL Credit Department are the executing agencies of this project.

- APB is implementing Part A .
- DOF is implementing Parts B, C and D, also co-ordinating and managing the project through the PCU and six PPCUs.

The Project implementation started in May 1995 and is scheduled to finish in early 2001. Scheduling of the four Project Parts is as follows:

- Part A : credit plantation client recruitment activities started in 1996 with first plantings in 1997 and plantings will continue each year till 2000.
- Part B : demonstration plantations, the PBP's were started in 1995 and completed in 1997, the PFP's were started in 1996 and completed in 1997.

- Part C : access road construction started in late 1995 and will conclude in April 1998.
- Part D : project support activities started in 1995 and will continue till end 2000;

1.3 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

- Stabilise most of the estimated 250,000 families practising shifting agriculture through allocation of permanent locations. Integration of agriculture with forestry through agro-forestry promoted to improve productivity.
- Protect the remaining natural forest areas, primarily for preservation of catchment values.
- Establish plantations to conserve and regenerate barren land which includes, degraded forest land, denuded forest land, grassland, and unstocked forest land. 2 million ha of degraded forest land to be converted to plantation development including agro-forestry 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 tree plantations; and
- Establishment of a policy and institutional framework for development of sustainable tree plantations.

1.4 Consultant Specialist Team

There are five specialists in the project implementation team fielded by CIRAD-Forêt which is the Project Consultant working in association with MIDAS Agronomics Ltd and Burapha Development Consultants Ltd. The team is made up of two international

specialists (Team Leader and Environmentalist) and three local specialists (Engineer, Nursery and Plantation Operations).

The combined consultancy was originally allocated a total of 79 man months from May 1995 to December 2000. In mid 1996 a 4 month extension of work period was approved by GOL and ADB for the Roding Engineer, increasing that specialist's allocation from 12 to 16 man months and therefore increasing the consultancy to a new total of 83 man months. In late 1997 it was approved by GOL and ADB after the Mid Term Review to transfer the remaining 3.97 man months of the Plantation Operations Specialist to the Roding Engineer who will complete this final work input on 29 April 1998. After the Engineer has completed his work time the remaining specialist's work inputs will consist of short term visits by the Team Leader and the Environmental Specialist through to the end of the Project

At the end of the long term phase of the Project the specialists work inputs will be;

Table 1: Specialists Work Input to Project as at 31-3-98

Specialist	<i>(Work Time in Man Months)</i>	
	Long term phase	Remaining
• Thomas Brummer (36 mths.) Plantation Management Specialist / Team Leader	33.17	2.83
• Anthony Zola (7 mths.) Environmental Specialist	3.63	3.37
• Khamsay Hongsouvanh (12 mths.)	12.00	0
• Bounsamay Inthavong (4 mths.)	4.00	0
• Korakhanh Voravong (3.97 mths.) Road Engineering Specialists	3.00	0.97
• Keu Moua (14 mths.) Plantation Operation Specialist	10.03	0
• Keo Nanthasack (10 mths.) Nursery Operation Specialist	10.00	0
TOTAL INPUT	75.83	7.17

The TOR of the Consultant Team is contained in [Appendix A1](#).

The Consultant Team's work input schedule for the whole project period appears in the lower half of [Appendix A2](#).

Three local support staff are employed by the implementation consultancy to assist the Project. Of these the secretary will finish at 31 March 1998, but the driver may remain to support the Roding Engineer, and the accountant to finalise the consultant's claims with GOL, both till the end of April 1998.

1.5 Project Organisation

The Project organisation was established in 1994 and is still in effect. The Project is directed by the National Project Co-ordinating Committee (NPCC) which meet every 3 months and also as required by important developments. The NPCC is comprised of the following members:

- Vice Minister of MAF (chairman)
- Representative from MOF, Foreign Currency Dept.
- Representative from BOL
- Representative from MCTPC
- Representative from DOF
- Representative from APB
- Representative from Planning Committee
- Representative from Lao Women's' Union
- Director PCU (secretary)

The BOL Credit Department is the Executing Agency for Part A. The APB is implementing Part A through its branches and field offices in the 6 provinces.

The DOF is the Executing Agency for Part B, C and D. Under it the co-ordination, supervision, and training of the project is conducted by the PCU which has its office in the DOF compound at Vientiane. The PCU is comprised of DOF staff, it is headed by a Project Director and Deputy Project Director and is divided into 4 Sections, each managed by a Section Head. During the remaining phase of the project the PCU numbers will not be increased. The PCU is staffed as follows;

Table 2: PCU Staffing

Section	Staff Nos. and Position
Directors	1 Project Director 1 Deputy Project Director
Monitoring & Evaluation Section:	1 Section Head 3 Section staff
Training & Extension Section:	1 Section Head / Training 1 Extension
Plantation Development Section:	1 Section Head
Administration Section:	1 Section Head 1 Accountant 1 Cashier
	12 persons

The implementation operations have been gradually decentralised and are now carried out by the PPCU in each province which is staffed by officers of PAFO and the DAFO on a long term basis. The PPCUs of Vientiane Prefecture and the Provinces of Vientiane, Bolikhamsay and Savannakhet were established in 1995 and have been implementing Part B and assisting with Parts A, C and D. While the PPCUs of Saravan and Champasak were established in late 1997 after the approval of GOL and ADB to add these two provinces to the Project, they are assisting with the implementing of Part A only. All PPCUs have office space provided in each PAFO. They are staffed as follows:

Table 3: PPCU Staffing

Position	Nos. in each PPCU						
	Pref.	Vient.	Bolik.	Savan.	Sarav.	Champ.	
Head	1	1	1	1	1	1	
Admin	1	1	1	2	1	1	
Extension	2	2	4	3	3	3	(includes deputy)
Technical	<u>4</u>	<u>3</u>	<u>2</u>	<u>3</u>	<u>0</u>	<u>0</u>	
	8	7	8	9	5	5	

1.6 Development of Implementation

The Consultant Team began work inputs in May 1995 assisting the PCU and PPCU with the establishment of Part B, Part C and Part D of the Project. Work on Part A began in September 1996 with first credit plantings in 1997.

Part B was completed by October 1997 and Part C will be completed in April 1998. Part A and Part D will continue until early 2001.

The original Project Schedule called for simultaneous establishment of the credit plantations of Part A and the demonstration plantations of Part B, while at the same time carrying on the institutional strengthening work of the TA 2028. There was delay in fielding the Implementation Consultant Team, from 1994 to 1995, and delay in the credit planting, from 1995 to 1997. In hindsight it is clear that DOF and PCU /PPCU would have had significant difficulties in implementing the 3 activities simultaneously. In fact it was beneficial that the Project followed the logical developmental steps of; (i) the initial institutional strengthening, (ii) then some first time practical experience of establishing the demonstration plantations and (iii) finally advising credit clients on plantation establishment. The PCU and PPCUs had much to learn because the activities of plantations, STP, environmental protection, credit and contract supervision etc. were all very new to them, those 3 activities could not have been done simultaneously.

A detailed Project Implementation Schedule appears in Appendix A2 showing planned and actual scheduling of the Project. It also shows the corresponding work input of the Consultant Team members.

1.7 Project Documents Produced

The implementation consultants have produced the following formal project documents:

Inception Report

- Inception Report, August 1995.

Six Monthly Reports

- First - July to December 1995.
- Second - January to June 1996.
- Third - July to December 1996.
- Fourth - January to June 1997.
- Fifth - July to December 1997.

Project Reviews

- Review Mission Report, February 1996.
- Mid Term Project Review Report, June 1997.

Plantation Management Papers

- Manual for Establishment and Measurement of Permanent Sample Plots in Plantations - No. 27, September 1996.
- Photographs for Extension Officers - No. 35, September 1997.
- Selected Plantation Management Papers - Nos. 4, 6, 10, 12, 14, 15, 17, 19, 21, 25, 28, 29 and 31. September 1997.

Environmental Specialist Trip Reports

- Trip Report No. 1, December 1995.
- Trip Report No. 2, March 1996.
- Trip Report No. 3, July / August 1996.
- Trip Report No. 4, November 1996.
- Trip Report No. 5, March 1997.
- Trip Report No. 6, May 1997.
- Trip Report No. 7, July 1997.
- Trip Report No. 8, November / December 1997.
- Trip Report No. 9, February / March 1998.

Environmental Technical Reports

- 1996 Environmental Baseline Survey Report, February 1997.
- Environmental Monitoring System : Detailed Program and Reporting Format for Monitoring and Evaluation of Environmental Impacts of Tree Plantations in Lao PDR, February 1997.
- Environmental Monitoring Report No. 1: Environmental Report on 1995 and 1996 Pilot Block Plantations, July 1997.
- Training Handbook for Environmental Monitoring of Forest Tree Plantations in Lao PDR, December 1997.
- Environmental Guidelines for Plantation Establishment, January 1998.
- 1997 Environmental Baseline Survey Report, March 1998.
- Environmental Monitoring Report No. 2: Environmental Report on 1997 Pilot Block Plantations, July 1997.

Road Engineering (Lao language)

- Tender Documents for Phon Sim Road
- Tender Documents for Song Khon Mai Road
- Tender Documents for Na Kha Road
- Tender Documents for Phon Tong Road
- Tender Documents for Nam Souang Bridge
- Tender Documents for Nongkhiat Road
- Tender Documents for Pakngan Road
- Tender Documents for Si-Savat Road
- Tender Documents for Song Khon Kao Road
- Tender Documents for Savang-Xong Road
- Tender Documents for Muk-Koua Road

A collection of catalogued and dated photographs, comprising 22 films, depicting Project activities and techniques from 1995 to 1998 has been produced. A large number of informal technical material have also been produced by the implementation consultant's team, most in the Lao language. The topics covered are:

Plantation Management

- plantation records
- species and provinces
- costs and productivity
- supervision requirements
- seed control system
- seed stands
- economic aspects
- plantation management plans
- credit plantation quality standards
- valuation of plantations
- seed production
- nutrient deficiency
- plantation access roads
- work programs
- budgets
- project expansion to Saravan and Champasak
- calculation of plantation IRR
- responsibilities for credit activities
- extension procedures
- preliminary environmental guidelines
- R&D requirements for plantations
- planting plans

Plantation Operations

- PFP recruitment
- plantation prescriptions
- manual contracts
- mechanical contracts
- extension report forms
- mapping
- fire protection
- plantation trial plans
- planting plans and strategies

Nursery Operations

- seedling production reports
- nursery contracts
- seedling production plans
- prescriptions
- supervision requirements
- nursery work plans
- nursery training manual
- nursery management forms
- seedling production schedules
- seed control
- seedling transport

Roading

- work programs
- construction cost estimates
- finance plan
- contractor supervision forms
- works reports

2. PART A : CREDIT PLANTATIONS

2.1 Progress

The start of the credit component of the Project was delayed for nearly two years because the loan funds were conditional upon; (i) production of an audit report of the APB, and (ii) the BOL adopting and implementing a new accounting system. Then in September 1996 investment seminars were held, the credit line was advertised and clients' applications were sought for planting in the 1997 season.

The 1997 planting target was 1,000 ha. A total of 875 ha of loan applications were approved by APB while 870 ha were actually planted. The shortfall in target achievement resulted mainly from misunderstandings between BOL and APB on the operation of loan funds, but also to a smaller extent because of the late start not enough preparatory work was able to be done before the seasonal field operations had to begin.

Table 4: Credit Plantation Establishment for 1997 Planting

Province	No. groups	No. families	Ha
Vientiane Pref.	-	10	277
Vientiane Prov.	-	13	196
Bolikhamsay	13	72	224
Savannakhet	8	81	173
	21	176	870

The 1998 target is 2,000 ha. There was delay caused in arriving at internal GOL understandings during the last quarter of 1997, this has been partly made up. Now the operations are 8 weeks behind schedule leaving no time flexibility for any of the usual delays. A dangerous situation for achieving quality standards and target. The number and the total area of loan applications indicates that the credit line is popular and that the recently strengthened extension service of PPCU is reaching the people. The latest update on progress from APB, as of 3 March 1998, indicates that 3,031 ha of applications have been received and are in various stages of processing.

Table 5: Credit Progress for 1998 Planting

Province	<u>Applications</u> (as at 3 March)	<u>Approvals</u> (as at 16 March)
Vientiane Pref.	211	185
Vientiane Prov.	800	215
Bolikhamsay	550	312
Savannakhet	500	107
Saravan	670	30
Champasak	300	0
	3,031 ha	849 ha

For the APB the new workload of this Project has resulted in the need for extra people to work with the credit line, vehicles to transport them to the field and computer equipment for administration and recording. But APB has not enough of it's own funds for these added requirements and profits from the interest service charge are not apparent. APB is now preparing additional staff which will work exclusively for the credit line. The NPCC

and ADB has agreed to the reallocation of funds for procurement of vehicles and equipment, it now remains for BOL to find a suitable mechanism to do this and for GOL to make application to ADB.

At project formulation it was expected that the largest proportion of credit line funds would be borrowed by private enterprises (registered companies) who pay the full interest each year to APB on their credit funds. But in 1997 all credit went to farmers and individuals who pay only 60% of the interest each year with balance at loan repayment, this results in APB not getting enough cash flow to service its costs. It was therefore proposed that farmers and individuals will pay full interest each year. NPCC and ADB have agreed to this approach.

2.2 Private Sector Involvement

One of the objectives of the Project is to develop the private sector. During the first year of the credit line many private enterprises made applications but no credits were approved by APB. But an important new group appeared that were neither farmers nor private enterprises (companies). These are called "Individuals", they are the Non Formal Enterprises and were approved by ADB to be treated as farmers. They are the only representatives of the commercial private sector participating in the Project to date.

The situation is that the larger enterprises already engaged in forestry are not eligible to receive credit because they are majority foreign owned and must supply their own capital as per GOL investment regulations, or they are government owned enterprises and are prohibited by ADB regulations to receive credit. Also, to date, no smaller private enterprise has been able to fulfil APB criteria for credit. It is suggested that the credit line has been attracting the wrong kind of Lao enterprises, the Project should seek out and make presentations to successful and well run Lao enterprises such as are found in the Lao Chamber of Commerce and Industry. The credit line needs to be made attractive to them.

It is regrettable that the private enterprises active in plantation establishment are not able to participate in the project and offer technical assistance to the farmers because they are majority foreign owned enterprises. It is recommended that a new rules be developed so that these foreign enterprises are allowed to form new subsidiary companies for the purpose of plantation establishment with the Project credit line. These subsidiaries must be majority owned by the Lao private sector and then APB will be able to approve credit to that new subsidiary enterprise but only to the Lao side, the foreign side must continue to provide all their own capital.

Without these recommended initiatives it is felt that the private sector involvement in the Project will continue to be dominated by the "Individuals" which are non registered, non tax paying "Non Formal Enterprises", and even though they are a very significant group and desirable for the Project, they are not able to assist farmers or to play the role of an engine pulling along development of the Lao plantation sector. This is because these Non Formal Enterprises /Individuals lack the required management systems and business experience for development of this nature.

2.3 Organisation

For all staff involved 1996-97 was the first time to develop and implement such an complicated activity between so many participants. It is not surprising that some significant problems and much confusion was encountered at all levels which was reported, analysed and eventually solved by PCU, APB and NPCC. From this experience better procedures have been developed for credit plantation activities of 1998. But the evaluation process needs to be on going and thorough.

The credit process now is; PPCU advertise the credit line through their extension service, those wishing to take part make application to the APB branch office. Applicants are questioned and an official application is prepared and then studied by the branch. Those applications that are in order are then referred to PPCU for STP survey and technical comment, then the application is returned to the APB branch who will recommend the application if it has followed all requirements. The application documents are then sent to APB Head Office for examination and approval. After approval the APB branch will invite the applicant to sign a credit contract. Then they advance the funds, or materials, to the client on a step by step basis followed by field inspections of the client's plantation work to confirm acceptability before advancing funds for the next stage of work and so on.

2.4 Markets

Though the confirmation of the timber marketing has been a priority of PCU, it has not yet been able to get further guarantees for purchase of Project wood other than the two contracts previously reported. Even though progress has been slow the PCU is expected to succeed as it is more a matter of timing that concerns the purchasing enterprises rather than disinterest. PCU has now engaged the assistance of NPCC in this. PCU will continue to work on marketing which is now an increasingly important aspect of its work.

It is encouraging to note that Burapha Agroforestry Co. is now in the last stages of securing finance from International Finance Corporation (IFC) for a sawing, drying and glue-lamination operation using plantation wood. Furthermore the IFC is targeting smaller scale plantation wood industry in Lao PDR to invest in and is very interested to learn of the Project's work in plantation development and also of the preparations for a second stage and its beneficial effect on timber supply. IKEA the huge European furniture retailing group is also exploring plantation wood utilisation investments in Lao PDR.

3. PART B : DEMONSTRATION PLANTATIONS

3.1 PBP Status

PBPs were started in 1995 and completed in 1997. A total of 12 PBPs were established in the four provinces. The target was 240 ha. A total of 228.6 ha was established which is 95% of target. Only 4 PBPs were able to be established with the original concept area of about 30 ha and therefore 4 extra PBPs were required to make up total area. The balance of PBPs had to be smaller to either comply with villagers' land requirements for other uses or because most land was privately claimed and the owner was not willing to give it up. Many areas were proposed and surveyed but then rejected by STP. Since the project appraisal time there has been much development including land allocation and private claims which have progressed to such an extent that vacant, unclaimed or unused land for PBPs was difficult to find.

PBP establishment has been implemented to demonstrate environmental protection measures, manual and mechanical cultivation techniques, most suitable species /provenances, fire protection methods, fertilising requirements, fencing systems and agro-forestry /grazing methods to clients. However as the PCU and PPCU staff had no experience of fast growing plantations, the most important aspect of PBP establishment was to give them that first hand experience so that they were able to pass on to the clients the knowledge gained in a confident and authoritative manner, knowing what they were talking about. The PBPs were also important testing grounds for fine tuning GOL models relating to plantation development in Lao PDR and have been visited by Lao authorities at all levels who have spoken favourably of the results. It is thus concluded that this component of the Project has been most successful. PBP planting is summarised in the table below;

Table 6: PBP Establishment Summary

Province	1995	1996	1997	Total ha
Vientiane Prefecture				
Na Kha	<u>14.9</u>	<u>14.7</u>	-	<u>29.6</u>
	14.9	14.7	-	29.6
Vientiane Province				
Phon Tong	8.5	41.6	-	50.1
Phon Kham	<u>8.2</u>	-	-	<u>8.2</u>
	16.7	41.6	-	58.3
Bolikhamsay Province				
Song Khon Mai	-	17.7	-	17.7
Pha Baht	-	10.5	-	10.5
Phon Savan	6.9	-	-	6.9
Phon Si	-	-	10.5	10.5
Som Sa Art	-	-	9.8	9.8
Song Khon Kao	<u>-</u>	<u>-</u>	<u>9.3</u>	<u>9.3</u>
	6.9	28.2	29.6	64.7
Savannakhet Province				
Phon Sim	10.1	20.6	-	30.7
B. Bouthong	-	13.3	-	13.3
Non Savang	<u>-</u>	<u>-</u>	<u>32.0</u>	<u>32.0</u>
	10.1	33.9	32.0	76.0
Totals	48.6	118.4	61.6	228.6

3.2 PFP Status

Implementation of PFPs were started in 1996 and were completed in 1997. There was a total of 401.6 ha planted in the four provinces. The target was 320 ha and achievement was 125% of target. The extra area is a reflection of farmer interest in plantations.

Farmers experimented with new and creative variations of agro-forestry, it was found that the extension officers only had to give ideas and the farmers themselves would improve on them according to their situation and needs. These small demonstration areas were very effective in giving the more progressive farmers a chance to try plantations thus gaining the confidence of the others who watched and then wanted to join the Project.

About two thirds of the PFPs have grown well, the remainder have grown slower because operations were not performed on time due to misunderstandings or competing time requirements from other farmer activities. This is considered a good result for first time plantings in comparison with experiences in other countries.

The total plantings are summarised in the table below.

Table 7: PFP Establishment Summary

Province	1995	1996	1997	Total ha
Vientiane Prefecture	-	20.0	95.5	115.5
Vientiane Province	-	17.5	52.9	70.4
Bolikhamsay Province	-	42.2	23.0	65.2
Savannakhet Province	-	57.5	93.2	150.7
	-	137.2	264.6	401.8

3.3 Research & Development Trials

During 1996 and 1997 trials were established in the PBPs to demonstrate various aspects of plantation establishment and to fine tune others.

The following trials were established in the PBPs ;

- Spacing trials
- Cultivation trials
- Species demonstrations
- Provenance trials
- Seed production stands
- Agro-forestry crops
- Chemical fertiliser trials
- Farmers' fertiliser trials
- Yield comparison of various techniques
- Economic comparison of various techniques
- Cattle fodder trials
- Boron deficiency trials

Most of the trials are ongoing and are being monitored and measured by PCU, but information evident from trials so far is as follows:

- Cultivated land should be planted at 3x3 m spacing, non cultivated land may be planted at 2x3 m.
- Harvesting should be at 4-5 years for most growers.
- Cultivation increases growth and yield.
- The best species are *Eucalyptus teritcornis*, *Eucalyptus camaldulensis*, *Acacia mangium* and *Acacia auriculiformis*, and the 14 provenances planted so far are suitable for conditions encountered here.
- Fertiliser rates of 50g after planting and 100g two months later is beneficial for good growth.

4. PART C : ROAD CONSTRUCTION

4.1 Design Standards & Tender Documents

In 1995 an agreement was reached with MCTPC about design requirements and the responsibilities of all parties involved. Formal design standards were produced by Engineer and approved by MCTPC.

After deciding on the road works to be constructed all the survey and design works were contracted out by tender. Upon completion of these the Engineer checked the drawings and the bills of quantity then using this data produced a detailed set of tender /contract documents for each contract. These tender documents were in three volumes and were all approved by MCTPC before the tender process began.

In April 1996 ADB approved the PCU request to waive the prequalification requirement for civil works under Part C because the small contract amounts and the small size of the bidders' enterprise. However a qualification provision of experience, financial position and technical staff was imposed by PCU on the contract bidders.

4.2 Contract Works

Because actual location of PBPs was closer to existing roads than envisaged at appraisal time the PCU needed the construction of only 4 roads, with a total length of 15.7 km, and one bridge. Full survey and design contracts were tendered, awarded and completed for each civil work construction contract. These construction works were completed by mid February 1997. A summary of these appears in the table below;

Table 8: Access Roads Completed

No.	Works Name	Province	Km	Contract Value \$
RC-01	Phon Sim Road	Savannakhet	7.9	118,307
RC-02	Song Khon Mai Road	Bolikhamsay	2.4	37,925
RC-03	Na Kha Road	Vientiane Pref.	3.4	67,278
RC-04	Phon Tong Road	Vientiane Prov.	2.0	42,650
BC-03	Nam Souang Bridge	Vientiane Pref.		28,400
All	survey & design	All		10,584
	GOI contribution			<u>10,787</u>
			15.7	\$ 315,931

As agreed during the ADB Review of 6-14 November 1996 the PCU, with assistance of provincial authorities, reviewed roading for rural development purposes and sent a proposal to ADB for an additional 41.5 km of road construction /rehabilitation having the dual objectives of access to credit plantations and rural development. These 6 contract road works are now in process and will be completed by May 1998. A summary of these roads now under construction appears below;

Table 9: Access Roads Under Construction

No.	Road Name	Province	Estim.Km	Approx. Value \$
RC-05A	Pakngan	Vientiane Pref.	11.6	87,100
RC-05B	Nongkhiat	Vientiane Pref.	4.8	50,700
RC-06	Muk-Koua	Vientiane Prov.	11.7	190,600
RC-07	Savang-Xong	Savannakhet	5.4	87,200
RC-08A	Si-Savat	Bolikhamsay	4.0	} 95,500
RC-08B	Song Khon Kao	Bolikhamsay	4.0	
All	survey & design	All	—	<u>20,200</u>
			41.5	\$ 531,700

These works will result in a total of 10 roads with a total of 57.2 km and 1 bridge being completed in this Project component with a estimated total expenditure of \$ 850,000. There will be some small costs additional to the contract cost, for example additional culverts.

4.3 Engineering Supervision

Originally the Engineer was allocated 12 man months for this Project. Because of late start two of the first batch of roading construction contracts were not able to be finished within the work time of the original Engineer, Mr Khamsay Hongsouvanh, who was required for another contract commitment. Therefore a replacement Engineer, Mr Bounsamay Inthavong, was engaged to complete these works after approval for a 4 man month extension by GOL and ADB. These works were finally completed in February 1997.

During the Mid Term Review GOL and ADB agreed that the remaining 3.97 man months of the Plantation Operation Specialist were not needed because of successful completion of Part B and that this time should be transferred to the Road Engineer in order to supervise the second batch of 6 road construction contracts starting in December 1997. Mr Korakhan Voravong's work time started on 1 January 1998 and will finish on 29 April 1998. A PPCU staff member is assigned to each road contract to record all the contractor work on a set of printed forms

4.4 Maintenance

The first batch of 4 constructed roads have been inspected by PCU and PPCU and it was noted that some minor maintenance work was required as well as some spot clearing of drains and culverts. The PPCUs have been instructed by the Engineer how to make a contract and call for tenders which they are now in process of doing, so that the maintenance will be completed by the start of rains in June this year. The PCU has been instructed on the requirements of road maintenance scheduling.

5. PART D : PROJECT SUPPORT

5.1 Seedling Provision: Part A

In 1997 participating nurseries grew and distributed 1,321,608 seedlings to credit clients in the four provinces to plant 870 ha. See [Appendix A5](#) for details of seedlings distributed to credit clients in 1997

An important part of PCU /PPCU work with credit plantations is to assist the clients with the provision of quality seedlings germinated from seed of desirable provinces with reliable genetic quality. This is co-ordinated by PCU who predict requirements from data forwarded by APB branches via PPCU.

Based on demand and location each season PPCU recruits nurseries judged reliable by past experience and pre qualification criteria to participate in seedling provision for the Project. The nursery staff receive training and instruction in the work prescriptions by PCU prior to the start of production. Seed is imported by PCU on behalf of credit clients and paid for with a Revolving Seed Fund. The seed is then broken down to the amounts required by each participating nursery and sold to them for actual cost thereby replenishing the fund in local currency which is later replenished in foreign currency by MOF for future purchases.

PPCU provide seedling purchase contract forms for each client to complete with the participation nursery of their choice and then they monitor and supervise seedling production at each nursery on behalf of clients. At time of planting PPCU approve the seedling quality and provide the co-ordination to arrange delivery times and locations between nursery and client.

5.2 Seedling Provision: Part B

The nursery production required for the Project PBP and PFP demonstration plantations has increased in steps. In 1995 a total of 122,505 seedlings were produced in 2 nurseries; in 1996 a total of 429,184 seedlings were produced in 4 nurseries and in 1997 a total of 688,482 seedlings were produced in 3 nurseries. A mixture of nursery types have participated; private, PAFO, DAFO. Prior to signing a contract with PPCUs the nurseries supplying seedlings had to pass a prequalification check from PCU and then attend a training course held by PCU.

The participating Project nurseries have produced a total of 1,240,171 seedlings from 1995 to 1997 for Part B. A summary of annual seedling production distributed to PBPs and PFPs is contained in [Appendix A6](#).

5.3 Extension Services

With the completion of Part B in late 1997 the six PPCUs have now been reoriented to the major duties of providing extension services for Part A clients. The successful attraction of applications for participation in the credit line and issuing of the STP certificates suggests that they are strong in these aspects.

Quality control of client's plantation operations has been an area of weakness in PPCU extension performance in the past. Extra training and attention has been given by PCU and specialist to overcome this potential problem and this aspect will continue to be monitored by PCU and Team Leader.

The motorcycles and equipment ordered with the approval of GOL and ADB after the Mid Term Review have been procured and will be available in early April. This will

certainly assist better access of extension workers to the more distant credit plantations and will improve the supervision by PPCU further.

5.4 Social Protection

This Project is notable and unique among plantation development projects in its concentration on a bottom-up development and its approach to harmonious integration with food production and other social concerns. This is best demonstrated in the development the Socio Technical Process (STP) for protection of people's rights, way of life, which is now also fully integrated with the environmental protection system.

Prior to the establishment of any plantation a STP survey is made by PPCU, village people and the person wishing to establish the plantation. The survey is conducted on site and entails filling in a detailed question form and completing a map. After the STP is completed it is analysed to ensure the following points regarding the land: it belongs to the applicant and there are no competing claims, is not essential for sustenance of any people's livelihood, is not required for social or cultural reasons, is not suitable for long term food production, does not contain viable natural forest, will not result in environmental degradation /natural forest depletion, is not too close to water bodies or wells, is basically economically feasible.

If the STP is positive the PAFO signs a formal certificate which is valid for three years only. The DOF is now institutionalising the STP on a national basis with assistance from PCU. Over the Project life the STP has evolved to become a practical and most essential tool for clients, non participants and the authorities leading to harmonious plantation development.

5.5 Environmental Protection

The Environmental Specialist has made 9 visits to the Project over the three years of implementation. He has reviewed the environmental aspects of the Project areas through frequent field trips to potential and established plantation sites. An environmental baseline survey was carried out during 1996 and 1997, with the results presented in the comprehensive *1996 Environmental Baseline Survey Report* submitted to the Project in February 1997 and *1997 Environmental Baseline Survey Report* submitted to the Project in March 1998.

The specialist worked with the PCU to develop an Environmental Monitoring System (EMS). An *Environmental Monitoring System* report was submitted to the Project in February 1997, that detailed a program and reporting format for the monitoring and the evaluating of environmental impacts of tree plantations. The EMS operates through a participatory process, with the PPCUs co-ordinating environmental protection and environmental data collection activities with villagers, to achieve the necessary level of community involvement in environmental protection. The EMS was in operation during the first half of 1997, the results of which were used to complete the *Environmental Monitoring Report No. 1* on the 1995 and 1996 PBPs, submitted to the Project in July 1997, and the *Environmental Monitoring Report No. 2* on the 1997 PBPs, submitted to the Project in July 1997.

Operation of the EMS combined with the experiences of specialists, PCU and PPCU and the lessons learned from management of PBPs have resulted preparation of detailed *Guidelines for Establishment of Forest Tree Plantations in Lao PDR*, that offer prescriptions for environmental protection in plantations. These guidelines are reviewed and modified periodically as additional experience is gained and as plantation activities expand into other provinces requiring additions to cope with the new physiographic conditions.

Numerous courses and on-the job training sessions have been organised for PCU, PPCU, PAFO and DAFO staff in the 6 provinces. This training has demonstrably contributed to strengthening awareness among the Project staff, provincial and district officials in implementation of plantation activities. The training has also enabled the PCU and PPCU to include environmental aspects in their extension message to Part A clients.

5.6 Training

Training has been a constant and high profile activity in all aspects of project implementation. It has been conducted at 3 levels; to PCU, provincial staff and clients. The training pattern being that various specialists train PCU, who then train the PPCU /PAFO, who in turn train /advise clients /supervise contractors, thereby training the trainers. A high level of training skill now exists with the PCU who now update and quality control PPCUs without specialist assistance.

A summary of training is contained in the table below. In addition to these there has been an even larger amount of on-job training which is not specifically recorded. A total of 5,717 training man days has been achieved on 98 courses. A annual breakdown summary of these is;

Table 10: Training Annual Summary

Year	Training man days	No. courses
1995	1,989	24
1996	2,651	41
1997	922	27
1998	155	6 (to 31 March)
	5,717	98

Appendix A3 contains details of all training, by 6 month periods, conducted by the Project specialists and PCU or training provided by others and used by the Project.

5.7 Offices and Laboratory

After the Mid Term Review GOL proposed and ADB agreed to allocate a total of US\$ 271,000 for the building of five offices for PPCU in the Provinces of Vientiane, Bolikhamsay, Savannakhet, Saravan and Champasak. After approvals were given PCU made proposal drawings and discussed these with all concerned Provincial Authorities. The Authorities were asked to provide; a building site, 20% of construction costs, their own design, or if they wished they could use a PCU provided design, and also to supervise the construction contract under PCU guidance following ADB civil works procedures.

All five provinces have approved the proposal, budgeted their contributions from annual GOL development allocations, provided a building site and are now in process of calling for tenders for design, including bill of quantities and construction cost estimates. It is planned that the buildings will be completed in 1998.

Also proposed by GOL and approved by ADB was a sum of US\$ 145,000 for construction and equipping of a tissue culture laboratory at the Forestry Research Centre (FRC) at Nam Souang. Upon this approval PCU provided DOF with a preliminary proposal including recommended objectives, design, schedule of equipment, personnel requirements, materials requirements and budgeted costs. The FRC is now preparing the building design and specification of equipment prior to calling of tenders.

5.8 Procurement

The physical facilities and items in the table below have been procured during the project. The items procured in 1998 are contracted to be delivered at end March 1998 otherwise all items have been received.

Table 11: Project Procurement

Year	Item	Units	Cost \$
1995	Motor cycle, Honda Dream	24	32,400
	Pickup, 4x4, Toyota Hilux, 2,800cc	1	27,500
	Fertiliser, NPK 15-15-15	480 bags	7,680
	Wire, barbed	390 rolls	4,056
	Nails	330 kg	429
1996	Type writer, Olympia 24	4	3,120
	Photocopier, Ricoh FT4215	1	2,900
	Fertiliser, NPK, 15-15-15	301 bags	5,418
	Fertiliser, NPK, 15-15-15	115 bags	2,012
	Hand tractor, Kubota ET115	3	10,097
1997	Fertiliser, NPK, 15-15-15	418 bags	7,315
	Fertiliser, NPK, 15-15-15	220 bags	3,850
1998	Motor cycle cross country	10	23,000
	Type writer, Olympia 24	2	1,600
Total			\$ 131,377

5.9 Consultancy Expenditure

These are presented as at 28 February 1998 for the purposes of this Final Report because the figures as at 31 March will not be available till the following month. Later these will be sent to ADB as a one page document to be added to the report.

A summary of the international and local expenditure by the consultancy specialists of the Project to the end of the long term phase as at 28 February 1998 is presented in the table below. For a detailed report on the consultants expenditure see [Appendix A4](#). These expenditure reports cover the implementation specialists expenditure only and does not include expenditure made by the consultant's home office.

Table 12: Out of Pocket Expenditure (US\$) as at 28 Feb. 1998

Item	Total Budget	Total Spent	Budget balance
International Expenditure	61,570	29,154.19	32,415.81
Local Expenditure	172,313	103,999.44	68,313.56

6. CONCLUSIONS

6.1 Conclusions

The concept and plan of the Project was sound and well thought out. It is concluded that the Project has achieved its objectives by initiating the re-establishment of tree cover on 1,500 ha to date and over 2,300 ha in process for 1998. These plantations were established on unstocked and degraded lands converting them to productive use for the production of wood materials, thereby creating opportunities to increase and diversify poor rural family rural incomes. Training, assistance and institutional strengthening by the Project at central and provincial levels of GOL have played a leading role in establishment of a policy and institutional frame work for the plantation sector development in Lao PDR. Project initiatives in social protection, with STP, and an environmental protection system are making this development sustainable.

6.2 Lessons Learned

The following lessons have become evident from the experiences of this project, they are:

1. Project must be harmonious with and reflect the Government policies and priorities to succeed in implementation and receive full support of GOL staff at all levels.
2. All government agencies must be assisted to be fully and actively involved in Project formulation because the presence of untested implementation arrangements, which should work in principle, may in fact be difficult or unworkable and always take valuable project time to uncover these problems and find practical solutions.
3. A project has a good chance of success if its objectives are focused on a narrow front, and there is also less overlap problems with other projects for GOL staff.
4. The planned implementation of the Project's TA & Part A & Part B simultaneously was too much for the executing agencies to absorb due to limited number of human resources and the new nature of the work. Future projects should start implementation of major components in a logical development sequence with the preceding component laying the foundations for the following one.
5. The actual Lao counterpart contributions, when properly valued, are reported to be more than the 20%. In future it would save much misunderstanding during project implementation if, at the project development stage, the Lao counterpart contributions are clearly, quantified, described (as being physical, personnel or funds) and valued.
6. DOF is not administratively set up to do all the many specialist operations that were expected of it. Institutional capacity strengthening is required so that its staff can carry out activities such as; contractor recruitment, disbursement, accounting, contract supervision and procurement and use these skills in supporting and facilitating the plantation sector development by using contractors to do many of the specialised tasks periodically if needed. e.g. project monitoring.
7. Structured on-the-job training (learning by doing and seeing) used by the Project has given very much better results than class room lecture style training. Training has followed this model where feasible.
8. Social and environmental protection as part of commercial plantation establishment is viable, desirable and necessary.

9. Ground-up plantation sector development using farmers takes a long time, but does not result in social problems.
10. Protection of food production potential is critical. Care must be exercised in the placement of plantations because of population expansion. STP, BME and environmental monitoring systems must be continued and be well operated.
11. Active participation of the Provincial Authorities from first stages of project formulation onward is as important as that of Central Government Agencies for success and sustainability in Project implementation.

6.3 Consultant's Recommendations

The following summary of recommendations are made with respect to the material contained in this Final Report:

1. It is recommended that the economic viability of the Lao plantation sector is yet to be proven. GOL now needs assistance with timber market development by the promotion of Lao products with local processing, using smaller scale value adding industries. This assistance needs to address; market identification, product identification, attractive design, desirable quality, supply scheduling and product evolution to follow changing customer desires.
2. Leaf Blight is a pathogen that is present in Lao PDR and must be carefully considered in the selection of *Eucalyptus* provenances as it has high potential to decrease wood yield in susceptible trees. The Project has nine provenances available from two *Eucalyptus* species that are not very susceptible, to choose from and should continue to plant an mixture of these rather than rely too much on any one provenance or species.
3. It is recommended that institutional capacity strengthening is required so that DOF staff can carry out such activities as; contractor recruitment, disbursement, accounting, contract supervision and procurement which are crucial to project implementation.
4. It is recommended that the credit line has been attracting the wrong kind of Lao enterprises, the Project should seek out and make presentations to successful and well run Lao enterprises such as are found in the Lao Chamber of Commerce and Industry.
5. It is recommended that a business economist is needed for 2 months to: (i) assess and if necessary assist APB with modifications to the credit line procedures /criteria used in light of actual experience, also (ii) find creative but viable ways to advise APB on redesigning it's credit regulations in order to attract well run Lao enterprises such as are found in the Lao Chamber of Commerce and Industry.
6. It is recommended that new rules need to be developed so that majority owned foreign enterprises are allowed to form new subsidiary companies for the purpose of plantation establishment with the Project credit line. These subsidiaries should be majority owned by the Lao private sector and then APB will be able to approve credit to that new subsidiary enterprise but only to the Lao side, the foreign side must continue to provide their own capital. The business economist proposed in the recommendation No. 5 above should be used for this aspect also.
7. It is recommended that in future projects the executing agency should not directly establish demonstration plantations but should use the "model farmer" or "model company" to establish the plantations in close co-operation with the PCU and specialists.

A special APB loan should be provided to finance the farmer or enterprise for the requirements of the demonstration after signing a co-operation agreement with the PCU.

6.4 Future Needs

The following is a list of future needs for the continued successful implementation of this project:

1. The Project needs to achieve the following planting targets to establish 9,000 ha by end of 2000:

1997	870	}	already planted
1998	2,130	}	
1999	3,000	}	need to plant
2000	<u>3,000</u>	}	
	9,000	ha	

2. The APB needs to have long term, full time staff to be involved in the implementation of the credit line of Part A at it's Head Office and in all it's provincial offices.

3. Procurement of vehicles and equipment for APB.

4. Extension service strengthening to be focused on provincial and district levels.

5. Continuing and increasing attention to the marketing of plantation timber.

6. Ensure that STP and environmental protection system is kept true and strong. Continue efforts to increase awareness of these issues in the rural population and in PAFOs /DAFOs.

7. PCU needs to continue active and capable monitoring activities of; benefits, achievement, technical quality and environmental /social protection.

8. Revision of fees, duty, tax and control on transport of plantation wood. The existing situation will hamper the plantation sector's growth.

9. Land allocation implementation progress will have an important impact on the Project. It is acknowledged that land allocation is a very urgent GOL priority.

10. Continue development of Project /CSIRO seed production areas to ensure the development of high quality Lao seed production stands to supply ready availability of locally adapted seeds for plantation establishment.

11. Continued monitoring and follow up of trials and Permanent Sample Plots.

12. Periodic review of status of Project computer software and hardware.

6.5 Prospects for Project Expansion

The prospects for Project expansion with a second phase are excellent. This is because of the following factors:

1. The project's objectives reflect GOL's policy and Project methods are in tune with GOL's desires.

2. Farmers are yearning for alternative crops that produce income.

3. Markets for timber, though still small, are developing. There are emerging possibilities for domestic value added processing e.g. DAFI, Luang Fat Hong, and Burapha's charcoal / processing developments.
4. The problems encountered with implementation of the credit component of the Project have been uncovered and solved by GOL. A second stage of this project will take advantage of using a functioning system.
5. A wealth of experience has been built up in the DOF which is available to build on.
6. Now there is general understanding and acceptance of fast growing species by the people and GOL officials.
7. There is still much degraded, unstocked unproductive land left to utilise and there are still many families who practice shifting agriculture to be stabilised.
8. There is much interest and need for plantation activity in many districts and provinces in which the Project has not yet been established.
9. The high reputation of the Project and personal interest of senior GOL officials.

CONSULTANTS TERMS OF REFERENCE

A. INTERNATIONAL

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

- i) Assist the PCU to establish and manage the PBP 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.

PROJECT IMPLEMENTATION SCHEDULE

COMPONENT	1994	1995	1996	1997	1998	1999	2000	2001
Long term phase of implementation consultancy								
Short term phase of implementation consultancy								
PART A								
Credit Facility for Private Tree Plantation								
Part B								
Establishment of Pilot Plantations								
1. Pilot Block Plantations								
2. Pilot Farm Plantations								
Part C								
Improvement of Plantation Access Roads								
Part D								
Project Management Support								
1. Physical Facilities								
2. Project Staff								
3. Consulting Services								
a. Team Leader / Plantation Management (Int'l)								
b. Environmental Specialist (Int'l)								
c. Road Engineer (Local)								
d. Plantation Operations Specialist (Local)								
[Plantation Operations Specialist]								
[Nursery Operations Specialist]								

Original Schedule 

Actual Schedule 

TRAINING PROGRAMS

Training Program 1994 to Dec 1995

Training topic	No. trainees	No. days	Man days	Location
Forestry Training (APB)	15	2	30	Vientiane
Nursery Techniques	10	3	30	Savannakhet
(PCU, PPCU, nsy)	10	3	30	Bolikhamsay
	9	3	27	Vientiane Prov
	11	3	33	Vientiane Pref.
Survey & mapping	8	3	24	Savannakhet
(PCU, PPCU,)	15	3	45	Bolikhamsay
	10	3	30	Vientiane Prov
	7	3	21	Vientiane Pref.
Extension technique	8	2	16	Savannakhet
(PCU, PPCU)	15	2	30	Bolikhamsay
	10	2	20	Vientiane Prov
	7	2	14	Vientiane Pref.
STP/ BME	9	5	45	Savannakhet
(PCU, PPCU,)	15	5	75	Bolikhamsay
	14	5	70	Vientiane Prov
	10	5	50	Vientiane Pref.
Project Training (PCU, PPCU)	35	30	1,050	Dong Dok
Study Tour (PCU, PPCU)	25	10	250	Thailand
Plantation & Extension	7	3	21	Savannakhet
(PCU, PPCU)	7	3	21	Bolikhamsay
	6	3	18	Vientiane Prov.
	6	3	18	Vientiane Pref.
	7	3	<u>21</u>	Vientiane
			1,989	

Training Program Jan to June 1996

Training topic	No. trainees	No. days	Man days	Location
Tree Plantations (PCU)	1	3	3	Viet Nam
Seed Collection (PCU)	1	12	12	Thailand
Nursery Technique	12	3	36	Vientiane Pref.
(PPCU, nursery staff, clients)	15	3	45	Bolikhamsay
	8	3	24	Savannakhet
Plantation Seminar	67	2	134	Bolikhamsay
(Province staff, clients)				
Mapinfo & GIS (PCU, DOF)	6	21	126	Vientiane
Climatic Map & Tree Growth	53	2	106	Vientiane Prov.
(PCU, DOF)				
Environmental data collection	8	1	8	Vientiane Pref.
(PCU, PPCU)	5	1	5	Vientiane Prov.
	7	2	14	Bolikhamsay
	5	2	10	Savannakhet
English (PCU)	3	30	<u>90</u>	Hoei Ngang
			551	

Training Program for July - Dec 1996

Training topic	No. trainees	No. days	Man days	Location
STP (PPCU, APB, PAFO)	18	3	54	Savannakhet
	23	3	69	Bolikhamsay
	15	3	45	Vientiane Prov.
	17	3	51	Vientiane Pref.
Plantation Investment (APB clients)	40	2	80	Savannakhet
	55	2	110	Bolikhamsay
	53	2	106	Vientiane Prov.
	49	2	98	Vientiane Pref.
STP (north, centre, south Laos)	29	10	290	Xepone
	34	10	340	Xieng Ngeue
	35	10	350	Hoei Ngang
Environmental (PPCU, APB, PAFO)	12	2	24	Savannakhet
	22	1	22	Bolikhamsay
	13	1	13	Vientiane Prov.
	15	1	15	Vientiane Pref.
English language	3	68	204	Hoei Ngang
GIS, GPS, Mapinfo (PCU)	6	15	90	Vientiane
CD ROM computer (PCU)	1	3	3	Vientiane
Map Drawing (PCU)	1	26	26	Vientiane
PPCU Strengthening	7	2	14	Savannakhet
	7	2	14	Bolikhamsay
	7	2	14	Vientiane Prov.
	7	2	14	Vientiane Pref.
PPCU finance & contracts	3	2	6	Savannakhet
	3	2	6	Bolikhamsay
	3	2	6	Vientiane Prov.
	3	2	6	Vientiane Pref.
PCU Strengthening	15	2	<u>30</u>	Vientiane
			2,100	

Training Program January to June 1997

Training topic	No. trainees	No. days	Man days	Location
Nursery Methods	16	3	48	Bolikhamsay
(PPCU, clients)	15	3	45	Vientiane Prov.
Environment Monitoring (PPCU)	4	1	4	Vientiane Prov.
	4	1	4	Vientiane Pref.
	4	2	8	Bolikhamsay
	4	2	8	Savannakhet
Env. Data Analysis (PCU)	5	1	5	Vientiane
Permanent Sample Plots (PCU)	6	3	18	Vientiane
Permanent Sample Plots (PPCU)	5	3	15	Bolikhamsay
	9	3	27	Vientiane Prov.
	7	2	14	Vientiane Pref.
	9	3	27	Savannakhet
English (PCU, PPCU)	2	70	<u>140</u>	Hoei Ngang
			363	

Training Program July to December 1997

Training topic	No. trainees	No. days	Man days	Location
Investment seminar	60	2	120	Saravan
(PPCU, clients)	70	2	140	Champasak
PSP Data Calculation (PCU)	10	1	10	Vientiane
Environment Data collection (PCU)	5	1	5	Vientiane
Plantation & Nursery (PPCU, APB, PAFO)	5	13	65	Saravan
STP (PPCU, APB, PAFO)	5	13	65	Saravan
ADB Project Finance (PCU)	2	3	6	Vientiane
Management Information (PCU)	1	20	20	France, CIRAD
National Forest Policy (PCU)	1	39	39	Sweden, Sida
Forest Management (PCU)	1	21	21	Sweden, Sida
Environmental Mitigation (PCU)	7	1	7	Vientiane
Environmental Analysis (PCU)	5	1	5	Vientiane
World Food Day Display (PCU, PPCU)	14	1	14	Bolikhamsay
English (PCU)	1	47	<u>47</u>	Hoei Ngang
			559	

Training Program January to March 1998

Training topic	No. trainees	No. days	Man days	Location
Plantation & Nursery (PPCU, clients)	12	5	60	Champasak
STP (PPCU)	10	5	50	Saravan
Environmental training (PCU)	5	1	5	Vientiane
Calculating PSP data (PCU)	7	1	7	Vientiane
Plantation IRR (PCU)	3	1	3	Vientiane
Seed Stand Thinning (PCU)	10	3	30	Vientiane Pref.
			155	

CONSULTANT'S EXPENDITURES**Local Expenses**

The report for international and local expenditure by the consultancy specialists of the project is in the two tables below. These expenditure reports cover the implementation specialists expenditure only and does not include expenditure made by the consultant's home office. The expenditure to the end of the long term phase ending on 28 February 1998 follows:

Local out of Pocket Expenses (US\$)

Item	Total Budget	Total Spent	Budget balance
Per Diem (field)	39,801	24,651.59	15,149.41
Per Diem (Vientiane)	10,968	5,688.00	5,280.00
DSA	13,306	5,203.14	8,102.86
Domestic air Travel	7,910	777.96	7,132.04
Transport	17,643	8,071.01	9,571.99
Communication	9,898	6,675.41	3,222.59
Housing	38,989	32,153.63	6,835.37
Local support staff	27,852	19,262.76	8,589.24
Office supply	<u>5,946</u>	<u>1,515.94</u>	<u>4,430.06</u>
	172,313	103,999.44	68,313.56

International out of Pocket Expenses (US\$)

Item	Total Budget	Total Spent	Budget balance
International Travel	38,825	19,066.24	19,758.76
Miscellaneous Travel Exp.	3,909	4,287.77	(378.77)
Per Diem out of Lao	2,798	2,200.00	598.00
Communications	5,108	593.49	4,514.51
Reproduction reports	9,835	2,914.31	6,920.69
Miscellaneous	<u>1,095</u>	<u>92.38</u>	<u>1,002.62</u>
	61,570	29,154.19	32,415.81

SEEDLINGS DISTRIBUTED TO CREDIT CLIENTS

Province & Nursery	Species	Provenance	No. Seedlings
Vientiane Pref. (Soukprasuth Nsy.) (Khanthaly Nsy.)	E. camaldulensis	Laura River	223,244 <u>70,000</u> 293,244
Vientiane Prov. (Keo Udom Nsy.) (Army Nsy.)	E. camaldulensis	Laura River	50,000 <u>161,636</u> 211,636
Bolikhamsay (Enterprise #3 Nsy.) (Muang Mai Nsy.) (Hua Hee Nsy.) (Kamphoun Nsy.) (Sai Samon Nsy.)	E. tereticornis	Mitchell River	42,750 89,725 13,600 159,471 <u>24,050</u> 329,596
Savannakhet (Km 4 Nsy) (Sod Nsy) (BAF Co. Nsy.)	E. camaldulensis	Laura River	50,000 200,000 <u>237,132</u> 487,132
Total			1,321,608

SEEDLINGS DISTRIBUTED TO PBPs & PFPs

Province & Nursery	Species	Provenance	No. Seedlings
1995			
Vientiane Pref.	E. camaldulensis	Morehead	}
Vientiane Prov		Petford	
Bolikhamsay		Katherine	
(Nam Souang Nsy)	A. mangium	Mata PNG	<u>18,524</u>
			86,248
Savannakhet	E. camaldulensis	Katherine	}
(Km 4 Nsy.)	A. mangium	Mata PNG	
			<u>36,257</u>
			<u>36,257</u>
Total seedlings for 1995			122,505
1996			
Vientiane Pref.	E. tereticornis	Holms Creek	2,500
(Nam Souang)	E. camaldulensis	Petford	49,430
	A. mangium	Kapal Village	5,400
	Poinciana regia	Lao	1,000
	Anthocephalus indicus	Lao	<u>833</u>
			59,163
Vientiane Prov.	E. camaldulensis	Petford	39,370
(Phon Savat)	A. mangium	Upper Aramia	1,000
	A. mangium	Kapal Village	2,240
	A. chinensis	Lao	1,083
(Nam Souang)	E. camaldulensis	Petford	55,917
	Poincephalus indicus	Lao	<u>340</u>
			99,950
Bolikhamsay	E. tereticornis	Holms Creek	2,000
(Na Euang)	E. tereticornis	Laura River	2,000
	E. tereticornis	Mitchell River	2,000
	E. tereticornis	Kennedy River	2,000
	E. camaldulensis	Petford	57,000
	E. camaldulensis	Katherine R.	5,216
	E. camaldulensis	Wrotham Pk.	2,000
	A. mangium	Kapal Village	7,149
	A. mangium	Upper Aramia	8,000
	Alstonia scholaris	Lao	<u>1,100</u>
			88,465
Savannakhet	E. tereticornis	Katherine	30,000
(BAF Co.)	E. tereticornis	Kennedy River	21,866
	E. camaldulensis	Petford	120,000
	A. mangium	Kapal Village	8,540
	Alstonia scholaris	Lao	<u>1,200</u>
			<u>181,606</u>
Total seedlings for 1996			429,184

Province & Nursery	Species	Provenance	No. Seedlings
1997			
Vientiane Prov (Ban Bua Nsy)	E. tereticornis	Laura River	98,050
	Cassia fistula	Lao	500
	Relomix regia	Lao	<u>500</u>
			99,050
Vientiane Pref. (Ban Bua Nsy)	E. tereticornis	Laura River	216,450
	A. mangium	Upper Aramea	5,550
	Cassia fistula	Lao	500
	Relomix regia	Lao	<u>500</u>
			223,000
Bolikhamsay (Enterprise #3 Nsy)	E. tereticornis	Mitchell River	61,050
	E. tereticornis	Kennedy River	48,606
	A. mangium	Upper Aramia	9,350
	A. ariculiformis	PNG	9,250
	Cassia fistula	Lao	300
	Relomix regia	Lao	100
	Calliandra calothyrsus	Retalhuleu ex Bali }	
	Gliricidia sepium	115690 }	<u>6,666</u>
			135,322
Savannakhet (BAF Co.)	E. tereticornis	Kennedy River	204,722
	A. mangium	Kapal Village	11,472
	A. ariculiformis	PNG	9,250
	Calliandra calothyrsus	Retalhuleu ex Bali	1,481
	Leucaena sp.	Australia	1,481
	Gliricidia sepium	115690	1,482
	Anthocephalus indicus	Lao	<u>1,222</u>
			231,110
Total seedlings for 1997			688,482
Grand total seedlings for Part B			1,240,171