



DEPARTMENT OF FORESTRY

Feasibility Study Report
on treatment of exhausted natural forest
and production forest establishment project
in Da Teh District, Lam Dong Province

Book 8-3: F/S Lam Dong

THE DEVELOPMENT STUDY ON CAPACITY BUILDING
FOR PREPARING FEASIBILITY STUDIES AND IMPLEMENTATION PLANS
FOR AFFORESTATION PROJECTS IN THE SOCIALIST REPUBLIC OF VIETNAM
---FICAB---

Preface

“Feasibility Study Report on Treatment of Exhausted Natural Forest and Production Forest Establishment Project in Da Teh District, Lam Dong Province (Book 8-3:FS Lam Dong)” is part of the training package prepared under the development study on capacity building for preparing feasibility studies (F/S) and implementation plans (IP) for afforestation projects in the Socialist Republic of Vietnam (hereafter referred to as “FICAB”).

The immediate objective of FICAB is to strengthen capacities for the preparation of afforestation projects through practical On-the-Job-Training (OJT), seminars, and workshops. Five provinces have been selected as targeted provinces for FICAB (Thai Nguyen, Son La, Quang Nam, Lam Dong, and Long An Provinces).

FICAB was divided into two phases. Phase I was to prepare Model F/S and IP as well as other training materials in Thai Nguyen, a Core Province (CoP). The second phase was to implement technical training for staff members of four other provinces as Participating Provinces (PPs), i.e. Son La, Quang Nam, Lam Dong, and Long An Provinces. The training was implemented using Model F/S, IP and other training materials.

Through conducting FICAB, four forms of output are to be generated. The first is an enhanced capacity for MARD personnel. Selected staff members of MARD develop administrative and coordination capacity for supervising the quality of F/S and IP. The second is an enhanced capacity for CoP and PPs personnel. Selected staff members of CoP and PPs enhance the capacity for preparing F/Ss and IPs. The third is the development of a monitoring and evaluation method for the technical training for preparation of F/S and IP. The fourth is the development of a training package for conducting the technical training for preparing F/S and IP for afforestation projects.

The training package is prepared as one of the four above forms of output of the FICAB. The entire training package comprises the following nine (9) books:

Book 1: Training plan

Book 2: Manual for preparation of feasibility study reports for production forest / agroforestry development projects in Vietnam

Book 3: Manual for preparation of implementation plans for production forest / agroforestry development projects in Vietnam

Book 4: Model F/S of Thai Nguyen Province

Book 5: Model IP of Thai Nguyen Province

Book 6: Monitoring and evaluation report on technical training of PPs

Book 7: Market trend reference book on wood-based and agroforestry products

Book 8: F/S reports of Son La, Quang Nam, Lam Dong, and Long An Provinces

Book 9: IPs of Son La, Quang Nam, Lam Dong, and Long An Provinces

‘Book 8-3’ was prepared by the Provincial Study Team of Lam Dong Province under the guidance of local consultant engineers.

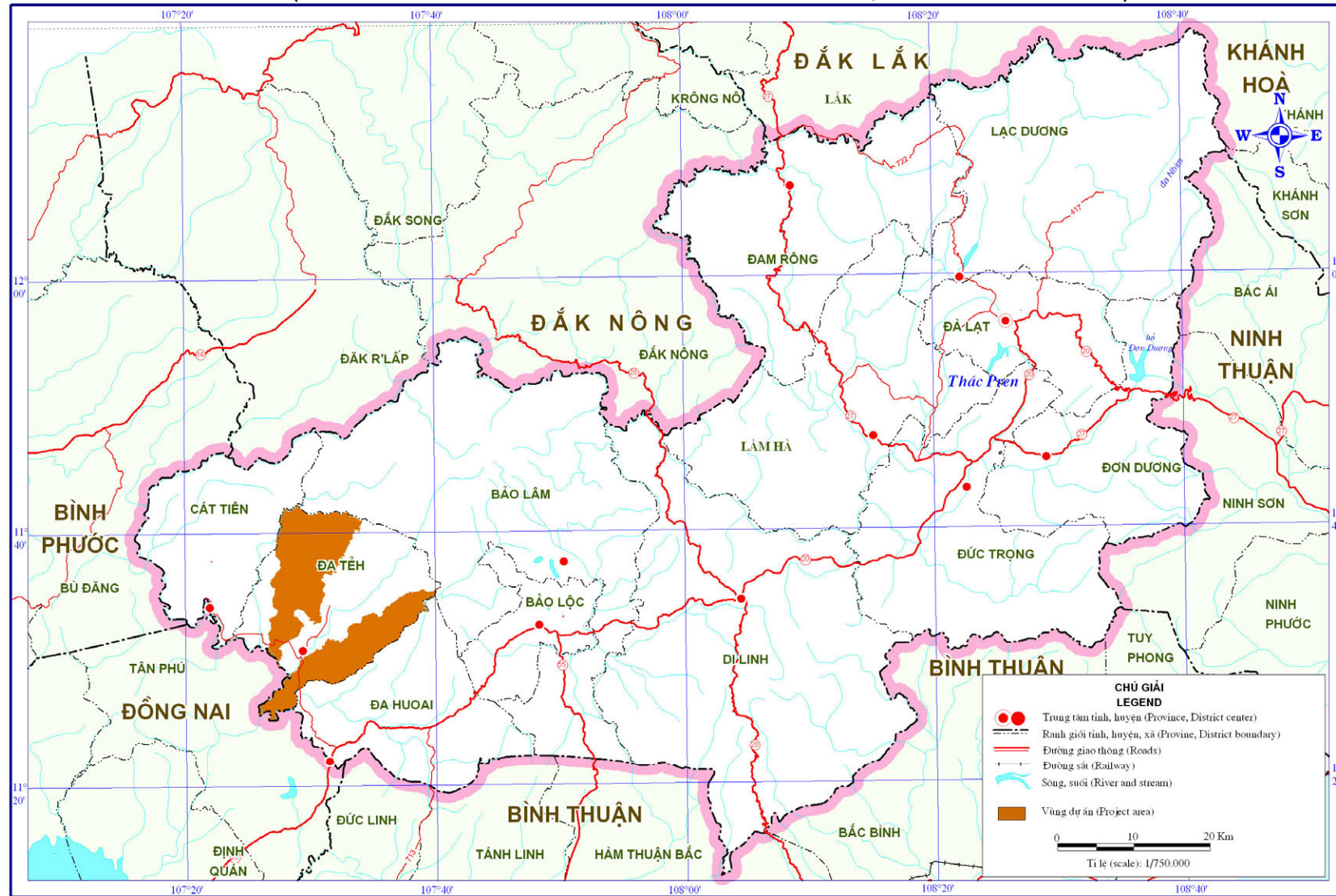
Bản đồ:

VỊ TRÍ TỈNH LÂM ĐỒNG (LOCATION OF LAM DONG PROVINCE)



Bản đồ 2:

(THE PROPOSED PROJECT AREA IN DA TEH DISTRICT, LAM DONG PROVINCE)



Bản đồ 3:

BỐN XÃ ĐỀ XUẤT CHO VÙNG DỰ ÁN

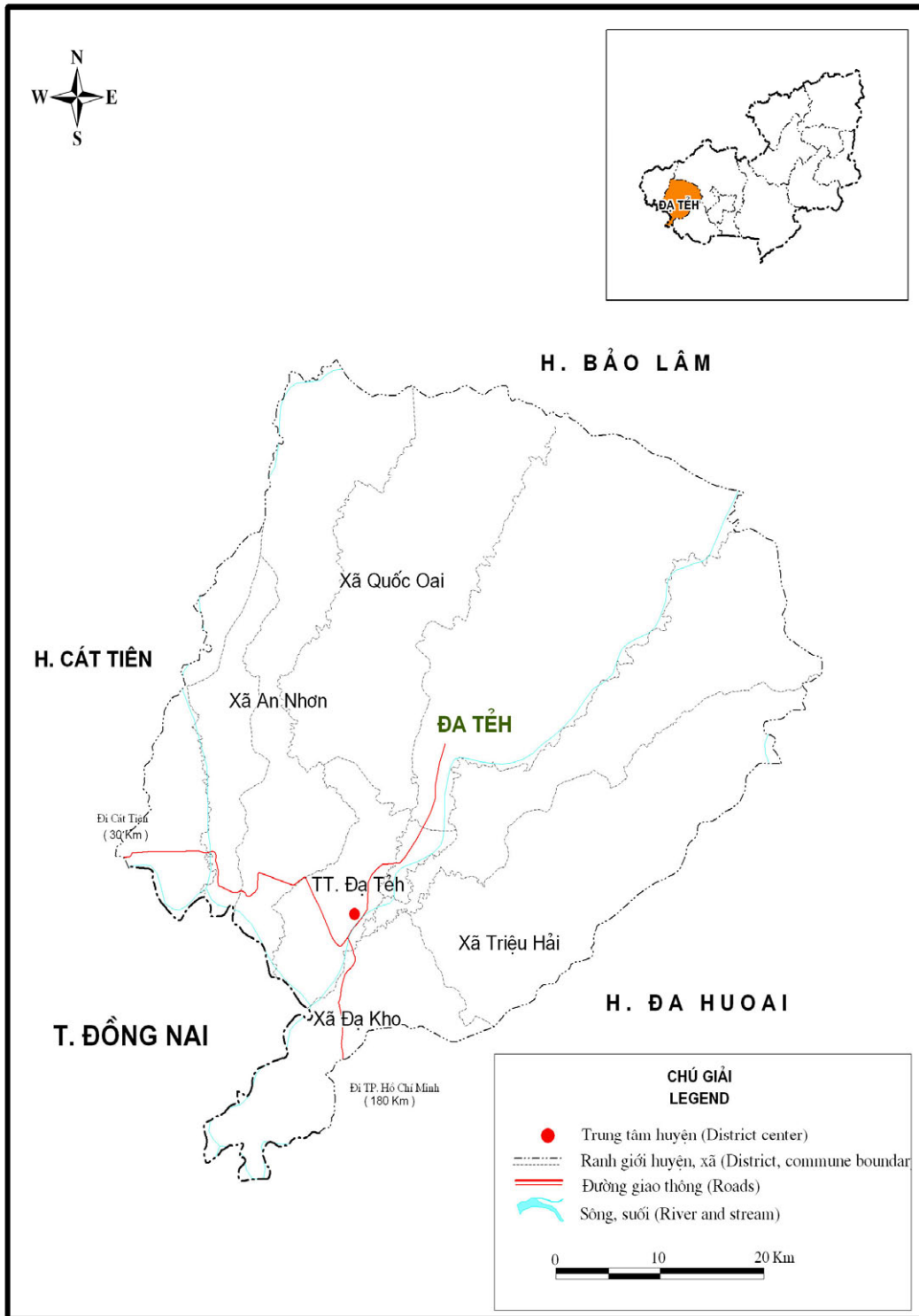


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Abbreviations and acronyms

DARD	Department of Agriculture – Rural Development
CPC	Commune People’s Committee
DPC	District People’s Committee
DoF	Department of Forestry
GOV	Government of VietMan
HH	Household
MARD	Ministry of Agriculture – Rural Development
PA	Project Area
PC	People’s Committee
PIU	Project Implementation Unit
PMB	Project Management Board
PPC	Province People’s Committee
PZ	Project Zone
SARD	Section of Agriculture – Rural Development
Sub-DoF	Sub-Department of Forestry
JICA	Japan International Cooperation Agency
BPV	Benefit of Present Value
CPV	Cost of Present Value
NPV	Net Present Value
IRR	Internal Rate of Return
FIPI	Forest Inventory and Planning Institute
B/C ratio	Benefits and Costs Ratio

Summary

Part I Project Background

Chapter 1 Project formulation context

The forestry of Vietnam contributes to improvement of ecological environment and development of economy. In the orientation of national forestry development, the GOV pays attention to development of forest, focusing on setting up the timber material zone, in order to reduce pressure of exploitation of natural forests and to intensify harvest of plantations and the GOV encourages enterprises, farmers to participate production forest development. The establishment of timber material zone is a forestry development objective of Lam Dong province. This zone is dynamic area in attraction of investment for production forest development and natural condition is suitable for managing plantation, and located advantageous area for supplying timber to markets. The project, which aims to treatment of poor natural forest and to develop new economic plantation is fit the development orientation of Lam Dong province.

Chapter 2 Legislation background of the project

The legislation background of the project is based on related documents and decisions such as Law for Protection and Development of forest, Law for Business and Decree No.200: Arrangement and Renovation of SFE, Decision No. 38/2005/QĐ-BNN: Cost norms for afforestation, protection of forest and so on.

Chapter 3 Natural and socio-economic conditions of the project area

The project area is Da Teh district and size of area is 52,000 ha. The project zone is a part of four communes: Quoc Oai, An Nhon, Trieu Hai and Da Kho. The size of project zone is 2,463 ha. The project zone is in the southwest of Da Teh district and 180 km from Da Lat city. The population of the project zone is 15,000 persons and 3,000 households. There are 11 ethnic groups, Kinh accounts about 75%. The average income of a household per year is 22 million VND. Agriculture production plays a vital role in the economic structure of Da Teh district, total value of agriculture production in the district is 235 billion VND or 46% of the total. Forestry production value is 26 billion VND or 5% of total of the district.

Chapter 4 Status of land use and forest resource use

The project zone is managed by Da Teh forest enterprise and red book is issued. Among 2,463 ha of the project zone, 2,022 ha is natural forest, 365 ha is plantation forests. Total timber stock in the project zone is 88,000 m³.

Chapter 5 Markets and sales

Together with development of the society, the demand of wood materials and wood products in the country has been increased. Lam Dong province is advantageous in supply wood materials from natural forest and plantation. However, the forestry sector of the province is not well developed comparing to adjacent provinces. Quantity and value of wood products in Lam Dong from 2001 to 2005 is as follows: as for round wood, total quantity is 276,000 m³ and value is 469.7 billion VND. As for pulp wood, total quantity is 94,000 m³ and value is 35.8 billion VND.

Chapter 6 Lessons learnt from other afforestation project

i) The cooperation among stakeholders should be set up on the basis of existing laws and regulations to ensure benefits sharing. ii) In order to achieve good results, project objectives should clearly be specified at the beginning of project based on the real sources and the trend of the market. iii) Information collection, survey and analysis should be implemented seriously.

Chapter 7 Opportunity and challenge

There are following opportunities and challenges: i) the project zone is managed by Da Teh forest enterprise and the enterprise has the right to decide land use issues, ii) the project zone is close to many potential markets, iii) natural conditions of the project zone suit production forest, iv) the enterprise has experiences for production forest, v) current credit loan for afforestation is not advantageous.

Part II Project Contents

Chapter 1 Rationale for project formulation

With the trend of environment protection globally, the exploitation and export of timber from natural forests are limited. The GOV has measures to encourage enterprises increasing investment to establish raw material zones linking to processing enterprises. The project area has been under the pressure of emigrants from the Northern provinces. They exploited timber from the natural forests, in a short time, the area became exhausted forests. The question is to rehabilitate and develop forest, by means of replacing the exhausted natural forests to plantation with high economic value, and to create jobs for local people and raise awareness among the communities in forest protection. These are good reason for establishment of this project to contribute to stabilizing people's life, protection and development of forest.

Chapter 2 Project objectives

Overall objectives are as follows: i) achievement of sustainable and reasonable forest development, ii) facilitation of investment iii) improvement of community life and iv) improvement of natural environment. Immediate objective is to improve exhausted natural forests by establishing new economic A.hybrid plantation.

Chapter 3 Project activities

Various project activities are grouped into two components such as Production Forest Development component, Support for Production Forest Development component.

Total area of the planting site is 1.406,7 ha. Planting is implemented during seven years from 2008 to 2014. Tending and protection is started on first planning year and is continued up to the year harvesting. And harvesting is conducted in eighth year after planting. Harvesting volume is estimated 70% of the standing volume. During seven years from 2015 to 2021, harvesting volume is estimated about 212,000m³. As infrastructure, 24km forest road is planed to open and 51 fire watch-towers are also planed.

Chapter 4 Potential market

Transport system of Lam Dong province is advantageous which creates good opportunity for accessing to potential markets in HCM city, and Dong Nai, Sai Gon and Binh Duong provinces.

Chapter 5 Project cost

Total baseline cost during assistance period is 47.8 billion VND including 40.5 billion VND of direct cost such as labor and material cost and 7.0 billion VND of indirect cost such as managing cost. Besides these cost, physical and price contingency is 2.4 and 29.7 billion VND respectively.

Chapter 6 Financial plan

Project cost is covered by two financing source, one is loan of Lam Dong province agriculture bank and the other is self fund of Da Teh forest enterprise. Da Teh forest enterprise cover 76% of total project cost which is 60.8 billion VND. Loan from the agriculture bank is 24% of total project cost which is 19.2 billion VND.

Chapter 7 Organization for project management and implementation

Da Teh forest enterprise is investment holder and implementer of the project. Da Teh forest enterprise has functional sections such as board of directors, personnel and administrative section, economic section and so on. These sections conduct respective activities related to establishing production forest. As related organizations, Lam Dong PPC, DARD/Sub-DoF, DaTeh DPC and so on, are listed up and explained their roles and responsibilities.

Chapter 8 Labor requirement and solution for labor mobilization

It is possible to mobilize labor from households involving in the project for meet annual labor demand during the project cycle. Da Teh forest enterprise coordinates with local authority to disseminate information to farmers in order for farmers to participate in afforestation activities. Training is implemented as follow: i) training of enterprise's staff on technical measures, ii) training farmers by the form of "learning by doing"

Chapter 9 Monitoring and Evaluation (M&E)

M&E will base on the identified indicators of the project. Identified indicators for M&E consist of afforested area, quality of plantation, result of tending and protection, harvesting volume, living conditions of households. M&E is implemented annually to know the results of project implementation and M&E groups consist of participants from DARD, Sub-DoF, Agriculture Bank and so on.

Chapter 10 Evaluation of the sustainability of the project

Technical measures for afforestation applied in the project are based on the technical regulations which are approved by DARD. The productivity of plantation is calculated base on real productivity obtained in existing plantations. The selection of planting sites is considered suitability of natural conditions.

Part III Project Effectiveness

Chapter 1 Economic effectiveness

1.1 Financial analysis

The project will develop production forests with A. hybrid with a cycle of eighth years. The financial analysis was conducted on total investment point of view for DaTeh forest enterprise. The net benefits arising from the without-project case are expected to be marginal and the only with-project case is considered for the analysis.

The results of the analysis shows that the production forests with A.hybrid are viable as the financial internal rates of return (FIRR) show 18%and BC ratio show 1.3 in the base cases. The conclusion suggested by the analysis that Acacia plantations are viable is confirmed through the enterprise's experience which was gained from past plantation of their own.

1.2 Economic analysis

The economic analysis of the project shows that the Net Present Value (NPV) is calculated at VND 3.9 billion (at the economic discount rate of 10%) and the Economic Internal Rate of Return (EIRR) is at 14%. The results confirm the feasibility of the project from a view point of the society.

Chapter 2 Evaluation of environmental impacts

Chemicals to kill termite and clear cut of vegetation for planting may cause negative impacts on environment. As these negative impacts are just limited and short term impacts, it will be overcome. Because the conversion of exhausted natural forests of low productivity to new high productivity acacia plantation give bigger positive impacts on environment.

Chapter 3 Evaluation of social impacts

Through implementation of the project, following social impacts is expected: i) Local people have more jobs and have more income, their life is improved, and the pressure on forests is reduced, ii) The awareness of the community in forest protection is improved, iii) Knowledge of the technical staff of the enterprise is improved.

Chapter 4 Project risks

Risks that the project may meet are listed as follows: i) Unstable government policy and loan condition, ii) Unstable market condition such as price and demand fluctuation and iii) natural disasters, pests and diseases, and forest fire.

Part IV Conclusions and Recommendations

Chapter 1 Conclusions

The financial analysis indicates that the investments are viable. The project is expected to contribute to improve the exhausted natural forest and increase its production values. In addition, conversion the exhausted poor natural forests to high productive A.hybrid plantation can contribute to soil improvement, increase of forest coverage, protection of soil erosion and water conservation. The success of the project will be a good model for implementation of production forest development in Lam Dong province.

Chapter 2 Recommendations

It is proposed that the competence authority appraise and approve the project as soon as possible for implementation. As for bank loan, loan condition should be stabilized and loan disbursement should also be sufficiently and timely to ensure production as planned. It is also proposed that local government pays attention to the project for smooth implementation as planned.

Introduction

Rehabilitation and development of forests in the Central High Land, limiting the exploitation of natural forests and concentrating on afforestation for timber materials, linking to harvesting and processing of forest products removed from plantation. This is a good orientation for the improvement of the Central High Land people's life who are living near forest and still meet with difficulties and the ecological environment need to be improved as forest is heavily invaded and degraded as the time being.

On this basic, within the framework of the RESEARCH PROJECT ON STRENGTHENING CAPACITY BUILDING OF FEASIBILITY STUDY AND IMPLEMENTATION PLAN OF AFFORESTATION PROJECT in Vietnam organized by JICA and MARD. Lam Dong province formulates *"Feasibility Study Report on the Treatment of Exhausted Forest to grow Production Forests in Da Teh enterprise, Lam Dong province"*

In the process of formulating the Feasibility Study Report (F/S), Lam Dong province study team (ST) supported by JICA on project preparation steps, pre-site assessment, field survey, implementation of community consultancy, setting up production plans, financial and economic analysis and project evaluation and completing the report.

According to project implementation plan, more than 1,000 ha of exhausted forest will be improved by growing new forest of high economic values which will contribute to the improvement of community's life of 04 communes Manely Quoc Oai, An Nhon, Trieu Hai, and Da Kho - Da Teh district. When the project starts its activities every year 350 local labors in average will be attracted to the project activities. Local farmers have chance to share benefits and step by step their awareness of forest protection is improved, limits the illegal forest exploitation. Farmers through training and extension services they will have skill for afforestation.

The formulation of the project fitting the Project of Renovation of State Forest Enterprises by the GOV Decree No. 200. Create opportunity for Da Teh enterprise to actively manage their forests the Project of Renovation of State Forest Enterprises.

The formulation and implementation of the project will bring about changes in socio-economy in the project area (PA) that it to improve life of the communities, environment, values of forestland use and step by step improving the awareness of communities on forest management and protection, limiting illegal forest exploitation. Such things greatly contribute to the sustainable development of socio-economic and environmental conditions in the project area.

PART I PROJECT BACKGROUND

1 Project formulation context

The project of treatment of exhausted forests to grow new production forests in Da Teh enterprise, Da Teh district, Lam Dong province is formulated in the context of Forestry at national and Lam Dong province level on the basis of accessing to forestry development targets.

1.1 Context of project formulation at national level

Integration for economic development in the region and the world, in the recent decade, Vietnam achieved significant level of economic growth. In which, the forestry of Vietnam with the management activities, protection, development and utilization of forest contributed significantly to the improvement of ecological environment linking to poverty alleviation and national security as well as conservation of bio-diversity.

However, to protect 12.6 million ha of existing forest, repair the degradation of forest to increase to forest coverage of the country up to 43%. In the orientation of national forestry development as of 2010, the GOV pays great attention to the development and establishment of forest, focusing on setting up the raw material area, reducing pressure of exploitation of timber from natural forests annually, implementation of close natural forest and intensifying harvest plantation forests

Besides, improving economic effectiveness of forest and forest profession, on the basis of sustainable forest management via the re-arrangement of enterprises to develop and utilize forest in a reasonable manner.

Consequently, Da Teh enterprise formulates the project with the status of a holder managing economic afforestation with the participation of the community, which suits the Decision No. 28 of the Political Bureau on the continuation of arrangement, renovation of State Farms (SF) and State Forest Enterprises (SFE) and Decree No. 200/2004/NĐ-CP dated 3-12-2004 of the GOV on the arrangement and renovation of SFE. From central planning forestry management to social forestry with the participation of many economic sectors.

The selection of poor forests for improvement by growing new ones with high economic value fits to Decision No.186/2006/QĐ-TTg; which meets 1 of 7 programmes of forest development as of 2010 that is *“improving forest value, using materials from plantation forest instead of the natural forest materials”*

1.2 Context of project situation in Lam Dong province and Da Teh district

The establishment of a timber material zone by growing short term species in Da Teh district is also one of 4 forestry development objectives of Lam Dong province as of 2010. This is to push up afforestation, in connection to speeding up natural regeneration and protection of forest, reasonable harvest as planned and closely linking the timber material zone with the processing industry.

Fitting to the Project of *“Protection, rehabilitation and development of forests of the Central High Land period 2005-2015”* of MARD. In which the Project shows the task of improvement and increasing quality of poor natural forest areas.

In the recent years Vietnam has to import pulp (500 - 600 million USD each year) while Vietnam has lands, labor techniques ... but cannot meet the demand for materials for paper production. To have enough materials the GOV encourages forest owners, enterprises, farmers practicing production afforestation for materials.

Da Teh is 1 of 3 districts locating the south of pulp material zone of Lam Dong province. This area is dynamic in attraction of investment from outside for economic afforestation and natural conditions suitable to economic tree species of short term management, advantageous in supply timber processing mills with material in Ho Chi Minh city and Dong Nai province. The establishment of the timber material zone in this area also contributes to the improvement of people's life and socio-economic development in the PA.

So, the project of treatment of poor natural forest to grow economic forests in Da Teh enterprise, Da Teh district, Lam Dong province is necessary and fitting the policy of GOV as well as the development orientation of Lam Dong province and contributes to meet the demand of timber within and without the province. If the project succeeds which will contribute to the pushing up the timber processing industry in Lam Dong in particular and south-eastern provinces in general while helps local people of Da Teh district improve their life, speed up the socio-economic development in the PA.

2 Legislation background of the project

2.1 Legislation background for project formulation

The project is formulated fitting the advocate of the government from national to local levels. The legislation background for the formulation of the project are based on related Documents and Decisions as follow:

- 1/ Law for Protection and Development of forest - 2004;
- 2/ Law for Business
- 3/ Decree No. 200/2004/NĐ-CP, 03 / 12 / 2004 GOV on Arrangement and Renovation of SFE;
- 4/ Decision No. 296/2005/QĐ-TTg, 14/11/2005 of the Prime Minister on the approval of Project of Arrangement and Renovation of SFE under Lam Dong PPC
- 5/ Decision No. 1557/QĐ-TTg, 07/12/2001 of the Prime Minister on the approval Land Use Planning of Lam Dong province period 2000-2010;
- 6/ Decision No. 1970/QĐ/BNN-KL, 6/7/2006 of Minister of MARD on Announcement of national forest resource status 2005;
- 7/ Letter No. 2871/UBND, 24/5/2006 of UBND Lam Dong PPC on the orientation of development of 3 forest categories
- 8/ Decision No. 186/2006/QĐ-TTg, 14/8/2006 of the Prime Minister on the Promulgation of Forest Management Regulations
- 9/ Decision of MARD Promulgation of key species for afforestation in 9 ecological zones, Forestry Varieties certificated for production and use.
- 10/ Circulation No. 99/2006/TTg.-BNN, 6/11/2006 of MARD on Guidance for the implementation of Decision No. 186/2006/QĐ-TTg, 14/8/2006;
- 11/ Decree No. 16/2005/NĐ-CP, 7/2/2005 GOV on the Management of Investment Project

2.2 Legislation background for the application for calculation in the project

- 1/ Decision No. 38/2005/QĐ-BNN, 06/07/2005 - MARD on cost norms (TEO) for afforestation, protection of forests
- 2/ Decision No. 68/2006/QĐ-UBND, 10/11/2006-Lam Dong PPC on the approval of cost norms for silviculture work using tree species for afforestation in Lam Dong province;
- 3/ Decision No. 69/2006/QĐ-UBND, 17/11/2006, Lam Dong PPC on unit price for silviculture work, Lam Dong province;
- 4/ Decision No. 1519/QĐ/NN-PTNT, 13/12/1997, Lam Dong DARD on Nursery techniques for Acacia applied within the province;
- 5/ Decision No. 06/2005/QĐ-BNN, 24/01/2005 – MARD quality checking of natural regeneration, protection of natural forests.

3 Natural and socio-economic conditions of the project area

3.1 Natural conditions

3.1.1 Geographical location

The Project Area: The PA in this report means Da Teh district, Lam Dong province. Total natural area of the PA is 52,419 ha.

The Project Zone: The project zone in this report is part of area in the PA (Da Teh district) which is selected to implement the production afforestation project within the territory of Da Teh enterprise, Da Teh district locating in the southwest Lam Dong province. The project zone has a natural land area of 2,463 ha, in the territory of 4 communes: Quoc Oai, An Nhon, Trieu Hai and Da Kho.

Table 1.1 Geographical coordinates of Da Teh district and Lam Dong province

Description	Lam Dong province	Da Teh district
North Latitude	11 ⁰ 12'47'' - 12 ⁰ 19'01''	11 ⁰ 25'00'' - 11 ⁰ 42'30''
East Longitude	107 ⁰ 16'23'' - 108 ⁰ 42'11''	107 ⁰ 24'06'' - 107 ⁰ 38'41''

The project area scale and Lam Dong province is described in the table below:

Table 1.2 The project area scale in Lam Dong province and adjunct provinces

Description	Lam Dong province	Da Teh district
North: bordered to	Dak Lak and Dak Nong Provinces	Bao Lam District, Lam Dong province
South: bordered to	Binh Thuan Province	Dong Nai Province
East: bordered to	Ninh Thuan and Khanh Hoa Provinces	Da Huoi District, Lam Dong province
West: bordered to	Dong Nai and Binh Phuoc Provinces	Cat Tien District, Lam Dong province
Other description	350 km from HCM city to the north, on national road No. 20.	The district center is 180 km away from Da Lat city to the southwest.

(See also the Map)

Da Teh district has an advantageous position, bordering to Dong Nai, a province having many industrial parks, particularly mills that produce man-made board, pulp as well as important timber processing companies in the province as Da Huoi, Bao Lam. In addition the road system connecting to key economic zones to the south as HCM city and the eastern provinces, which helps the exchange of products, socio-economic development in Da Teh district.

Table 1.3 Area of project zone and PA in the context of Lam Dong province

Item	Area (ha)		
	Lam Dong province	Project Area (Da Teh district)	Project Zone (Da Teh enterprise)
Total natural land area	976.479	52.419	2.463
Forestry land	649.714	30.940	2.386,3
Forested land	624.319	30.762	2.386,3
Open land	25.395	178	0
Others	326.765	21.479	76,7

3.1.2 Topographical characteristics

(1) Da Teh district is located in the transitional zone of the highland to the south-eastern. The topography is inclining down to the Dong Nai River.

(2) The project zone is in the southwest of Da Teh district, with low mountains and hills alternated by narrow valleys at the elevation of about 300m, average inclination of 15^0 .

3.1.3 Land characteristics

(1) Soil:

As shown by field survey findings, soils in this area are developed mainly on mother rocks as: (i) schist stone; (ii) basaltic soil; (iii) sediment developed on old alluvium

(2) Soil characteristics

- Yellow-red developed on schist stone (Fs) - 1,544 ha, or 62.7% of total area in the project zone (PZ) located in most of communes in the district on hilly sites, and low mountains. The soil depth is >100 cm, the texture is mainly sandy and loamy, moist, mixed rock of < 5%, medium compaction and sealing which fit the production afforestation.

- Red-brown developed on basaltic rock (Fk) - 910 ha, or 36,9% of total area of the PZ. Located mainly in the hilly sites and low mountains in communes: Quoc Oai, Trieu Hai, Da Kho. Soil depth is > 100 cm, high fertility which fit the production afforestation.

- Others (old alluvium, river and stream) - 9 ha, or 0.4% of total area of the PZ. Located mainly along the stream and river sides.

Table 1.4 Area of soil types in the PZ

No.	Soil types	Area (ha)	Rate (%)
1	Red-brown developed on basaltic rock (Fk)	910	36.9
2	Yellow-red developed on schist stone (Fs)	1,544	62.7
3	Others (old alluvium, river and stream)	9	0.4
Total Natural Land Area		2.463	100.00

(3) Assessment of potential of forestry land

Assessment of production potential of forestry land is undertaken with support from FIPI. The object to be assessed is forestry land (2,386.3 ha) in the PZ. The production potential of forestry land is assessed via the close relating factors to productivity of plantation forests that are:

- Soil types: Soil type that shows part of its potential fertility and has close relation to productivity of plants. Different soil types have different effects on productivity of plants. In the PZ there are 2 main soil types Fs and Fk.

- Absolute elevation: is an indicator relating to the distribution of plants. In the PZ the 2 popular forms of topography: the one with a symbol (Đ), at 300 m ASL; other with a symbol (N3), at 300 – 700m asl;

- Inclination: it is a factor relating to the fertility, erosion and land use methods. The inclination impacts on afforestation. Here in this PZ there are 3 key inclination levels, Level I: < 16^0 ; level II: > $16 - 25^0$; and level III: $26 - 35^0$ (not much)

- Soil depth: most of soil types in the PZ have the soil depth of >100 cm the symbol for it is a cross bar (-).

- Rainfall: is a climatic factor having important role for ecological requirement of plants. In the PZ the mean rainfall annum is > 2000 mm/year;

- Vegetation: is a factor that shows the potential of land. Vegetation cover in the PZ consists of forested sites (natural forests and *Acacia hybrid*, *Acacia auriculiformis* plantation forests).

On the basic of analysis and assessment factors that relate to the productivity of trees planted on each stand shows that the production potential of forestry land in the PZ consists of 2 suitability levels:

Suitability level I (SI): ĐIF $\bar{s}$ and N3IF $\bar{k}$;

Suitability level II (SII): $\bar{D}IIF\bar{s}$, $\bar{D}IIF\bar{k}$ and $N3IIF\bar{k}$.

Survey findings show that soil types in the PZ have depth $\delta > 100$ cm, the texture is sandy and loamy at the mean elevation of about 300m and mean inclination of 15° , fertile, close to water source.

Table 1.5 Aggregation of area in the PZ by production potential of forestry land

Unit: ha

Commune	S I	S II	Total
Quoc Oai	410,0	199,9	609,9
An Nhon	242,8	54,7	297,5
Trieu Hai		451,0	451,0
Da Kho	118,6	909,3	1.027,9
Total	771,4	1614,9	2386,3

(See also Annex 3 for details)



Fig. 1 Soil profile survey

3.1.4 Climatic characteristics

Da Teh district is in the tropical monsoon:

(1) Temperature: mean - $24,6^\circ\text{C}$, highest mean - $26,4^\circ\text{C}$ (month 2 and month 4), lowest mean - $22,8^\circ\text{C}$ (month 12). In the south of Da Teh district, the temperature is higher than the mountain areas as affected by south-eastern climate and the topographical factor.

(2) Humidity: mean humidity annum - 82%. Lowest - 15% (month 2 and month 3), highest - 88% (month 8), months that have highest humidity - from month 6 to month 9, (rainy months), - $> 86\%$.

(3) Sunshine: plentiful, 6 h/day, highest mean - 8 h/day (month 12), lowest - 5 h/day (month 8). Sunny hours - 2,518.5 in average annum

(4) Wind: prevailing: East wind, Northeast wind, and Southwest wind, velocity - 10-12 m/s. frequency of wind 2% of North wind and Northeast wind with the highest velocity of 21-25 m/s.

(5) Evaporation: average annum is 1,200 mm. The dry months have high evaporation and the max is in month 3 (173.7 mm), in rainy season the average evaporation is 65-70 management/month.

(6) Rain: from month 5 to month 11, dry season from month 12 to month 4. 80% of rainfall is in rainy season; local droughts as no rain for months.

As shown in the map of the General Department of Hydrometeorology, in 1994, Da Teh district had mean rainfall from 2.200 mm – 2.400 mm.

The results of study of hydrometeorology show that climate and weather of Lam Dong province in general and the PZ in particular is good for increment of plants.

1.3.1.5 Hydrology

The system of river/stream in the PA is fairly dense consisting of river/stream pouring water into Dong Nai river. This is a big water source for production and life. But flood always happen in rainy season.

Table 1.6 Characteristics of main streams in Da Teh

Mane	Length (km)	River bed inclination (‰)	Water flow (m ³ /s)	Quantity (10 ⁶ m ³)
1. Da Teh (Da Nhar)	42,5	16,8	19,84	625,67
2. Da Mi	30,5	51,0	4,13	130,24
3. Da Lai	40,0	5,3	6,75	212,86

Source: Irrigation Design Enterprise No. 3

Within Da The area, reservoirs can be built in many places to get water for production in dry season. The ground water in this area is fairly abundant at the depth of 5- 10 m, however water way for timber transport is nor feasible.

3.2 Socio-economic conditions in the PA

The PA locates in 4 communes: Da Kho, Quoc Oai, Trieu Hai and An Nhon thuộc Da Teh district Lam Dong province (180 km from Da Lat city to the south). Below shows the socio-economic situation:

Table 1.7 Basic conditions of 4 communes in the PZ

Content	Da Teh district	4 communes				
		Total	Quoc Oai	An Nhon	Trieu Hai	Da Kho
Area (km ²)	524,19	225,66	85,98	69,08	32,19	38,41
Population	48.164	15.075	3.546	4.052	2.651	4.826
Household (HH)	10.207	3.127	759	831	530	1.007
HH having forestry land		953	154	137	22	640
Ethnic group	11	17	4	5	5	3
Labor	26.032	7.372	1.368	1.772	1.712	2.520
Village		37	7	11	8	11

Source: Da Teh district and Lam Dong province Statistic Year Book 2005

***Note:** poverty criterion: GOV Decision No. 170/2005/QĐ –TTg, 08/ 7/ 2005 on the poverty criterion for period 2006 - 2010

1. Rural area: income of 200.000 Dong/man/month (2.400.000 Dong/man/year) downward
2. Urban area: income of 260.000 Dong/man/month (< 3.120.000 Dong/man/year) downward

3.2.1 Ethnic group, population and labor

(1) Population

- The population of 4 project communes is 15.075 heads and 3.127 HHs or 31,30% of the district (in average each HH has 4.8 heads). The rate of physical population increasing is 0.96 %, density-66.8 head/ km².

- The proportion between males and females is even (males 7,622 or 50.56%). No differentiation between males and females in work particularly in agriculture production.

(2) Ethnic groups

Table 1.8 Minority group comparing to the country, province

Country	Central High Land	Lam Dong	Da Teh district*
- Ethnic group: 54 Manely: Kinh, Thái, Mường, Dao, H'Mông, Khơ Mú, Dáy, Lô Lô, Xê Đăng, Cà Tu, Giẻ Triêng, Raglay, Khùa, Mày, Sách, Rục, Vân Kiều, Chăm, Ê Đê, Ba Na, M'Nông, K'Ho, B'Râu...	- Ethnic group: 44 indigenous and migration - Manely: Kinh, K'Ho, Châu Mạ, Ba na, Ê đê, K'Tu, Giẻ Triêng, Xtriêng, Khơ me, Chăm...and migration as: Hoa, Tày, Nùng, Thái, Dao, Hmông, Sán chay, Sán Diu, Thổ, Chày...	- Ethnic group: 32, original High Land account for 15,1%) - Kinh: 77%, minority: 23%, uneven distribution. - The minority in Lam Dong, K'Ho the indigenous, account for most - 12,98% of the province, then, the Mạ - 3,1%, Hoa - 1,75%, Chu Ru 1,63%, Nùng -1,33%, Tày- 1,03%.	- Ethnic group: 11Manes, numbers of people shown in 1-9 below.

Source: * Statistic Section - Da Teh district PC

There are in Da Teh 11 ethnic groups of indigenous and immigrations from the Northern provinces to set up new economic zones.

Table 1.9 Ethnic group in Da Teh district

No.	Group	Quantity		%	
		HH	Inhabitant	HH	Inhabitant
1	Kinh	7.863	36.950	76,17	76,72
2	K'Ho	6	22	0,06	0,05
3	Châu Mạ	553	2.645	5,62	5,49
4	Tày	933	4.353	9,48	9,04
5	Nùng	780	3.860	7,93	8,01
6	Mường	15	68	0,15	0,14
7	Thái	7	21	0,07	0,04
8	Dao	35	183	0,36	0,38
9	Khmer	13	60	0,13	0,12
10	Vân Kiều	1	1	0,01	0,00
11	Lào	1	1	0,01	0,00
Total		10.207	48.164	100%	100%

Source: Religion and Ethnic Section-Da Teh district

- The Kinh: account for > 70% of total population in the PA, the Kinh community practice as trade, service, state employees, construction...with small rate living in the district center, others live in the rural areas and practicing agriculture as growing paddy rice and cash crops, silk worms and animals ... They have cultivation technique as they know how to do intensive farming, and their life is stable. And few HHs have no stable job so they have to depend on forests, collecting NTFP for income

- The Châu Mạ: the indigenous, practicing shifting cultivation in the past. Since 1990, the GOV launched a movement of settled agriculture so the Chau Ma now settles in 3 hamlets of Con O, Da Nhar and Tổ Lan. However they still have a difficult life, poor HHs mainly concentrates in this location.

- The Tày, Nùng and others: Most of them are illegal immigration from the north to Da Teh district town and communes as An Nhon, Hương Lâm and other communes. They do all kind of job, and growing paddy rice, raising animals are the key activities while they also have off-farm work as forestry work, so their life is fairly stable.

In general the life of Da Teh people is improved significantly but people they still meet with difficulties. Agricultural land is limited, that is why the development of forestry activities is a good

orientation that suits the aspiration of local people and the common development of the society. In recent years, particularly when the land and forest allocation policy to HHs, people get allocated land and forests and they know how to do with their land and forests. By now most of the ethnic groups understand the important benefits taken from forests, particularly afforestation, that is why they actively receive land and forests, participate in afforestation movement launched by Da Teh enterprise.

(3) Labor

Total labors in the PA is 6,372 or 42,27% of total population, the female labors account for 47,93% or 3.054 persons, each HH has 2 labors. Labors distributed by job is shown in 1-10 below

Table 1.10 Labors distributed by job in Da Teh district

Item	Labor	(%)
1. Agriculture, Forestry and Fishery	17.032	71,59
- Agriculture and Forestry	16.911	71,08
- Fishery	121	0,51
2. Industry - Construction	3.101	13,03
3. Trade and Service	3.660	15,38
Total	23.793	100

Source: Statistic Section - Da Teh district, 2005

As shown in table 1-10, labors are agriculture and forestry workers - 71,08% of total. In reality, agriculture labors work mainly in autumn rice crops or 50-60% of time of a year. Da Teh district has abundant unskilled labor source, when they are off-farm they can involve forestry work to earn more income for an improved life.

3.2.2 Household economy

(1) HH's income and structure of income

Like other upland areas of Vietnam, ethnicity is one of factors deciding the HH economy. Survey findings show that, average income of the Kinh is 3.12 times bigger than the Chau Ma's.

On the other hand, location is not a decisive factor to HH's income. Da Kho commune has better geographical location, road system for example, but average income of HHs in the Da Kho commune is not higher, on the contrary, lower than other communes in the PA.

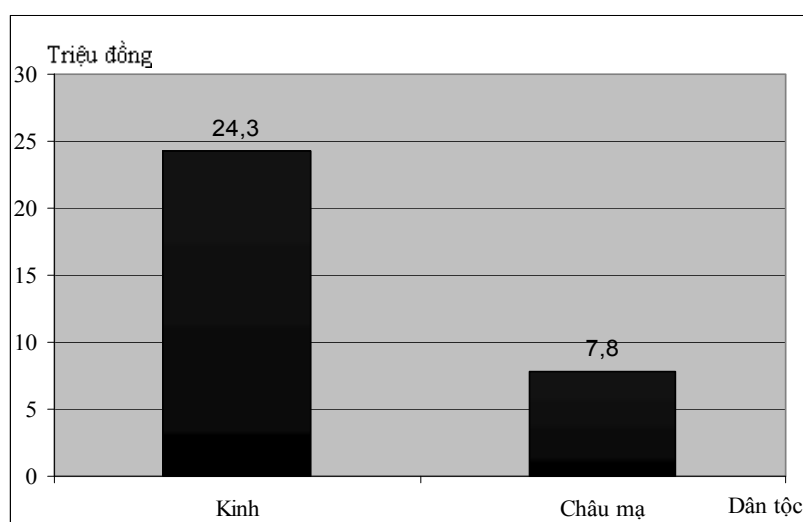


Diagram 1 Income structure by ethnic groups

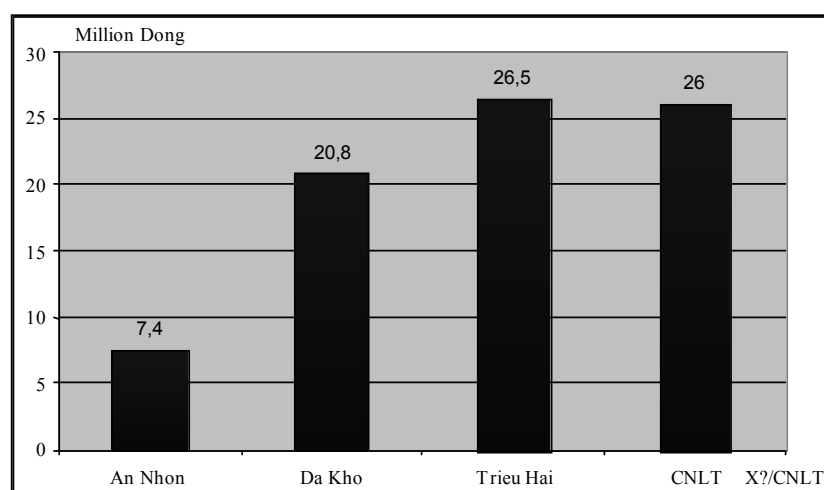


Diagram 2 Income structure by communes

The average income of a HH per year, as shown by survey findings is 21.73 Mil. Dong, from different sources: cultivation – 7.92 Mil. Dong; livestock – 5.44 Mil. Dong; forestry work - 1,01 Mil. Dong and other sources (service, selling labor, salary...) – 7.36 Mil. Dong.

Table 1.11 Average income per year of HHs

No.	Sources	Income/year (Mil. Dong)	%
1	Cultivation	7,92	36,5
2	Livestock	5,44	25,0
3	Forestry	1,01	4,6
4	Others	7,36	33,9
5	Total /year	21,73	100,0

Source: HH survey.

(2) Poverty

Results of socio-economic survey show that the situation of poverty is presented below:

Rich HH:	0%
Better off:	22,81%
Medium:	52,63%
Poor:	24,56%

(3) Other information relating production and life

- House: Good/semi good house: 32,3%; House level IV: 50%; Poor house: 17,7%

Means of transport: motor bike and bike (70% of HH has motor bike)

- Expenditure: (interview) 19.74 Mil. Dong/HH annually, of which: food – 10.54 Mil. Dong or 53,3%, life - 5,86 Mil. Dong or 29.7%, others (education, health, wedding gift, death ceremony...) - 17 % of the total. . (See annex 14 for details of HH economic survey)

Table 1.12 Average expenditure by HH interview (questionnaire)

Item	HH average expenditure per year (1.000.000 Dong)	(%)
Food	10,54	53,3
Life	5,86	29,7
Others	3,35	17,0
Total	19,74	100,0

3.2.3 Key economic activities

(1) Economic structure by sector

In 2005, total value obtained from production of Teh district is 514.701 Mil. Dong, or 3.5% of total income of the province. Food is 29.396,54 ton, or 13,62% of the province. or 480 kg/head, 2.57 times bigger the average of the province.

Table 1.13 Economic structure of the province and the PA

Item	Lam Dong province		Da Teh district	
	Billion Dong	(%)	Billion Dong	(%)
Agriculture, Forestry and Fishery				
- Agriculture	6,939,094	47.15	234,940	45.64
- Forestry	136,538	0.93	25,935	5.05
- Fishery	49,325	0.34	8,061	1.57
Industry + Construction	4,227,575	28.73	107,801	20.94
Services	3,363,844	22.86	137,964	26.80
Total	14,716,376	100	514,701	100

Source: Statistic Year Book Lam Dong province, 2005

(2) Agriculture Production activities

- Agriculture production plays a vital role in the economic structure of Da Teh district, total value of agriculture production in the district in 2005 is 234,940 billion Dong or 45.64% of the total.

- In agriculture production, cultivation accounts for 66.1%. (Paddy rice, perennial crops as maize, cassava, sweet potato, bean and vegetables...), cash crops as sugar cane, tobacco and other as cashew nut, tea, fruit trees and mulberry...

- Cattle: in (2005) buffalo (3.162 heads), cow (8.987), pig (14.916), chicken (136.670), duck, goose, Muscovy duck (25.960)... However the value obtained from livestock is still low.

(3) Forestry Production activities

- According to forest inventory data in 2005 of Da Teh district, total forestry land area of this district is 39,038 ha, of which Da Teh enterprise manages 30,939.4 ha, and the enterprises allocate part of forestland to local people for management and protection under the contract. Initially the forestry sector has an active role in creating job for farmers, improves living conditions for local people in particular the people in remote and critical communes. Forestry production value in 2005 is 25.935 billion Dong or 5.05% of total of the district. Fund for forestry production in this district is mainly taken from state funds, and most of the money is used for afforestation, tending and protection. Investment to infrastructure is negligible.

- In recent years, the GOV has many new advocates on forestry development, strengthening the afforestation, management and protection of forest. In 3 years from 2003 – 2005, Da Teh enterprise planted 376 ha, of which, 106.5 ha required by the province, replant after logging 115,6 ha and 128.8 ha planted jointly with SanrimJohap Vina. Planted species is Acacia hybrid (cuttings), and the total area of plantation forests of this enterprise is 1.071,16 ha. Acacia hybrid suits the climatic conditions and soil of this area, so the increment is good.

- As for Da Teh enterprise, the network of forest management and protection is consolidated comprehensively, enterprise staff work in connection to local government and functional organizations to implement forest protection.

(4) Industry and services

- According to 2005 statistics, the district has 868 industrial and handicraft enterprises, 2 out of which are the state-run enterprises. The industry sector attracts 2.547 labors. Industrial operations focus on mining, processing (mainly agriculture and forestry products and handicraft) Total value obtained by industry sector is in 2005 is 50,540.6 Mil. Dong.

- Total value taken fro services of Da Teh district in 2005 is 137,964 billion Dong or 26,8% of total production value of the district.

3.2.4 Credit loan for agriculture and forestry production

Findings surveyed from Agriculture Bank and Policy Bank - Lam Dong province, and Agriculture Bank and Policy Bank - Da Teh district:

3.2.4.1 Credit loan

(1) Agriculture Bank - Lam Dong province

Total out standing balance of Agriculture Bank Lam - Dong province as of 12/2004 is 1,907,381 Mil. Dong and by 12/2005 – 2,211,343 Mil. Dong or 15.94% increased comparing to 2004. The short-term loan increased by 31.60%, medium term reduced by 8.96% and long term increased by 997.34% comparing to 2004. It is easy to see that the loan sum is in favor to the long-term borrowers. While the client reduces by 25,95% comparing to 2004, and loan sum increases. In average each borrower gets 22.15 to 34.68 Mil. Dong.

Table 1.14 Outstanding balance at the end of the year of Agriculture Bank - Lam Dong province

Loan types	Unit	Term 12/2004 (a)	Rate %	Term 12/2005 (b)	Rate %	Comparison (b-a)*100/a
Outstanding balance (a)	Mil. Dong	1.907.381	100	2.211.343	100	15,94
Short term	Mil. Dong	871.942	45,71	1.147.461	51,89	31,60
Medium term	Mil. Dong	1.023.392	53,65	931.685	42,13	-8.96
Long term	Mil. Dong	12.047	0,63	132.197	5,98	997,34
Numbers of clients (b)	Client	86.117		63.766		-25,95
Comparison (a)/(b)	Mil. Dong	22,15		34,68		

Source: Agriculture Bank- Lam Dong province

The loan sum in 2005 increases comparing to 2004 focusing in processing industrial sector (82,91%) and forestry (60,39%). Loan for agriculture increases by 9.41%, trade - increases 18.25% and other sectors – 9.73% and the private sector and cooperative and others as well.

Table 1.15 Loan distribution by sectors in Lam Dong province

Item	Outstanding balance 2004 (a)	%	Outstanding balance 2005 (b)	%	Comparison (b-a)*100/a
Outstanding balance	1.907.381	100	2.211.343	100	15,94
Of which:					
Agriculture	903.333	47,36	988.329	44,69	9,41
Forestry	16.834	0,88	27.000	1,22	60,39
Trade	339.046	17,78	403.558	18,25	19,03
Processing	110.975	5,82	202.984	9,18	82,91
Private & Cooperative	0		0		
Others	537.193	28,16	589.472	26,66	9,73

Source: Agriculture Bank - Lam Dong province

(2) Agriculture Bank Da Teh district

Agriculture Bank Da Teh district has total outstanding balance in 12/2004 is 76,101 Mil. Dong. By 30/12/2005 – 91,603 Mil. Dong, increased 20,37% comparing to 2004. Of which short term increased by 2,77%; medium term loan increased by 47,42⁽¹⁾

Table 1.16 Outstanding balance at the end of term in Agriculture Bank Da Teh district

Loan types	Unit	Term 12/2004 (a)	%	Term 12/2005 (b)	%	Comparison (b-a)*100/a
Total outstanding balance (a)	Mill. Dong	76.101	100	91.603	100	20,37
Short term	Mill. Dong	45.299	59,52	46.555	50.82	2,77
Medium term	Mill. Dong	30.802	40,48	45.408	49.57	47,42
Long term	Mill. Dong	-		-		
Borrowers (b)	Clients	4.599		4.619		0,43
Comparison (a)/(b)	Mill. Dong	16,55		19,83		

Source: Agriculture Bank- Da Teh district

Survey results in 2 banks the Agriculture Bank Da Teh district and Lam Dong province show that the outstanding balance of these 2 banks focuses most in short term and medium term loan items, while no long term occurs. Every year loan fro production increases.

(3) Policy Bank - Da Teh district:

Outstanding balance of the Policy Bank in Da Teh district as of 2005 is 21.454 Mil. Dong⁽²⁾, increased by 19% comparing to 2003, of which short term outstanding balance is 4.263 Mil. Dong, Medium term - 17.191 Mil. Dong, while no long term occurs. Intentionally, in the future, long term will be applied. The loan sum is very small comparing to that of the Agriculture Bank of Da Teh district in the same period of 2005. Table below shows credit operations in recent 3 years of the Policy Bank of Da Teh district.

¹ Interview Agriculture Bank - Da Teh district - 17/10/2006.

² Interview Policy Bank - Da Teh district - 16/10/2006.

Table 1.17 Table for analysis of credit operations

Unit: Mil. Dong

Indicators	31/12/03	31/12/04	31/12/05	Compared to 2003 (%)	Compared to early 2005 (%)	Compared to plan (%)	(%)
1. Total loan							
- Household (HH)	598	1.266	764	+27,7	-40		
- Quantity	2.191	9.300	6.911	+137	-25,7	75,7	
2. Repaid sum							
- Household (HH)	569	752	659	+15,8	-12,3		
- Quantity	1.940	2.026	2.424	+25	+19,6	54,5	
3. Outstanding balance							
- Household (HH)	3.017	3.491	3.608	+19	+3		
- Quantity	9.912	16.967	21.454	+116	+26,4	99,1	100
Of which: within term loan	8.663	15.794	20.434	+136	+29,4		95,23
+ Overdue	102	391	563	+452	+44		2,64
+ Remained loan	1.147	728	457	-60	-41,6		2,13
3.1 Outstanding balance by source of funds	9.912	16.967	21.454	+116	+26,4	99,1	100
- Outstanding balance <i>by poor HHs</i>	3.958	14.139	18.146	+136	+27,6	99,6	84,6
- Outstanding balance GQVL	2.220	2.685	3.114	+40	+16	99,4	14,5
- Outstanding balance for labor export	0	89	194	+100	+118	61,2	0,9
3.2 Outstanding balance by terms	9.912	16.967	21.454	+116	+26,4	99,1	100
- Short term Outstanding balance	3.958	3.010	4.263	+8	+46,6		19,9
- Medium term Outstanding balance	5.954	13.957	17.191	+119	+23		80,1
3.3 Outstanding balance by economic components	9.912	16.967	21.454	+116	+26,4	99,1	100
- State enterprises	290	290	290	0	0		1,35
- HHs and individuals	9662	16.677	21.164	+123	26,9		98,65
3.4 Outstanding balance by economic sectors	9.912	16.967	21.454	+116	+26,4	99,1	100
- Cultivation	4.072	1.275	1.628	+60	+72,7		7,59
- Husbandry	5.816	15.588	19.597	+273	+25,7		91,34
- Others	24	104	229	+854	+120		1,07

Source: Policy Bank - Da Teh district

Looking at the table above we can see that the loan sum together with numbers of HHs borrowing money for production is going up. The outstanding balance remains in HHs and private borrowers (in 2005 – 21,164 Mil. Dong or 98,65% of total outstanding balance), while state enterprises borrow so little (290 million for 3 recent years – 1.35% of total outstanding balance)

3.2.4.2 Lending mechanism from financial agencies

(1) Agriculture Bank

Findings from survey in 2 banks the Agriculture Bank of Lam Dong province and Agriculture Bank of Da Teh district show that, the existing lending mechanism of these 2 banks in the main is similar and under the jurisdiction of the higher level.

- Term: Short term: < 12 months, medium term: 12-60 months and long term: > 60 months upward, but not more than 15 years. The term is negotiated.

- Conditions for borrower: (i) person with legislation status; (ii) legal use; (iii) financial capacity to pay as committed; (iv) having feasible investment project; (v) follow the principles regulated by the bank of Vietnam.

- Lending capacity: The bank only lends an amount of money equal to 80% of total cost of the project and disbursement is done accordingly based on the annual project implementation progresses.

- The same rate of interest is applied to all borrowers and is paid by monthly or quarterly manner or negotiated agreement between the lenders and the borrowers. The rate of interest applied by both Banks is as follow:

Table 1.18 Term and interest applied by Banks Da Teh district (As of 10 - 2006)

Term	Rate of interest (%/month)	
	Agriculture Bank Lam Dong province	Agriculture Bank Da Teh district
Short term (< 12 months)	1.03	Zone 2:1.02; Zone 3: 0.84
Medium term (12 to 60 months)	1.18	Zone 2:1.17; Zone 3: 0.97
Long term (> 60 months)	1.28	Not yet

- At present, Agriculture Bank of Da Teh district has not applied the long term, but in the coming years if clients requested.

- Agriculture Bank Lam of Dong province has been doing this. However there is not any cases of getting long term loan for afforestation in the province, the bank is ready to lend Da Teh enterprise with long term in the form of trust collateral for afforestation provided that: (i) the enterprises should have a feasible afforestation plan approved by an appropriate authority; (ii) The situation of production of the enterprise must be effective and notified by expertise organization as well as appropriate authority.

(2) Lending mechanism of the Policy Bank of Da Teh district

At present all financial source managed by the Policy Bank of Da Teh district is coming from the higher-level bank, and the bank cannot lend Da Teh enterprise for afforestation.

3.2.4.3 It is proposed that the potential financial agencies supply credit loan to the project.

Through the results of study from Banks on the advantages and disadvantages for the enterprise to get loan to implement the planned project and the conditions of lending of the Agriculture Bank Lam of Dong province, it comes to a conclusion that borrowing money from this bank is relevant to the enterprise. Besides, the Agriculture Bank of Lam Dong province also confirms that the loan may be adjusted in year 3 when the project has initial results and show the possibility of success with the notification of expertise organization as well as appropriate authority. And the loan term will be amended relevantly.

3.3 Infrastructure

3.3.1 Transport

(1) National roads No. 20, 27, 28 and 55 connect Lam Dong to the south-eastern part, HCM city and the Central High Land as well as the Central coastal provinces.

(2) Within Da Teh district territory, beside the main roads, the provincial roads 721-725, there is other systems connecting to commune centers, which are asphalted, so travelling is rather convenient even in rainy season. As for the internal district road system inter-village road system is under concretisation.

(3) In the project zone, vehicle roads reach close to the proposed afforestation sites of the project. However, it is necessary to open forestry roads reaching the center of afforestation sites.

3.3.2 Power and water utilization, irrigation system

(1) At present, in Da Teh district 100% of communes have electricity for all HHs for daily use and production.

(2) The PZ has a dense river/stream system, water available around the year; ground water level is fairly high.

3.4 The production situation of Da Teh enterprise period 2003 - 2005 and production orientation in the future - period 2006 - 2010

3.4.1 Labors, knowledge, skills of staff and workers of the enterprise

(1) At present, this enterprise has 71 staff, 3 state employees (a director, a vice director and an accountant) and 68 contractors (Long term: 57, one-year contract: 11). Among them: (i) University level: 17 or 24 % (Forester: 11, Economists: 3, Soil engineer – 1, and 2 Bachelors of Art on land management); (ii) Technicians: 30 or 43%; (iii) Workers: 12 or 18%

(2) In the recent years, Da Teh enterprise fulfilled well the plan assigned by the GOV. Most of the staff have worked for the forestry sector for long, and they are regularly trained to improve their competence. At the moment, the enterprise needs mechanics and processors. In the coming years the enterprise should have training plan of mechanics, processors and marketing staff.

3.4.2 Situation of management of period 2003-2005

2001 is the first year Da Teh enterprise implement its management plans for the period 2001 – 2005 by Decision No. 102/QĐ-UB, 23/10/2001 of the PPC on doing business. This is one of the first steps in the implementation of the renovation of the SFE by Decision No. 187/TTg of the GOV. The situation of doing business and management of the enterprises is evaluated s follow:

(1) Exploitation:

- Timber exploitation from natural forests: The volume of timber removed from natural forest in the recent 3 years (2003 – 2005) of Da Teh enterprise is 9,378 m³, or 3,126 m³/year. The exploitation follows the regulation of MARD and Lam Dong province. In addition, Da Teh enterprise participates in tender of buying standing trees from Bao Lam and Loc Bac enterprises with the volume of 2,853 m³.

- Timber exploitation from plantation forests: Total quantity of timber exploitation from plantation forests in 3 years is 9,504 m³. The main exploited species are Acacia mangium, which is affected by diseases for pulp production.

- Exploitation of NTFP: In 3 years, 1.460 ster of bamboo for pulp and 1,619,000 bamboo stems for other processing, 128 palm trees, 157 m³ of timber (salvaged exploitation), and 707 ster of firewood. The exploitation follows the regulations promulgated.

(2) Afforestation:

In 3 years (2003 – 2005), Da Teh enterprise grows 376 ha of forest. Planted species is Acacia hybrid as it is suitable to the natural conditions of the area.

(3) Forest management and protection:

- Beside the forest area managed by the enterprise itself, Da Teh enterprise makes contract with 385 farmer HHs and 2 collective groups to protect 12,138 ha and cash payment is applied. The Chau Ma community is the main contractor.

- In 2005, the enterprise set up documents of contracting for afforestation based on benefit sharing policy by Decision No. 178/QĐ-TTg with an area of 455,4 ha. The enterprise also set up benefit-paid contract documents of forest protection instead of cash-paid way by Decision No. 178/QĐ-TTg with an area of 606 ha. The document was approved in quarter I-2006.

- Forest fire prevention: Attention is well paid to this activity by the enterprise, so in recent years no fires happen.

3.4.3 Results of management and doing business period 2003 - 2005

(1) Financial situation

Total capital source owned by the enterprise is 15,866 Mil. Dong, of which debt to be paid is 5.024 Mil. Dong, owner's capital is 10.842 Mil. Dong (See also attached Annex 9 for detail).

(2) Results of management and doing business period 2003 -2005

Table 1.19 Results of management and doing business of Da Teh enterprise period 2003 -2005

No.	Indicators	Unit	2003	2004	2005
1	Total turnover	Mill. Dong	7,986	8,252	10,313
2	Income from financial contract	Mill. Dong	252	251	165
3	Other income	Mill. Dong	164	114	12
4	Total revenue	Mill. Dong	246	293	309
5	Total charge	Mill. Dong	2,423	3,090	1,596
6	Labor by end of year	Person	68	67	71
7	Average income	Mil. Dong /man/month	1.3	1.2	1.5

(3) Results obtained after 3 years as follow:

- Benefit obtained: 848 Mil. Dong, 283 Mil. Dong/year.
- Average income: 1.3 Mil. Dong /man/month.
- Stable increasing of turnover in 3 years

4 Status of land use and forest resource use

4.1 Land use status

Table 1.20 Land use status in the project zone (PZ)

Unit: ha

Item	By commune				Total
	Quoc Oai	An Nhon	Da Kho	Trieu Hai	
1. Natural forests	437,8	104,9	1.027,9	451,0	2.021,6
2. Plantation forests	172,1	192,6			364,7
3. Others	59,9		16,8		76,7
Total Area	669,8	297,5	1.044,7	451,0	2.463,0

(See also Annex 3)

Total area of land types in the PZ is 2.463 ha, of which forested land accounts for 96,9%, others 3,1%. All area is managed by Da Teh enterprise and red book is issued.

4.2 Area and stock of forest types

Total forest area in the PZ is 2.386,3 ha, of which 2.021,6 ha is natural forest and 364,7 ha of plantation forests.

Total timber stock in the project sites is 88.406 m³, (plantation forests: 24.664 m³, natural forest: 63.742m³ and 4,086,000 bamboo.

(1) Natural forests:

Based on the survey results, natural forest can be divided in 2 groups as follow:

- Group I: to be replaced by new plantation forests with fast growing species. This groups consists of statuses as: (i) Bamboo + IIIA1; (ii) Bamboo + Ia; (iii) L.Ib.

- Group II: no intervention, consisting of: (i) IIIA1 + Bamboo; (ii) IIB.

(2) Plantation forests:

It is known from survey results that plantation forests of Da Teh enterprise are of different age classes. Extensive Acacia plantation forests planted in 1993 & 1998 of poor productivity comparing to that of the intensive afforestation in 2002, 2003 and 2005.

Area and stock of forest types in the PZ are described in table below:

Table 1.21 Area and stock of forest types in the PZ

No.	Status	Area (ha)	Average		Total	
			Timber (m ³ /ha)	Bamboo (stem/ha)	Timber (m ³)	Bamboo (1.000 stem)
1	Natural forest	2.021,6			63.742	4.086
1.1	Bamboo + IIIA1	895,5	23	2.400	20.597	2.149
1.2	Bamboo + IIa	287,4		2.000		574
1.3	L.Ib	119,4		1.200		143
1.4	IIIA1 + Bamboo	717,4	60	1.700	43.044	1.220
1.5	IIB	1,9	53		101	
2	Plantation forests	364,7			24.664	
2.1	Acacia 1993	41,8	90		3.762	
2.2	Acacia 1998	23,8	70		1.666	
2.3	Acacia 2002	57,4	102		5.855	
2.4	Acacia 2003	151,2	89		13.381	
2.5	Acacia 2005	90,5	No stock			
Total		2.386,3			88.406	4.086

(See also Annex 3)

**Fig. 2 Acacia hybrid (cuttings) 3 years of age**



Fig. 3 Acacia hybrid (cuttings) 4 years of age

4.3 Potential of land for afforestation

4.3.1 Area possibly used for afforestation

From the results of survey on forest status and stock, and on the basis of land use planning and production forest plan of Da Teh enterprise, it is to see that land possibly used for production afforestation in the PZ is 1.406,7 ha, of 2 groups below

(1) Area with natural forest: consisting of exhausted sites to be replaced. This groups consists of 1.042 ha: (i) Bamboo + IIIA1 and (ii) Bamboo + Iia, (iii) L.Ib.

(2) Area with plantation forests: to be replanted after logging, 364,7 ha.

Tentative land for afforestation in the PZ is as follow:

Table 1.22 Land possibly used for afforestation in the PZ

Unit: ha

Item	Total	By commune			
		Da Kho	Trieu Hai	Quoc Oai	An Nhon
Total Area	1.406,7	557,5	67,9	504,8	276,5
Bamboo + IIIA1	716,6	327,6	67,9	321,1	
Bamboo + Iia	229,9	229,9			
L.Ib	95,5			11,6	83,9
Acacia 93	41,8				41,8
Acacia 98	23,8				23,8
Acacia 02	57,4			57,4	
Acacia 03	151,2			24,2	127,0
Acacia 05	90,5			90,5	

(See also Annex 3)

4.3.2 Increment and growth of the existing plantation forests

Based on the sampling in the field on the index for calculation as density (N), diameter (D), height (H), stock (M) of Acacia hybrid existing in Da Teh enterprise on different sites to calculate and get bases for prediction of standing volume. The calculation is as follow:

(1) MAI of D: the formula used is $\Delta \bar{D} = \frac{\sum D}{A}$ (cm /year), of which $\Delta \bar{D}$ is MAI of D, D is for species, A is age.

(2) MAI of H: $\Delta \bar{H} = \frac{\sum H}{A}$ (m/year), of which $\Delta \bar{H}$ is MAI of H, $\sum H$ is total height of species and A is age.

(3) MAI of volume: $\Delta \bar{M} = \frac{\sum M}{A}$ (m³/year), of which $\Delta \bar{M}$ is MAI of volume, $\sum M$ is total average stock of tree. A is age.

The mean index on $\Delta \bar{D}$, $\Delta \bar{H}$, $\Delta \bar{M}$ will be bases for prediction of productivity of Acacia hybrid plantation forests for project formulation.

Table 1.23 Increment and growth of the existing Acacia hybrid plantation forests

Species/ Planting year	Suitabilit y class	Land form	Density stem/ha	Existing MAI			MAI			Qualit y
				$\bar{D}$ (cm)	$\bar{H}$ (m)	$\bar{M}$ (m ³ /ha)	ΔD (cm)	ΔH (m)	ΔM (m ³ /ha)	
Acacia hybrid (2002)	Very suita ble	ĐIF $\bar{s}$, N3IF $\bar{k}$	2200	11,6	11,5	108	2,9	2,9	27	Good
	Suita ble	ĐIIF $\bar{s}$, ĐIIIF $\bar{s}$, N3IIIF $\bar{k}$	2200	10,5	10,8	96	2,6	2,7	24	Good
Acacia hybrid (2003)	Very suita ble	ĐIF $\bar{s}$, N3IF $\bar{k}$	1660	11,4	11,8	93	3,8	3,9	31	Good
	Suita ble	ĐIIF $\bar{s}$, ĐIIIF $\bar{s}$, N3IIIF $\bar{k}$	1660	11,2	11,4	84	3,7	3,8	28	Good

The above table show that indexes of MAI on ΔD , ΔH , and ΔM of density of 1.660 stem/ha is higher than MAI of ΔD , ΔH , ΔM of 2,200-stem/ha-density. So, the density and soil factors clearly affect productivity. So the density of 1.660 stem/ha of Acacia hybrid plantation forests is most suitable in the project area.

4.3.3 Prediction of productivity

Based on data shown in table 1-23, the productivity is predicted as follow: As only data collected from Acacia hybrid plantation forests at age classes 3 and 4, so the interpolative method is: MAI of stock is considered to be unchanged so the stock after 7-year cycle can be calculated by the following formula:

$$Mkt = \Delta M * 7 \text{ (m}^3\text{/ha)}$$

From the interpolative formula we predict the productivity of Acacia hybrid plantation forests at the end of the cycle aggregated in the table below

Table 1.24 Prediction of productivity of Acacia hybrid plantation forests at the end of the cycle in the PA.

Suitability	Land form	N/ha	Prediction indicators			
			Mht (m ³ /ha)	ΔM (m ³ /year)	Mkt (m ³ /ha)	SLkt (m ³ /ha/7 years)
Very suitable	$\bar{D}IF_s, \bar{N}3IF_k$	1660	93	31	217	152
Suitable	$\bar{D}IIF_s, \bar{D}IIIF_s$ $\bar{N}3IIF_k$	1660	84	28	196	137

5 Markets and sales

5.1 Assessment of timber consumption at present

According to general prediction, for most of forest products (timber, and NTFP) supply and demand are imbalanced. Handicraft, wood-based furniture...are preferred by both domestic and oversea markets. In the coming years, the oversea markets have a big demand for forest products are Japan, South Korea, Taiwan. Besides, the north American countries, Mide-East and Russia are also potential markets.

Together with development of the society, as the time being, the demand for consumption of forest products in the country becomes bigger and bigger. The processors move from using timber from natural forest to timber from plantation forest to produce wood-based products.

Lam Dong province is advantageous in supply timber from both natural and plantation forest. However, the on the spot processing in this province is not well developed comparing to the adjunct provinces that results in low value. Timber from natural and plantation forest is partly used for processing of furniture and the remain is sold to other provinces.

Table 1.25 Quantity and value of forest products in Lam Dong

Product	Unit	2001	2002	2003	2004	2005	Total (2001-2005)	Unit price (Mil. Dong)	Value (Mil. Dong)
Round wood	m ³	39.477	67.728	58.269	65.552	45.258	276.284	1,70	469.683
Pulp wood	m ³	4.572	12.402	21.519	22.458	33.321	94.272	0,38	35.823
Bamboo	Stem	10.614	7.906	10.920	9.078	4.051	42.569	0,003	128
Bamboo for pulp	Ton	6.850	3.320	1.638	2.086	850	14.744	0,20	2.949
Total		61.513	91.356	92.346	99.174	83.480	427.869		508.583

According to Statistic Year Book 2005, numbers of enterprises dealing with timber processing in the country and Lam Dong province are of follow form:

Table 1.26 Kinds of timber processing enterprises

No.	Ownership	Country-wide	Lam Dong province
1	State	374	40
2	Private	786	130
3	Joint venture	40	0
4	Cooperative and Share Stock Co.	No data	0
Total		1.200	170

Source: Vietnam Timber Association, Sub-DoF, Lam Dong province, 2005

In 2005, Lam Dong province has the following timber processing enterprises:

Table 1.27 List of leading timber-processing enterprises in Lam Dong province

Mane and location	Product	Capacity	Coarse material (species)	Material quantity
1. Bao Lam SFE	Sawn wood (fresh)	2.012	Pine	4.318
	Sawn wood (dried)	111		
2. Van Duc Co. Ltd	Sawn wood (dried)	1.259	Pine	3.553
	Sawn wood (fresh)	42		
3. Lam Dong Forest Products Co.	Wood furniture	1.821	Pine	2.236
	Plywood	292		
4. Hop Tien Co. Ltd	Plywood	798	Pine	2.940
	Well processed	44		
5. Tien Dzung Co. Ltd	Plywood	445	Pine	2.871
	Sawn wood (fresh)	419		

5.2 Demand for industrial material timber

Acacia timber is sold to timber processing enterprises of other provinces, and in the project area

Specifications requirements of processors within and without the province

- (1) Pulp wood: $D = 4 - 12$ cm, $L = 1 - 2,2$ m
- (2) Round wood for packing: $D \geq 13 - 19$ cm, $L = 2,2$ m
- (3) Timber for chi: D (small end) ≥ 4 cm, $L = 2,2$ m.
- (4) Handicraft: $D \geq 8$ cm, $L \geq 1,05$ m.

1.5.2.2 Quantity of timber required annum

(1) Phu Dong Joint Venture Co. needs 25.000-30.000 m³ of timber to produce 20.000 m³ of products/year.

(2) Minh Huy Co. Ltd (Tien Giang province) needs 9.000 - 10.000 m³ timber/year.

(3) Thanh Vu handicraft enterprise needs about 14.400 - 18.000 m³ annum. This enterprise plans to expand its production in 2007, and timber quantity will be about 30,000m³ annum.

(4) Timber processing workshop of Da Teh Forestry Company (the former Da Teh enterprise) needs 5,100 m³/year. This company also plans to expand its production in 2009, 2010, and timber requirement will be 10.000 m³/year.

5.3 Transport and marketing

5.3.1 Transport

Transport is convenient in the project area. Province roads No. 721 connecting to road No. 20 links the PA with industrial areas in the Southeastern provinces, these roads are asphalted. The road system in Da Teh district is being upgraded.

As planned, timber is sold at Landing II of the enterprise, and the buyers will be responsible for transport of materials to their mills.

5.3.2 Price of products

- The selling price of plantation forests timber depends on sizes as well as the consumer market. In reality, the price of plantation forests timber varies in different times and is affected by oversea markets

- Price trend: Timber and wood-based products is in increasing due to the price of materials, transport cost and harvest cost increases. Inflation and salary for state employees increase that affect the timber price and the demand for timber increases resulting in the increase of timber price

Table 1.28 Competitive price of timber

Client	Species	Sizes		Price	Delivery place
		D (cm)	L (m)		
Phu Dong Joint venture Co.	Acacia	6 – 12	2,2	230.000 Dong/m ³	Landing II Da Teh enterprise
		13 -19		437.000 Dong/m ³	
		≥ 20		552.000 Dong/m ³	
Minh Huy Co, Ltd	Acacia	6 – 12	1,1 - 1,2	193.000 Dong/m ³	Landing II Da Teh enterprise
		13 -19		380.000 Dong/m ³	
		≥ 20		493.000 Dong/m ³	
Thanh Vu Handicraft Workshop	Acacia	8 - 10	1,05 –	200.000 Dong/Ster	Workshop gate
		11 - 17	1,3	320.000 - 350.000 Dong/Ster	
		≥ 18		600.000 - 680.000 Dong/Ster	

6 Lessons learnt from other afforestation project

(1) Recently, afforestation for timber processing and paper industry in Lam Dong province engages the participation of General Paper Co. and General Forestry Co. of Vietnam. The investment source to the establishment of the raw material zones is taken from preferential credit and Development Support Fund as the interest rate is 6.6%/year. The average investment cost norm ranges from 10 - 17 Mil. Dong. Intensive farming should be applied in afforestation for higher productivity.

(2) The implementation process mentioned above shows that the cooperation between the implementers should be set up on the basic of existing regulations, law and legislations to ensure benefits sharing equally between the parties.

(3) To achieve good results, the project objectives should clearly be specified right at the beginning of project design based on the real sources and the trend of the market.

(4) The collection of information during the preparation stage should be implemented seriously. Lessons learnt from Joint venture afforestation project with South Korea in Da Teh show that the basic inventory was not detailed and close to the reality...therefore when implementing the planned area was not covered. Detailed and thorough survey and in-depth analysis are required to ensure the success and feasibility of the project.

7 Opportunity and challenge

7.1 Opportunity

The implementation of production afforestation project in Da Teh enterprise has the following advantages:

(1) All forestry land in the PA is managed by Da Teh enterprise. It has the right to decide land use issues. At present the enterprise already decide to allocate its forestry land to the production afforestation project.

(2) The project site is close to many potential markets. Da Teh enterprise will be converted to be Da Teh Forest Product Company, and the competence authority approved the plan. The

company will set up a processing mill and wood-based products as particle- board, plank board... using timber from plantation forests of the project.

(3) Natural, climatic conditions and soils in the project area suit the production afforestation particularly to species as Acacia hybrid, the productivity of plantation forests is $>140 \text{ m}^3 / 7 \text{ years}$.

(4) In the PA as well as the adjunct areas Acacia hybrid was planted and the result is good. Lam Dong Sub-DoF promulgated the regulation for intensive growing Acacia hybrid for pulpwood. In addition, Da Teh enterprise has nursery certificated, which ensures seedlings with good quality for afforestation in the area.

(5) The project implementer is Da Teh enterprise, who is experienced enough for production afforestation. This is a good base for the success of the project.

(6) In recent years afforestation is supported by Lam Dong province

(7) Unskilled labor source is available and abundant.

7.2 Challenge

(1) Local people are of low awareness, and not much experience in intensive farming

(2) Low income, most of farmers are poor and medium, their contribution to the project is only labor. Credit loan for afforestation at the moment is not advantageous. The Policy Bank has preferential policy in interest rate but its source is limited while the Agriculture Bank of big potential applies higher rate of interest

(3) Population often increases and people live alternatively with forests, which create great pressure on forest management and protection.

(4) Technology for processing plantation forests timber in the plantation forests area is not well developed, so it cannot encourage the development of afforestation for materials.

(5) Difficulties bear typical characters of the production afforestation project in the controlling of prices, risks during the project cycle

PART II PROJECT CONTENTS

1 Rationale for project formulation

1.1 Rationales

The project of improvement of exhausted forests in Da Teh district, Lam Dong province is established on the basis of different aspects as policy, finance and management as follows:

(1) Implementation of sectoral development plan, that is the development of forestry in connection to poverty alleviation, relevant use of forest resources and improvement of environment.

- Vietnam forestry sector, in the context of regional and international integration, at present has a strategic orientation, that is the decentralization in management. One of the big challenges at the moment of the forest product processing is the price of materials and the supply of materials. With the trend of environment protection globally, the exploitation and export of timber from natural forests are limited. In recent years the countries as Indonesia and Malaysia decide to draw up exporting sawn wood. If Vietnam has to import from other countries far from Vietnam the transport cost will go up much higher.

- In such a reality, the GOV has measures to encourage enterprise increasing investment to establish raw material zones linking to processing enterprises to reduce price of products and create subjective position in management.

- Da Teh was reclaimed since 1977-1978. that is why the area is under the pressure of emigrants from the northern provinces. To exist, they apply slash and burn practice and then exploit timber from the natural forests. In a short time when forest has no owners in connection to poor understanding on forest protection and utilization of natural resources that make exhausted forests. The question is to rehabilitate and develop forest estates, improve the value of land use by means replacing the exhausted forests and grow new plantation forest with high economic value, create jobs for local people and step by step raising awareness among the communities in forest protection and development.

Therefore, this is a good reason for the establishment of this project to contribute to stabilizing people's life, protection and development of forest. Through the implementation of production afforestation project, subjective management for Da Teh enterprise is created. If the project is successfully implemented it will usher in a new orientation to Lam Dong forestry sector in particular and the Central High Land in general in the improvement of exhausted forest, growing new plantation forests to supply local processing mills and others with enough materials.

(2) Production afforestation for economic purpose in the project area meets with many advantages in natural conditions, which satisfies the requirement of the donors as the material zone is close to potential timber users. The reality of afforestation in recent years and results of prediction of productivity allows investment with economic effectiveness, and sustainable utilization of forest. On the other hand, the GOV, ministries of concerned set up clear and open mechanism for the treatment of exhausted forest by new economic forests.

1.2 Assessment for project selection

Assessment for project selection aims at specification of project model to ensure the feasibility based on the analysis and selection of core components:

- (1) Implementer
- (2) Products made by production afforestation project
- (3) Financial sources for project implementation

From the results of socio-economic survey, in connection to market survey and consultancy of community, the selection of core components can be summed up as follows:

(1) Implementer:

- Da Teh enterprise is a forestry business. In recent years the enterprise was implementing afforestation in their land territory.

- Da Teh enterprise is a legal business and capacity to be an implementer of the production afforestation project on the land allocated to by the GOV.

(2) Products:

- Products supplied: (i) domestic wood-based product; (ii) Laminated Finger Joint Board; (iii) chip; (iii) chip + Laminated Finger Joint Board.

- Through the analysis and evaluation of types of products shows that: chip + Laminated Finger Joint Board are most suitable as it satisfies the requirements as: (i) market' needs; (ii) suitable to economic afforestation with fast growing species; (iii) product value meets the expectation of the enterprise; (iii) meets the requirement of credit loan condition

(3) Financial sources for the project:

- The financial source are examined for selection: (i) Enterprise's own budget; (ii) credit loan + Enterprise's own budget; (iii) Joint venture fund.

- Through the analysis of financial sources, the use of credit loan from the bank and enterprise's own budget for production afforestation project is most feasible: (i) suitable to financial conditions and production and doing business capacity of the enterprise; (ii) suitable to conditions of borrowing from commercial banks

From the analysis above, the model of production afforestation project selected with the following core components:

(1) Implementer is Da Teh enterprise;

(2) Products are chip and Laminated Finger Joint Board;

(3) Financial Source: credit loan from banks and Da Teh enterprise's own budget.

(See also Annex 2 for details)

2 Project objectives

2.1 Overall objective

Forest development in a sustainable, and reasonable way

Creation of attraction of investment and improvement of community life

Improvement of natural environment of the PA

Limiting slash and burn practice by

Attracting local people to involve in afforestation project

Supply timber materials to processing industry

Creation of subjective position for Da Teh enterprise in production and doing business

2.2 Immediate objectives

Carry out the solution of improvement of exhausted forest by growing new economic plantation forest for materials:

- Within a cycle of management material quantity to sell to processing mills is 202,282 m³, in average 140 m³/ha. Total man-day used is 758.457 for one project cycle, about 350 labors attracted annually.

- Set up a sustainable credit mechanism for the production afforestation

- Improved income for farmer HHs involving in the afforestation project

- Improved enterprise's capacity of production forests management

3 Project activities

3.1 Project components

Based on the project objectives and design matrix, project components are specified as follow:

(1) Production forest development component

This component aims at creating economic forest of high productivity to replace the exhausted forest. Afforestation activities consist of nursery construction; preparation of afforestation site, planting, tending, management, protection and harvest as well as sales

(2) Support production forest development component

Support activities consist of procedure for credit loan; canvass people to sign contract of afforestation; technical training in connection to dissemination/education on forest protection; checking, monitoring, evaluation of project.

3.2 Project implementation

Technical design for a core component: Planting, tending, protection and harvest of plantation forest which is described in detailed in Annex 13. Contents below will describe operational plan of production afforestation development component.

3.2.1 Site selection

3.2.1.1 Criteria for site selection

Project site selection aims at specifying forestry areas to be used for afforestation suitable to project objectives (local policy within the legislation framework of the GOV, natural and socio-economic conditions...) . Based on the field survey findings on natural and socio-economic conditions of the PA, the set-up criteria for afforestation site selection in Da Teh enterprise are specified as follow:

(1) Land use situation: Areas selected are planned for production afforestation, no conflict in land use, forestry land allocated with red book

(2) Forestry land use status and point of view of land users: Selected sites consist of forestry land having plantation forest or exhausted natural forest (criteria set up by the GOV).

(3) Natural conditions: suitable to tree species for afforestation, good example of afforestation in this area

(4) Accessibility to market, distance to market places: Roads to afforestation sites available for transporting of final products to the market

3.2.1.2 Afforestation site selection

From criteria presented above, comparing to the realistic conditions in the PA, the following characters can be seen:

(1) The selected afforestation sites consist of areas which land use rights with red book issued under the management of Da Teh enterprise in 4 communes: Da Kho, Trieu Hai, An Nhon and Quoc Oai.

(2) The selected sites consist of 2 objects:

Exhausted natural forest sites (stock <30 m³/ha), poor quality, need to be improved by growing new economic plantation forests

Areas with existing plantation forests: Acacia hybrid & Acacia mangium planted in 1993 – 2005 to be replanted after logging

(3) Selected areas for production afforestation project has suitable natural conditions which meet the project objectives. In reality Da Teh enterprise has satisfactory results of production afforestation in this area

(4) The topography is suitable with low mountains and hilly sites, the inclination is 15°, and transport system is fairly advantageous as roads in this area are being upgraded

The project area is close to potential markets as Da Lat, HCM city, industrial parks of Dong Nai, Binh Duong. (See also table 2-1 below)

Table 2.1 Results of site selection

Unit: ha

Status	Quoc Oai	An Nhon	Trieu Hai	Da Kho	Total
Exhausted natural forest	332,7	83,9	67,9	557,5	1.042,0
Bamboo + Ic	11,6	83,9			95,5
Bamboo + IIA				229,9	229,9
Bamboo + IIIa1	321,1		67,9	327,6	716,6
Plantation forests	172,1	192,6			364,7
Acacia 93		41,8			41,8
Acacia 98		23,8			23,8
Acacia 2002	57,4				57,4
Acacia 2003	24,2	127			151,2
Acacia 2005	90,5				90,5
Total	504,8	276,5	67,9	557,5	1406,7

(Annex 4 and 5 for details)

3.2.2 Selection of species for afforestation

Based on the results of analysis land use status and natural resources utilization, survey of tree productivity, *Acacia hybrid* (*Acacia hybrid*) is selected for afforestation:

- (1) This species is prioritised for production afforestation by MARD and local government
- (2) This species yields product fitting the project objectives (chip). As for markets, Acacia hybrid can be planted in large scale as many timber processing enterprises need materials for production
- (3) Technical guideline is available for intensive planting of Acacia hybrid promulgated
- (4) Acacia hybrid planted in Da Teh enterprise yields high productivity (table 1-23). Da Teh enterprise has nursery and experienced staff in producing seedlings with large scale.
- (5) Farmers prefer this species based themselves on realistic results in the area.
- (6) Acacia hybrid can improve soil conditions, causing no harmful impacts on environment (soil, water, agriculture production)

3.2.3 Afforestation plant

3.2.3.1 Identify area to be planted annum

(1) Total area of the project is 1.406,7 ha; Acacia hybrid is planted and harvested in year 8 since planting. Afforestation is implemented in 7 years and distributed for different years as follow:

- 2008: 227,8 ha,
- 2009: 215,6 ha,
- 2010: 233,3 ha,
- 2011: 219,1 ha,

2012: 193,6 ha,
 2013: 154,7 ha,
 2014: 162,6 ha.

(2) This breaking down fits the capacity of afforestation of the enterprise, the supply of seedling and human beings as well as the management and supervision of Da Teh enterprise.

(3) Afforestation is implemented in 7 years (2008 to 2014). And from 2015 to 2021, beside the tending and protection harvest activity is also undertaken. Right after logging, replanting for cycle 2 is started. The project cycle is not too long (14 years tentatively), ensuring continuous afforestation and harvest during the project life time, ensuring stable quantity of harvest.

Afforestation area in the PA annually is identified as follow:

Table 2.2 Planting plan

Species: Acacia hybrid

No.	Forest district	Total	Area planted annum (ha)						
			2008	2009	2010	2011	2012	2013	2014
1	550	504,8	36,9	57,4	24,2	91,0	106,9	93,7	94,7
2	551B	101,3	17,4	52,8		31,1			
3	554B	175,2	48,2		127,0				
4	571	67,9							67,9
5	572A	355,1	125,3		82,1		86,7	61,0	
6	572B	202,4		105,4		97,0			
Total		1406,7	227,8	215,6	233,3	219,1	193,6	154,7	162,6

(Annex 4, 5 and 6 for details)

3.2.3.2 Organization for afforestation

Afforestation is carried out on the basic of official technical guidelines promulgated so far.

3.2.4 Seedling supply plan

3.2.4.1 Annual seedling plan

Based on: (i) Afforestation plan annum; (ii) Species and density (+10% for beating up) to estimate quantity of seedlings as follow:

Table 2.3: Seedling supply plan

No.	Planting year	Species	Area (ha)	Quantity (1,660 stem/ha)	Beating up (166 stem/ha)	Total
1	2008	A. Hybrid	227,8	378.148	37.815	415.963
2	2009	A. Hybrid	215,6	357.896	35.790	393.686
3	2010	A. Hybrid	233,3	387.278	38.728	426.006
4	2011	A. Hybrid	219,1	363.706	36.371	400.077
5	2012	A. Hybrid	193,6	321.376	32.138	353.514
6	2013	A. Hybrid	154,7	256.802	25.680	282.482
7	2014	A. Hybrid	162,6	269.916	26.992	296.908
Total			1.406,7	2.335.122	233.514	2.568.636

(Annex 4, 5 and 6 for details)

3.2.4.2 Identification of seedling suppliers

(1) Based on the demand for seedlings annum to see that smallest requirement of seedlings is in year 6 (282,482) and highest in year 3 (426,006).

(2) Da Teh enterprise a certificated has nursery with the production capacity of 600,000 Acacia hybrid/crop.

(3) Staff are experienced in production of seedlings of Acacia hybrid (cutting). At the moment, the enterprise supplies seedlings not only to the enterprise itself but also farmers in Da Teh district.

Compare with the demand for seedlings of the project, Da Teh enterprise can supply enough seedlings as afforestation plan of the project.

3.2.5 Harvest plan

3.2.5.1 Method and technology

- (1) Clear cut method is applied
- (2) Using chain saw for felling, disbranching, sectioning, debarking.
- (3) Skidding manually as well as mechanically. Skidding distance is 200 - 300 m.

3.2.5.2 Area and quantity of harvest

- (1) Based on the productivity prediction, commercial volume is 70% of the standing volume.
 - (2) Based on the management cycle, plantation forest will logged in year 8 since planting
 - (3) Based on afforestation area planned for logging annually
- Annual area and quantity of harvest are aggregated as follow:

Table 2.4 Annual area and quantity of harvest

Item	Logging year							Total
	2015	2016	2017	2018	2019	2020	2021	
A. mangium (ha)	227,8	215,6	233,3	219,1	193,6	154,7	162,6	1.406,7
Standing volume (m ³)	49.466	46.500	50.400	46.634	41.911	33.573	33.879	302.363
Commercial volume (m ³)	34.626	32.550	35.280	32.644	29.338	23.501	23.715	211.654

(See also Annex 4, 5 and 6 for details)

3.2.6 Plan for construction and upgrading infrastructure

3.2.6.1 Construction and upgrading roads

(1) Afforestation area concentrates in compartment and forest district. Roads only reach to the outside of the afforestation sites. To serve the project activities in the field, it is necessary to open new roads to the heart of the afforestation sites.

(2) Roads should be opened when starting planting for transporting of seedlings and materials. The roads can be used as the fire breaks. Later on, roads serve the transport of timber. Quantity of roads to be opened is shown in table below:

Table 2.5 Plan for construction and upgrading roads

No.	Year	Quantity (m)
1	2008	3.350
2	2009	3.240
3	2010	1.560
4	2011	3.740
5	2012	5.590
6	2013	2.600
7	2014	3.420
Total		23.500

(See also Annex 4 and 5 for details)

3.2.6.2 *Others*

(1) Project office: Da Teh enterprise is the project implementer, so office of the enterprise can be used as PMB office.

(2) Fire watch-tower

To serve forest protection in particular forest fire prevention, the system of towers should be set up with the following characters:

- Temporary construction and use in dry season. And 51 towers are required to meet the realist situation

- Set up on top of high hills, easy to access. The position of towers is in stand 1, compartment 10, forest district 550; stand 1, compartment 2, forest district 554B; stand 2, compartment 8, forest district 572A; stand 3, compartment 5, forest district 572A.

Table 2.6 Plan for the construction of fire watch-towers

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
Quantity	3	3	4	4	4	4	4	4	4	4	4	4	3	2	51

4 Potential market

The geographical location of the PA is in the south of Lam Dong province, the transport system is advantageous which creates good opportunity for accessing to potential markets in timber processing industry and pulpwood in industrial parks in HCM city and other province as Dong Nai. Through survey and analysis a potential market is considered as follow:

4.1 Timber material supply capacity of the project

According to the project implementation plan, from 2015 onward harvesting volume of Acacia hybrid plantation forests of Da Teh enterprise is 30.000 m³/year in average (or >200 ha per year);

The rate of commercial products from plantation forests by specifications as follow:

Table 2.7 The rate of commercial products of Acacia hybrid plantation forests by timber specifications

Product	Rate (%)	Average (m3/ha)
Group 1 (D > 19 cm; L = 1,2 m)	35	49
Group 2 (D = 13-19 cm; L = 2,2m)	55	77
Group 3 (D = 6 - 12 cm; L = 2,2 m)	10	14

4.2 Potential market

(1) From the results of market survey on demand, price, transport to know that the market for Acacia hybrid product is satisfactory. At present, most of Acacia timber in Lam Dong province is sold to other provinces, key potential users are in Dong Nai, Sai Gon and Binh Duong provinces

(2) Potential users is Phu Dong Joint Venture Company by the following reasons:

- Phu Dong Joint Venture Company has the production capacity of 20,000 m³ of particleboard and 100% of product made by this company is exported to Japan markets. Phu Dong Joint Venture Company needs more or less 25.000 - 30.000 m³ of hard wood every year. At the moment only 70% of demand is met. If the company has enough and stable material supply it will expand the production. In conclusion this company can use all timber produced by the enterprise.

- Distance from Phu Dong Joint Venture Company to the project area is about 160 km, and road quality is good, that reduces transport cost a lot.

- Price set up by Phu Dong Joint Venture Company for product made by Da Teh enterprise is suitable and satisfied.

(3) In addition to Phu Dong Joint Venture Company, other users as Tan Mai Paper Mill, Mai, Minh Huy Co. Ltd, timber processing mills in Dong Nai province. Da Teh enterprise is considered to be a clue o consuming products from plantation forests of the project with the capacity of 5,100 m³/year in 2007 and 10.000 m³/year in 2010.

4.3 Present and future price of products

- Selling price of timber depends on specifications. According to survey results in 2006, selling price at landing 2 of Da Teh enterprise by groups as follow:

Table 2.8 Price of Acacia hybrid by specifications

Products	Selling price at landing 2 (Dong/m ³)
Group 1 (D >19 cm; L = 1,2 m)	552.000
Group 2 (D= 13-19 cm; L = 2,2m)	437.000
Group 3 (D= 6 - 12 cm; L = 2,2 m)	230.000

This is the price level to be used for analysis of economic and financial effectiveness of the project.

5 Project cost

5.1 Assumptions for cost calculation

Based on the results of field survey on natural and socio-economic conditions, survey in district and province banks, and based on guideline of cost estimation for the silviculture work formulation promulgated by Lam Dong DARD and the reality of production of the enterprise to implement the project, the following pre-conditions are set up to calculate the project costs.

- (1) Base year is 2006 and starting year is the 2008
- (2) Expected inflation: 5%/year.

Table 2.9 CPI and PPI in the recent years

Item	2001	2002	2003	2004	2005	Bình quân
CPI (consumer price index) %	100,8	104,0	103,0	109,5	105,4	4,5
PPI (selling price index) %	96,2	107,4	103,9	108,7	105,9	4,4

(Source: National Year Book- 2005)

Through the results of analysis of CPI and PPI in 5 recent years, it is seen that CPI in 5 years yields the average value of 4,5%; PPI - 4,4%. But when calculation is applied to 3 recent years as, the index of CPI is 6,0%; PPI - 6,2%. So, the domestic inflation index is 5% for calculation.

- (3) Physical contingency is 5% of baseline cost
- (4) Life time of the project is 14 years from 2008 - 2021.
- (5) Management cycle is 7 years, starting harvest in year 8 and for one cycle
- (6) Labor cost is 40,000 dong/man-day, (local price)
- (7) Price of fertilizers and seedlings in project communes

5.2 Project cost

Labor cost is 40.000 dong/man-day. The cost per one ha is applied right in the first year and the value of cost is at a time of 2006. Taking the common figure of 2 productivity class of 140 m³/ha. Then, costs for 1 ha of Acacia hybrid and the whole model is presented in the table below:

Both cost calculations for 1 ha model and project as a whole, the material cost includes cost for road construction, land hiring and fire-watch towers. And other costs include cost for technical training.

Table 2.10 Estimation cost for 1 ha of plantation forests (40,000 Dong/man-day)

<i>Unit: Dong.</i>		
Item of costs/year	Total	%
A) Total baseline cost (I+II+III)	34.049.152	68,74
I. Direct cost	28.824.521	58,19
1. Planting, tending and protection costs	11.830.621	23,88
a- Labor cost	9.613.600	19,41
b- Material cost	2.217.021	4,48
2. Harvesting cost	16.993.900	34,31
II. Indirect cost	4.943.405	9,98
1. Management fee (6,5% x DIRECT COST)	1.873.594	3,78
2. VAT (10% × value predicted before tax)	3.069.811	6,20
III. Others	281.226	0,57
B) Physical contingency	1.702.458	3,44
C) Price contingency	13.782.787	27,82
Total cost for planting, tending, protection and logging (A+B+C)	49.534.397	100,00

(See also Annex 9 for details)

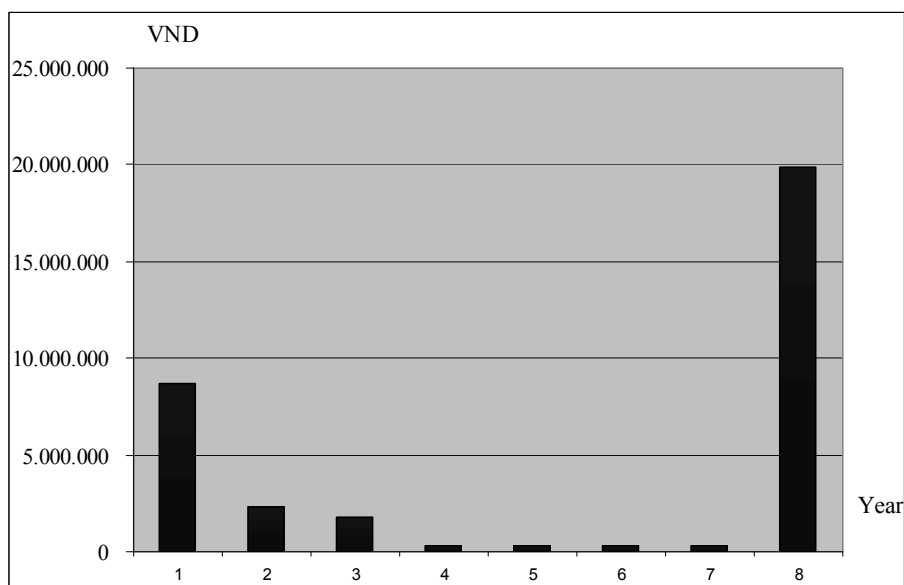


Diagram 3 Estimated cost for 1 ha (excluding reservation)

Total cost for 1 ha of Acacia hybrid is 49,5 Mil. Dong, of which, 11,8 Mil. Dong or 23,88% for planting, tending and protection (from year 1 to 7); and 17 million or 34,31% for logging. If Physical contingency and Price contingency are excluded then, total cost for 1 ha is estimated at 34 Mil. Dong.

Table 2.11 Cost for the whole model (1,406.7 ha)

Unit: Dong

Item of costs/year	Total	%
A) Total baseline cost (I+II+III)	47.896.941.680	59,85
I. Direct cost	40.547.453.170	50,66
1. Cost for planting, tending and production	16.642.134.040	20,79
a- Cost for planting, tending and production Labor cost	13.523.451.120	16,90
b- Material cost	3.118.682.920	3,90
2. Others	23.905.319.130	29,87
II. Indirect cost	6.953.888.219	8,69
1. Management fee (6,5%x direct cost)	2.635.584.456	3,29
2. VAT (10% × value predicted before tax)	4.318.303.763	5,40
III. Others	395.600.291	0,49
B) Physical contingency	2.394.847.084	2,99
C) Price contingency	29.740.500.262	37,16
Total cost for planting, tending, protection and logging (A+B+C)	80.032.289.025	100,00

(See also Annex 9 and 10 for details)

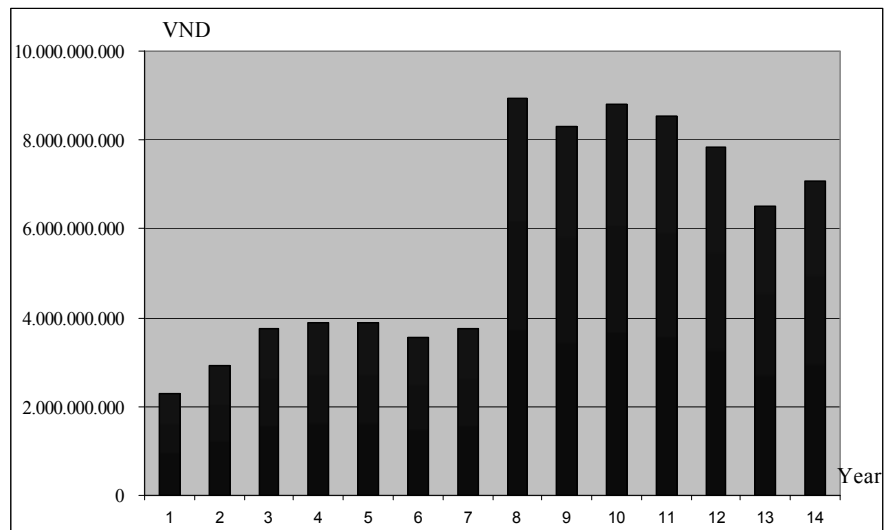


Diagram 4 Estimated cost for the whole model (1,406.7 ha including Price contingency and Physical contingency)

Total cost for the model (1,406.7 ha) is 80 billion Dong, of which, 16,6 billion Dong or 20,9% for planting, tending and protection; 23,9 billion Dong or 29,87% for logging. If Physical contingency and Price contingency are excluded then, total cost for the model is estimated at 47.8 billion Dong.

6 Financial plan

6.1 Financial sources for the project

Project cost is taken from financial Source: Lam Dong province Agriculture Bank and Da Teh enterprise own fund. Table below shows the financial sources for project implementation.

Table 2.12 Aggregation of costs by financial source

Unit: Dong

Item of costs/year	Own fund	Loan	Total
A) Total baseline cost (I+II+III)	28.673.706.665	19.223.235.014	47.896.941.680
I. Direct cost	23.905.319.130	16.642.134.040	40.547.453.170
1. Cost for planting, tending and protection	0	16.642.134.040	16.642.134.040
a- Labor cost	0	13.523.451.120	13.523.451.120
b- Material cost	0	3.118.682.920	3.118.682.920
2. Others	23.905.319.130	0	23.905.319.130
II. Indirect cost	4.372.787.245	2.581.100.974	6.953.888.219
1. Management fee (6,5% x direct cost)	2.635.584.456	0	2.635.584.456
2. VAT (10% × value predicted before tax)	1.737.202.789	2.581.100.974	4.318.303.763
III. Others	395.600.291	0	395.600.291
B) Physical contingency	2.394.847.084	0	2.394.847.084
C) Price contingency	29.740.500.262	0	29.740.500.262
Total cost for planting, tending, protection and logging (A+B+C)	60.809.054.011	19.223.235.014	80.032.289.025
Interest to be paid by the enterprise	19.952.652.775	0	19.952.652.775
Total project cost	80.761.706.786	19.223.235.014	99.984.941.800
%	81	19	100

(Unskilled labor price = 40.000 dong/man-day)

Total loan sum is 19,223,235,014 Dong or 80% of total cost for first 7 years of the project. From year 8 onward, the enterprise will have income from selling products to clear off. The reservation cost is an item that remained unused and is considered to be the enterprise's own fund and if necessary this item is used and pays no rate of interest.

6.2 Plan for repayment

6.2.1 Term and conditions of loan

Conditions and loan for afforestation project are based on the conditions proposed by the Agriculture Bank, however, the adjustment of time for repayment of loan is applied. As is calculated, the enterprise has to borrow a sum of 13.7 Mil. Dong in average for 1 ha model material cost, design, check upon delivery and labor cost for 1 ha model.

Conditions for getting loan:

- (1) Borrower: Da Teh enterprise
- (2) Condition: Collateral
- (3) Interest: 15.36%/year, paid in yearly manner
- (4) Max loan sum is 80% of total cost
- (5) Grace period: 7 years

6.2.2 Repayment plan

Plan for repayment of loan is set up. Interest is paid in yearly manner while principal is paid in year 6. Source is distributed to every year and financial plan for one ha and the whole model of 1.406,7 ha (including Physical contingency and Price contingency) are shown in the table below:

Table 2.13 Repayment plan for 1 ha model*Unit: 1.000 Dong*

Year	2008	2009	2010	2011	2012	2013	2014	2015
Implementation year	2	3	4	5	6	7	8	9
Outstanding balance (early of year)	0	8.029	10.301	12.108	12.474	12.858	13.261	13.685
Disbursement	8.029	2.272	1.808	366	384	403	423	0
Repayment	0	1.233	1.582	1.860	1.916	1.975	2.037	15.787
Interest	0	1.233	1.582	1.860	1.916	1.975	2.037	2.102
Principal	0	0	0	0	0	0	0	13.685
Outstanding balance (end of year)	8.029	10.301	12.108	12.474	12.858	13.261	13.685	0

Table 2.14 (a) Repayment plan for 1,406.7 ha model*Unit: 1.000 Dong.*

Year	2008	2009	2010	2011	2012	2013	2014
Implementation year	2	3	4	5	6	7	8
Outstanding balance (early of year)	0	1.829.049	4.164.146	7.155.354	10.268.621	13.369.411	16.220.562
Disbursement	1.829.049	2.335.097	2.991.208	3.113.267	3.100.790	2.851.152	3.002.673
Repayment	0	280.942	639.613	1.099.062	1.577.260	2.053.541	2.491.478
Interest	0	280.942	639.613	1.099.062	1.577.260	2.053.541	2.491.478
Principal	0	0	0	0	0	0	0
Outstanding balance (end of year)	1.829.049	4.164.146	7.155.354	10.268.621	13.369.411	16.220.562	19.223.235

Table 2.14 (b): Repayment plan for 1,406.7 ha model

Year	2015	2016	2017	2018	2019	2020	2021
Implementation year	9	10	11	12	13	14	15
Outstanding balance (early of year)	19.223.235	16.477.059	13.730.882	10.984.706	8.238.529	5.492.353	2.746.176
Disbursement	0	0	0	0	0	0	0
Repayment	5.698.865	5.277.053	4.855.240	4.433.427	4.011.615	3.589.802	3.167.989
Interest	2.952.689	2.530.876	2.109.063	1.687.251	1.265.438	843.625	421.813
Principal	2.746.176	2.746.176	2.746.176	2.746.176	2.746.176	2.746.176	2.746.176
Outstanding balance (end of year)	16.477.059	13.730.882	10.984.706	8.238.529	5.492.353	2.746.176	0

6.3 Project financial flow

On the basis of proposed financial sources, the project consists of an only component. The financial flow is directly identified by Da Teh enterprise and Agriculture Bank of Lam Dong province under the guarantee of Lam Dong PPC.

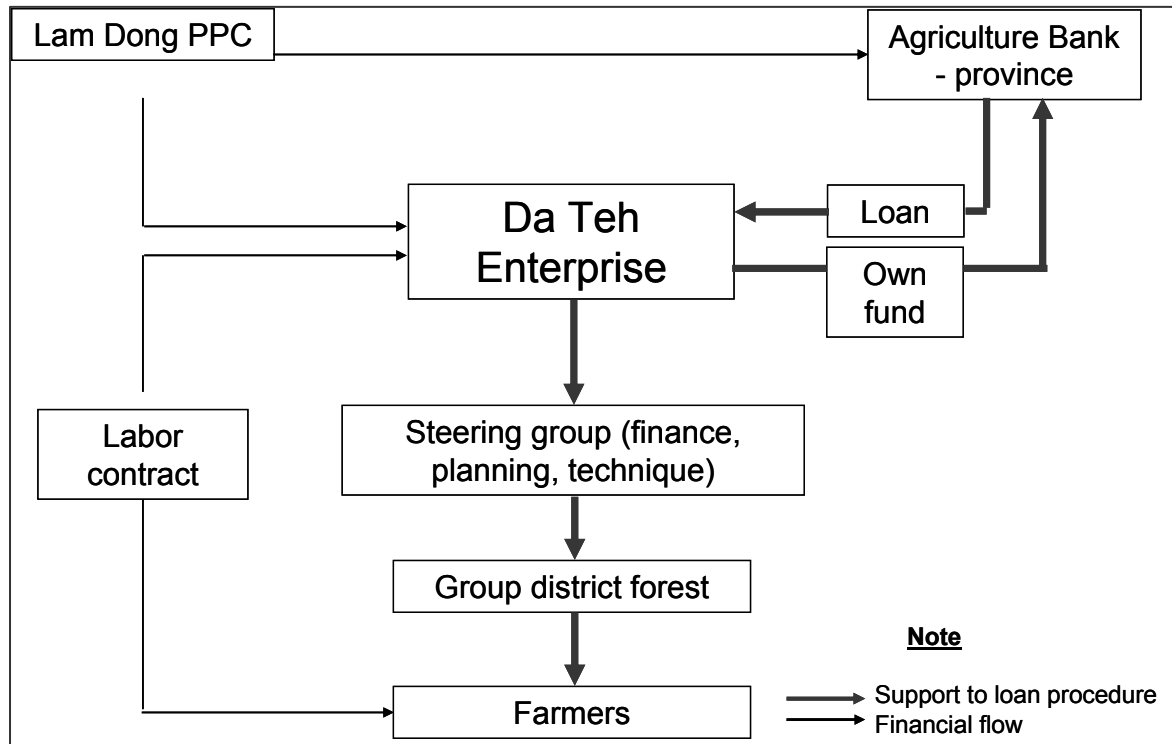


Diagram 5 Financial flow for project implementation

The demand for loan of the project is identified according to cost plan of the project. The PMB, Da Teh enterprise, the project implementer works in close connection to Lam Dong PPC and Lam Dong Agriculture Bank to sort out. The enterprises directly borrow money from the Agriculture Bank of Lam Dong province under the guarantee of Lam Dong PPC based on the process of using money of the project.

7 Organization for project management and implementation

Project Mane: Project of treatment of exhausted natural forests and production afforestation in Da Teh enterprise, Da Teh district, Lam Dong province.

7.1 Role and responsibility of the project holder (Da Teh enterprise)

Da Teh enterprise is investment holder and implementer of the project. The role of Da Teh enterprise in project implementation is identified as follow:

a) Linking with concerned organizations/sectors:

Da Teh enterprise is the project holder, it should collaborate with Lam Dong PPC, DARD, Da Teh DPC and financial agencies to solve issues of concerned as:

- + Constructs plan for improvement of exhausted forests to grow new economic plantation forests then submits to PPC and DARD for approval

- + Completes the procedure for getting loan fitting the regulations of Financial Department and the Agriculture Bank base in Da Teh district

- + Coordinates with district, communes to receive and contract labors with farmer HHs involving in the project, links training to education/dissemination of forest protection to local people.

- + Employs regulations, rules and new policy in production afforestation activities

b) Role in subjective management / doing business

The organizational machine of the enterprise the directory board and functional sections, as shown in a diagram below;

Note:

One-way arrows show direct relation and two-way arrows show coordination relation

Please insert these to the boxes in Vietnamese

Ban Giám đốc: Directory Board

Phòng Kinh tế: Economic Section

Phòng Kỹ thuật QL BV: Technical and Forest Management and Protection Section

Xưởng chế biến lâm sản: Forest Product Processing Workshop

Personnel and Administrative Section

Đội trồng rừng & KT lâm sản: *May be KT lâm sinh*: Afforestation Brigade and Silviculture technique

Cụm TK: District Forest Group 1, 4, 5

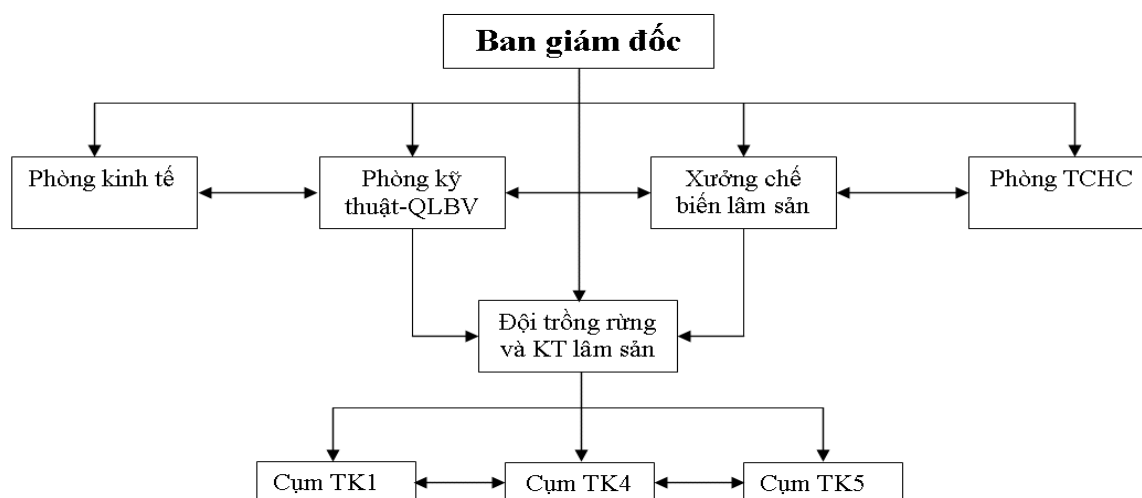


Diagram 6 Managerial machine of Da Teh enterprise

With the organizational system presented above, roles of functional sections of Da Teh enterprise in afforestation are coordinated as follow:

(1) Directory Board: 2 persons, (i) the Director coordinates general activities, on behalf of the enterprise to sign loan contact; (ii) the vice Director, the Director's assistant to implement what assigned/delegated by the Director, to settle thongs on behalf of the Director when the Director is in absence

(2) Personnel an Administrative Section: 5 persons, consultancy to the Director on the issue of personnel, management of employees, administrative issues

(3) Economic Section: 7 persons, consultancy to the Director in financial issue, planning for monitoring, getting loan, commercial contracting, labor contracting, contacting to processing agencies within and without the province

(4) Technical and Forest Management and Protection Section: 6 persons, consultancy to the Directory Board in planting, tending and logging, conducting the forest management –protection, fire prevention network. In connection the staff working in the District forests to deal with dissemination in forest protection.

(5) Forest Product Processing Workshop: 20 persons, implementation of contracts of process forest products, setting up market demand plan and production plan

(6) Afforestation Brigade and Silviculture technique: 10 persons, doing nursery work, planting and harvest

(7) District Forest Group: consists of head of District Forest Group and members. This group is in charge of production and afforestation. District Forest Groups work in connection to local authority, CPC, to monitor and supervise afforestation activities.

District Forest Group 1: 6 persons, working in Trieu Hai and Da Kho communes

District Forest Group 4: 6 persons, working in Quoc Oai commune

District Forest Group 5: 8 persons, working in An Nhon, Huong Lam and Da Lay communes

Note:

Broken line: indirect relationship; solid lines: direct relationship; 2-way arrows: coordination relationship

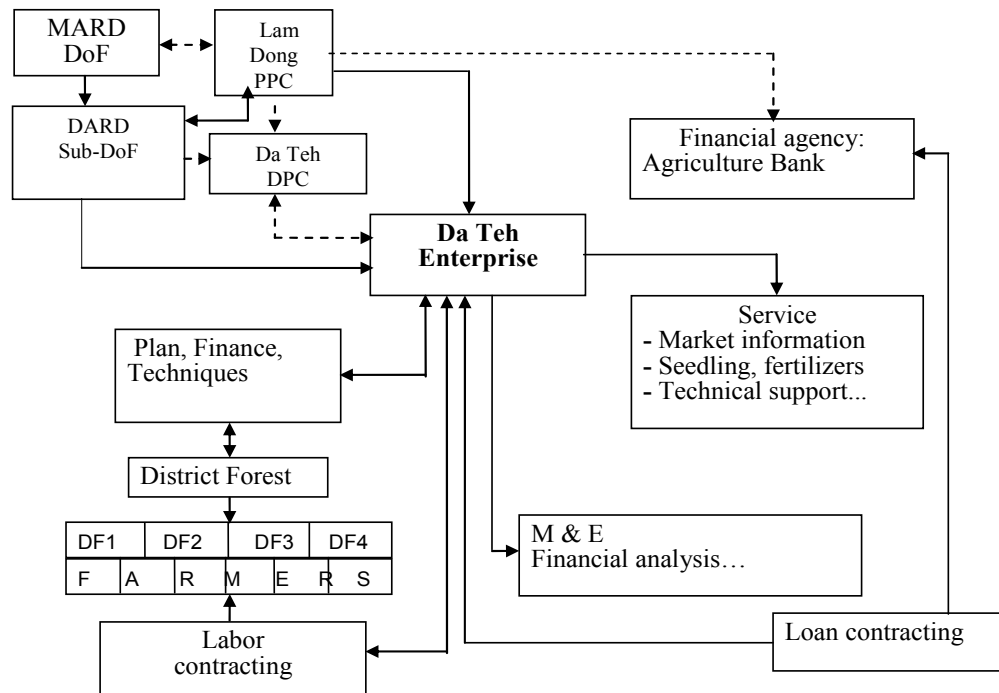


Diagram 7 Organizational structure for implementation production afforestation project of Da Teh enterprise

7.2 Role and responsible of the supporting agencies

Supporting agencies: DoF, Lam Dong PPC, DARD, Sub-DoF, Da Teh DPC and the bank...having coordination relationship

(1) DoF: mechanism, policies for afforestation in Vietnam in general but there is an opportunity to adopt in the PA (Circulations, Guidelines...)

(2) Lam Dong PPC: pushing up financial agency to support PMB (Da Teh enterprise) to access to loan with suitable rate of interest, mechanism for afforestation, approval plans of improvement of exhausted forests.

(3) DARD, Sub-DoF: technical support appraisal of plans of improvement of exhausted forests, policy of land use, resources relating to the PA, vertical supervision of project implementation.

(4) Da Teh district DPC: Dissemination, canvassing local people to participating in the project, supply information on labors

(5) Lam Dong Agriculture Bank: Facilitation for the implementation financially, supervision of project activities.

7.3 Role of people involving in the project

Land in the PA is managed by the enterprise, HHs involve in the project by contribution of labors and the enterprise pays for their labor-days in planting, tending and protection of plantation forests.

Farmer HHs involve in the project will be trained on necessary silviculture techniques as soil preparation, planting, logging ... In addition, farmers will be supplied with information relating their rights, benefits and responsibility when involving in the project.

8 Labor requirement and solution for labor mobilization

8.1 Labor requirement

(1) Based on: (i) Technical cost norms from Decree No. 38/2005/QĐ-BNN, 06/07/2005 of MARD; (ii) Guidelines for estimations cost for the formulation of silviculture work of Lam Dong DARD; (iii) reality of production of Da Teh enterprise in the field; (iv) plan of afforestation, logging set up for the project. Labor requirement calculated for one project cycle starting from 2008 till harvest 2021.

(2) Operational activities in the field bearing seasonal character but not evenly distributed in all months of the year. The common characters is that in all years, activities often happen at the beginning and at the end of the year. This is the suitable time for site preparation for afforestation, open forest before logging, felling and skidding of timber from the plantation forest.

(3) Labor demand increases gradually from year 1 (2008) to year 8 (2015), then, reduction every to the last year (2021).

Aggregation of labor requirement annually of the project is shown in table below:

Table 2.15 (a) Annual labor requirement

Item	2008	2009	2010	2011	2012	2013	2014
I. By total man-day annum (man-day/year)							
1. Planting	19.199	18171	19662	18466	16317	13038	13705
2. Tending	8688	16911	22738	22570	21491	18686	16875
3. Protection	2945	5733	8750	11583	14086	16086	18189
4. Harvest	0	0	0	0	0	0	0
Total	30.832	40.815	51.150	52.619	51.894	47.810	48.769
II. By months that require most labor-day in the year (man-day/month)							
Month	6	11, 12	11, 12	11, 12	11, 12	11, 12	11, 12
Total (man-day/month)	4.574	5.702	7.402	7.605	7.454	6.776	6.431
Labor (man/month)	208	259	336	346	339	308	292

Table 2.15 (b) Annual labor requirement

Item	2015	2016	2017	2018	2019	2020	2021
By total man-day annum							
1. Planting	0	0	0	0	0	0	0
2. Tending	10016	4009	0	0	0	0	0
3. Protection	15243	12455	9439	6606	4103	2102	0
4. Harvest	59.215	55.468	62.822	56.458	51.046	42.988	42.598
Total	84.474	71.932	72.261	63.064	55.149	45.090	42.598
II. By months that require most labor-day in the year							
Month	11, 12	3, 4	1, 2, 3, 4, 10, 11, 12	1, 2, 3, 4, 10, 11, 12	1, 2, 3, 4, 10, 11, 12	1, 2, 3, 4, 10, 11, 12	1, 2, 3, 4, 10, 11, 12
Total (man-day/month)	12.585	9.979	9.762	8.616	7.634	6.316	6.086
Labor (man/month)	572	454	444	392	347	287	277

(See also Annex 7)

8.2 Solution of labor mobilization

(1) According to results of survey on natural and socio-economic conditions, total labors in the PA is 7.372 persons, mobilizing only 10 % of labors from each the project communes and 700 labors will be obtained.

(2) Comparing to the labor demand annually during the project cycle a said in table 2-15, the forestry labor on the spot is enough for the implementation of project activity annum. So, labor available in the PA can be mobilized they are mainly from farmer HHs involving in the afforestation project via labor contract.

(3) Da Teh enterprise coordinates with local authority to disseminate to people in 4 project communes to participate in afforestation activities via labor contract

(4) The mobilization of labors for afforestation of the project will be carried out by Da Teh enterprise by District Forest Groups where afforestation is taken place. Leaders of the District Forest Groups will be in charge of labor mobilization and supervision of the implementation fieldwork.

(5) During the implementation of the project, the enterprise will consider of priority given to families in difficulty, those who seriously follow the regulations of the enterprise with job.

8.3 Technical training

The purpose of technical training is to equip farmers with operational skills in the field as soil preparation, planting, tending and protection as well as logging. The training is implemented as follow:

(1) The technical section of Da Teh enterprise will train the enterprise's staff on technical measures to be applied in the field

(2) Trained staff in (1) will directly support farmers what they learnt in the form of "learning by doing"

Training is regularly implemented during the project lifetime

9 Monitoring and Evaluation (M&E)

The M&E will base on the identified indicators of the project. These indicators are set up in the project design matrix – the logical framework (See also Annex 1 for details)

9.1 Identified indicators for M&E

Identified indicators for M&E consist of afforested area, quality of plantation forests, result of tending and protection, commercial logged and sold volume, living conditions of HHs and economic brought about by the project to farmers HHs involving in the project

9.2 Cycle of M&E

M&E is implemented in a yearly manner to get to know the results of project implementation each year and accumulate results from starting year to the M&E year.

9.3 Composition of the M&E groups

M&E groups consists of participants from DARD, Sub-DoF, Agriculture Bank, Lam Dong Agriculture – Forestry Share Consultancy Company and Da Teh district SARD

9.4 Method of M&E and information collection

As regard afforestation sites, sub-DoF in connection to SARD supervise the implementation the silviculture operations in growing economic plantation forests in area and technical regulations applied.

Check all area, compare to the afforestation design map to determine quantity of work done. Random or systematic sampling by line of by sampling plots (plot area: 100 - 400 m²). Quantity of sampling depends on area. Unit is numbers of trees of holes; method of M&E of tending is similar to afforestation.

Commercial timber logged and sold are checked using management book, statistics, document of harvest design and compare to area logged or interview / refer data from timber processing enterprises.

M&E on people involving the project: Da Teh district SARD and Da Teh enterprise working in connection to do this.

9.5 Budget for M&E

Budget for M&E is taken from project implementation source

9.6 Achievements of M&E

Achievements of M&E are documents of quality check upon delivery, reports and proposals from the improvement of the situation of project implementation.

10 Evaluation of the sustainability of the project

10.1 Technical Evaluation

(1) Suitability of technical measures applied

Technical measures for afforestation applied in the production afforestation project of Da Teh enterprise are constructed based on the Technical Regulations for intensive growing Acacia hybrid for pulpwood of the General Pulp Co. of Vietnam in 2002, which is approved by DARD and it is applied in Da Teh enterprise in recent years.

Survey on plantation forests in Da Teh enterprise to know that Acacia hybrid planted in 2003, 2004 and 2005 applied this regulations (See also Annex 13) and the trees grow well.

(2) The ensure of productivity of plantation forests:

The productivity of plantation forests is used for the calculation is taken from real productivity obtained in afforested areas of A. hybrid in Da Teh enterprise. Therefore the prediction of productivity (m^3/ha) as calculated by the project ensures the feasibility

The selection of afforestation sites is considered on the basic of suitability to natural conditions of the PA, to GOV policy promulgated, meets the production requirement of Da Teh enterprise. And the land use coefficient of 0.8 ensures the safety of land use.

The arrangement of quantity of work annum as are of planting, area of logging, seedling production plan, opening forestry roads to serve the project ... is thoroughly considered based on the implementation capacity of Da Teh enterprise. Therefore, the implementation of afforestation and logging ... satisfy the requirement of quantity and quality of implementation, which ensures the implementation of the project as planned.

From the contents of evaluation in (1) and (2) said above it is possible to confirm that the project is feasible technically

10.2 Financial Evaluation

The production afforestation project using Acacia hybrid on an area of 1,406.7 ha, density of 1,60 stem /ha, management cycle of 7 years and harvest in year 8

Investment: 100 billion Dong including interest of loan (excluding reservation of 68 billion Dong)

Turnover obtained after logging: 160 billion Dong (if excluded the inflation of 89.9 billion Dong)

Indicators recorded:

Out-cash flow CPV: 20.8 billion Dong

In-cash flow BPV: 26,9 billion Dong

Net benefit NPV: 6.1 billion Dong

IRR: 18%;

BCR: 1.3

So, the project will obtain financial benefits.

10.3 Other Assessment

(1) Environment effectiveness: Replace exhausted forests by growing Acacia hybrid for improvement of soil, increasing forest coverage, soil protection against erosion and water source conservation

(2) Scio-economic effectiveness: (i) job for community, awareness raising in forest protection of people, improvement life of farmer HHs involving the project; (iii) forming up the

raw material zone which is a base for the upgrading the forest product processing system in the PA for subjective production and more job for community

(3) In addition, there are some constraints which need to be adjusted and regulated during the process of implementation: (i) The supporting role of the enterprise in extension and disseminations of forestry operation in community involving the project for overcoming difficulties on production afforestation techniques; (ii) Paralleling to the accessibility to markets, generating material source to counterparts in doing business. The enterprise step by step balances the obtained benefits for upgrading of equipment to improve the competition capacity in the markets, and subjective in production and doing business, linking the raw material zone to the timber processing nearby.

PART III PROJECT EFFECTIVENESS

1 Economic effectiveness

1.1 Financial analysis

1.1.1 An overview of production forest model, plan of planting, tending and logging

(1) Production forest model

The proposed production forest project in 4 communes (Trieu Hai , Quoc Oai, An Nhon and Da Kho) purely grows Acacia hybrid, management cycle of 7 years. Table 1 shows afforestation, tending and logging plan of the project. Planting happens in year 1 with the density of 1,660 stem/ha. Tending is carried out in year 1, 2 and 3, protection – from year 1 to year 7 and logging – in year 8.

Table 3.1 Design for planting, tending and harvest

Activity / year	1	2	3	4	5	6	7	8
Planting	_____							
Tending	_____	_____	_____					
Protection	_____	_____	_____	_____	_____	_____	_____	
Harvest								_____

(2) Afforestation plan

Afforestation is carried out in 2008 and ended in 2014. Total afforested area of 1.406,7 ha.

Table 3.2 Annual afforestation plan

Unit: ha

Item	2008	2009	2010	2011	2012	2013	2014	
Implementation year	1	2	3	4	5	6	7	Total
Area	227,8	215,6	233,3	219,1	193,6	154,7	162,6	1.406,7

(3) Logging plan

Logging is happening in year 8 and ending in year 14 of the project and is shown in the table below:

Table 3.3 Harvest plan

Unit: ha

Item	2015	2016	2017	2018	2019	2020	2021	Total
Implementation year	1	2	3	4	5	6	7	
Area	227,8	215,6	233,3	219,1	193,6	154,7	162,6	1.406,7

1.1.2 Analysis method; assumptions; expected benefits and costs

1.1.2.1 Analysis method

(1) In case of without-project

The reality in this area shows that, in case of without-project, the forestry lands in the proposed project area consist of exhausted forests of poor stock, and bring about no economic values. It is to see that on the same lands, if the project happens the economic values brought about is higher

(2) In case of with-project

Analysis method: The principle of analysis is presented in the Diagram below by means of calculation of the net income based on the fixed price of 2006 and investment indicators as NPV, IRR, and B/C ratio.

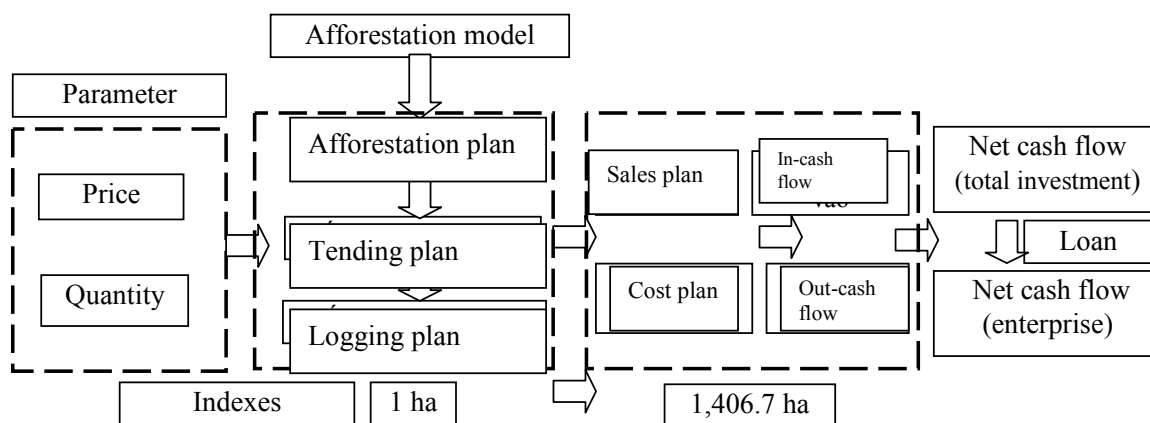


Diagram 8 Principle of financial analysis (for both cases with- & without-project)

The analysis is applied for 1 ha and the for the whole model. From the total investment point of view, direct B/C is calculated in the cash flow. Then analysis by implementer's point of view (enterprise). In analysis by implementer's point of view, the programme of borrowing money is placed in the cash flow of total investment point of view.

The analysis will be implemented by means of calculation the net cash flow and apply the investment indicators as NPV, IRR and B/C ratio on the basic of the fixed price in 2006. The net cash flow based on the sales plan and expenditure plan which are presented in the parameters (unit price). Quantity of B/C for 1 ha of plantation forest and implementation time schedule, planting and logging plan are set up on the basic of the production afforestation model.

Formulate table of sales plan (in-cash flow) and expenditure (out-cash flow) of 1 ha Acacia hybrid model.

Analysis of the net cash flow, IRR, NPV and B/C ratio by total investment point of view of 1 ha of plantation forest and the whole model.

Formulate table of borrowing money, analysis of the NPV.

Analysis of the NPV and IRR by project holder point of view of 1 ha and the whole model.

Analysis of the sensibility of NPV and IRR by project holder point of view of 1 ha and the whole model on the change of conditions as rate of interest and unit price of labor man-day.

1.1.2.2 Assumptions and expected costs

- (1) Inflation: 5 % (an estimation figure).
- (2) Fixed price: in 2006.
- (3) Physical contingency: 5% of baseline cost
- (4) Expected cost

Project costs consisting of items as seedlings, fertilizers, labors (planting, tending, afforestation design...) are calculated on the basic of unit price for man-day (working day) of 40,000 Dong/man-day. According to the results of survey, few HHs have off-farm income taken from business, selling labor to other HHs or working in the construction sites. The off-farm working day price ranges from 30,000 – 40,000 Dong/man-day in the PA.

Unit price for seedlings and fertilizers is calculated on the basic of the existing price (in month 10 of 2006). Initial density is 1,660 stem/ha, and the rate of beating up is 10% (166)

Table 3.4 Plan cost

Item	Unit price - 2006	Quantity
Labor cost (planting, tending)	40.000 Dong/man-day	As presented in Annex 9 Table 1
Afforestation design, tending, Check upon delivery	57.287 Dong/man-day	As presented in Annex 9 Table 1
Check upon delivery, set up management document	48.000 Dong/man-day	As presented in Annex 9 Table 1
Seedlings (Acacia hybrid - cuttings)	400 Dong/stem	As presented in Annex 5
Insecticide (Pasudin)	15.000 Dong/kg	As presented in Annex 9 Table 1
Fertilizer (NPK)	3.500 Dong/kg	As presented in Annex 9 Table 1

1.1.2.3 Expenditure plan

Expenditure plan annum is based on the unit price of labor-day payment of 40,000 Dong/man-day and annual operation plan

Table 3.5 Cost per 1 ha

Unit: 1.000 Dong

Item of costs/year	2008	2009	2010	2011	2012	2013	2014	2015	Total
A) Total baseline cost (I+II+III)	2	3	4	5	6	7	8	9	
I. Direct cost	8.670	2.336	1.770	341	341	341	341	19.908	34.049
1. Planting, tending, protection cost	7.161	1.994	1.511	291	291	291	291	16.994	28.825
a- Labor cost (unskilled)	7.161	1.994	1.511	291	291	291	291	0	11.831
b- Material cost	4.944	1.994	1.511	291	291	291	291	0	9.614
2. Harvest cost	2.217	0	0	0	0	0	0	0	2.217
II. Indirect cost	0	0	0	0	0	0	0	16.994	16.994
1. Management fee (6,5% x direct cost)	1.228	342	259	50	50	50	50	2.914	4.943
2. VAT (10% × value predicted before tax)	465	130	98	19	19	19	19	1.105	1.874
III. Other costs	763	212	161	31	31	31	31	1.810	3.070
B) Physical contingency	281	0	0	0	0	0	0	0	281
C) Price contingency	433	117	89	17	17	17	17	995	1.702
Total cost for planting, tending, protection (A+B+C)	933	387	401	99	122	146	171	11.525	13.783
	10.036	2.839	2.259	457	480	504	529	32.429	49.534

(See also Annex 9 Table 9-3 for details)

Table 3.6 (a) Cost per 1,406.7 ha

Unit: 1.000 Dong

Item of costs/year	2008	2009	2010	2011	2012	2013	2014
A) Total baseline cost (I+II+III)	1.975.002	2.401.363	2.929.612	2.903.959	2.754.592	2.412.215	2.419.437
I. Direct cost	1.631.189	1.998.063	2.444.731	2.426.242	2.304.863	2.021.945	2.026.214
1. Planting, tending, protection cost	1.631.189	1.998.063	2.444.731	2.426.242	2.304.863	2.021.945	2.026.214
a- Labor cost (unskilled)	1.126.152	1.520.073	1.927.500	1.940.493	1.875.647	1.678.972	1.665.726
b- Material cost	505.037	477.990	517.231	485.749	429.215	342.973	360.488
2. Harvest cost	0	0	0	0	0	0	0

Item of costs/year	2008	2009	2010	2011	2012	2013	2014
II. Indirect cost	279.749	342.668	419.271	416.101	395.284	346.764	347.496
1. Management fee (6,5% x DIRECT COST)	106.027	129.874	158.907	157.706	149.816	131.426	131.704
2. VAT (10% × value predicted before tax)	173.722	212.794	260.364	258.395	245.468	215.337	215.792
III. Other costs	64.063	60.632	65.610	61.617	54.445	43.506	45.727
B) Physical contingency	98.750	120.068	146.481	145.198	137.730	120.611	120.972
C) Price contingency	212.560	397.441	662.917	842.426	983.666	1.031.114	1.212.932
Total cost for planting, tending, protection (A+B+C)	2.286.311	2.918.872	3.739.010	3.891.583	3.875.987	3.563.940	3.753.341

Table 3.6 (b) Cost per 1,406.7 ha

Unit: 1000 Dong

Item of costs/year	2015	2016	2017	2018	2019	2020	2021
A) Total baseline cost (I+II+III)	5.482.755	4.853.255	4.893.652	4.536.209	3.962.501	3.135.292	3.237.098
I. Direct cost	4.680.115	4.142.770	4.177.253	3.872.138	3.382.417	2.676.305	2.763.208
1. Planting, tending, protection cost	808.905	478.885	212.576	148.774	92.398	47.349	0
a- Labor cost (unskilled)	808.905	478.885	212.576	148.774	92.398	47.349	0
b- Material cost	0	0	0	0	0	0	0
2. Harvest cost	3.871.210	3.663.885	3.964.677	3.723.363	3.290.019	2.628.956	2.763.208
II. Indirect cost	802.640	710.485	716.399	664.072	580.084	458.986	473.890
1. Management fee (6,5% x DIRECT COST)	304.207	269.280	271.521	251.689	219.857	173.960	179.609
2. VAT (10% × value predicted before tax)	498.432	441.205	444.877	412.383	360.227	285.027	294.282
III. Other costs	0	0	0	0	0	0	0
B) Physical contingency	274.138	242.663	244.683	226.810	198.125	156.765	161.855
C) Price contingency	3.173.938	3.204.795	3.649.961	3.790.679	3.684.855	3.225.990	3.667.226
Total cost for planting, tending, protection (A+B+C)	8.930.830	8.300.713	8.788.295	8.553.699	7.845.481	6.518.047	7.066.180

(See also Annex 10 Table 10-1 for details)

1.1.2.4 Expected benefits

The expected benefits of the production afforestation model is the value of selling products in year 8 as planned. The unit price used for calculation is the price at landing 2 of the enterprise. And prices depend on the specifications of products. See also table 2-8 for details.

1.1.2.5 Commercial volume

Based on the results of survey in Da Teh district, the predicted commercial volume of Acacia hybrid planted in this area to be harvested is 140 m³ /ha/7 years.

Table 3.7 Logging and sales plan (1 ha)

Types of products	Selling price Dong/m ³	Rate %	Quantity (m ³)	Revenue (Dong)
Group 1 (D >19 cm)	552.000	30	49	27.048.000
Group 2 (D= 13 - 19 cm)	437.000	55	77	33.649.000
Group 3 (D= 6 - 12 cm)	230.000	15	14	3.220.000
Total		100	140	63.917.000

(See also Annex 9 Table 9-4 for details)

1.1.3 Results of analysis

Results of analysis presented spring from (1) total investment point of view (2) project holder point of view (Da Teh enterprise). The rate of discount applied to this analysis is 11%.

1.1.3.1 Analysis by total investment point of view

Analysis by total investment point of view: calculation and analysis to put forth assessment indicators as PVB; PVC; NPV; IRR and B/C ratio for 1 ha and the whole models follow:

Model of 1 ha

Table 3.8 The assessment indicators for economic effectiveness by total investment point of view for 1 ha model

Indicators	Value	Unit
Total BPV (a)	24.986.739	VND
Total CPV (b)	19.310.308	VND
NPV	5.676.430	VND
IRR	18	%
BC Ratio (a)/(b)	1,29	

(See also Annex 9 Table 9-6 for details)

Results of analysis for 1 ha shows that this model is feasible with NPV=5.676.430 and B/C=1.29.

(2) Model of 1,406.7 ha.

Analysis by total investment point of view of model 1.406,7 ha: Table below indicates the project assessment indicators as PVB; PVC; NPV; IRR and B/C.

Table 3.9 Economic effectiveness assessment indicators by total investment point of view of the model 1,406.7 ha

Indicators	Value	Unit
Total BPV (a)	26.932.196.504	VND
Total CPV (b)	20.813.801.460	VND
NPV	6.118.395.043	VND
IRR	18	%
BC Ratio (a)/(b)	1,3	

(See also Annex 10 Table 10-3 for details)

Results of analysis for the whole model indicates that if the unit price per man-day is 40.000 dong/man-day, the project is feasible with NPV= 6.118.395.043 and B/C=1,3.

1.1.3.2 Analysis by the project holder point of view

Analysis by the project holder point of view by means of combining between the loan and interest and principal payment by total investment point of view by labor unit price of 40.000 dong/man-day. The necessary sum of money to be borrowed is calculated for project costs as hiring labors, material cost... As for the enterprise, to implement the project the enterprise has to hire local labors. The requirement of annual labors is as follow:

Table 3.10 Estimation of labor requirement annum

Unit: man-day

Implementation year	1	2	3	4	5	6	7
Total man-days	30.832	40.815	51.150	52.619	51.894	47.810	48.769
Labor requirement	208	259	336	346	339	308	292
Implementation year	8	9	10	11	12	13	14
Total man-days	88.618	75.768	73.786	65.577	57.685	45.090	42.236
Labor requirement	599	480	455	413	364	287	282

Considering the character of long term loan, the analysis is based on the conditions of getting loan from Agriculture Bank Da Teh district, but there is some amendment on loan term. Conditions identified for analysis are:

- (1) Total: 19,2 billion Dong
- (2) Interest: 1,28 %/month; (15,36%/year)
- (3) Loan term: 7 years
- (4) Grace period: 7 years
- (5) Payment: Principal is paid in 1 time in harvest time and interest is paid in a yearly manner.

Table below is the results of analysis by point of view of project holder, indicators for assessment are NPV and IRR.

Table 3.11 The assessment indicators of economic effectiveness for model of 1 ha (project holder point of view)

Item	Value	Unit
NPV (discount index 11%)	6,069,193	VND
IRR	27	%

(See also Annex 9 Table 9-5 for details)

**Table 3.12 The assessment indicators of economic effectiveness for model of 1,406.7 ha
(project holder point of view)**

Item	Value	Unit
NPV (discount index 11 %)	6,533,981,609	VND
IRR	25	%

(See also Annex 10 Table 10-4 for details)

It is possible to see that the cost for afforestation and for others to be paid to the loan by the enterprise to implement afforestation model of Acacia hybrid yield feasible results with NPV= 6,069,193 and IRR=27% for 1 ha model and NPV=6,533,981,609 and IRR=25% for the whole model..

1.1.4 Analysis of sensibility of the project

1.1.4.1 Analysis of sensibility by total investment point of view

Below is the analysis of sensibility for 1 ha model and the whole model of 1,406.7 ha Acacia hybrid plantation forest by total investment point of view with changes of conditions (i) the change of selling prices of products increasing or reducing by 10%, 20% and 30% respectively; (ii) change of unit price for labor of 40.000 Dong/man-day from 25.000 Dong/man-day, 30.000 Dong/man-day, 35.000 Dong/man-day, 45.000 Dong/man-day, 50.000 Dong/man-day or 60.000 Dong/man-day is the price per one working day. This is the opportunity cost of the local people involving in the project and is applied in 2 points of time -busy or off-farm times. Labor cost accounts for a big rate, so this change greatly impacts on the analysis indicators. In addition, the unit price of the output of products also impacts on the project effectiveness; (iii) simultaneous change of selling price of products and harvest quantity ...

(1) Analysis of sensibility by unit price for man-day

Table 3.13 shows the results of analysis of sensibility by changing unit price for man-day.

Table 3.13 (a) Analysis of sensibility of unit price for labor working day for 1 ha (by total investment point of view)

Rate %	VND/m3	NPV (11%)	IRR	B/C
150%	60.000	1.337.694	12%	1,06
125%	50.000	3.507.062	15%	1,16
113%	45.000	4.591.746	17%	1,23
100%	40.000	5.676.430	18%	1,29
88%	35.000	6.761.114	20%	1,37
75%	30.000	7.845.799	22%	1,46
63%	25.000	8.930.483	25%	1,56

**Table 3.13 (b) Analysis of sensibility of unit price for labor working day for 1,406.7 ha model
(by total investment point of view)**

Rate %	VND/m3	NPV (11%)	IRR	B/C
150%	60.000	1.441.846.134	12%	1,06
125%	50.000	3.780.120.588	15%	1,16
113%	45.000	4.949.257.816	17%	1,23
100%	40.000	6.118.395.043	18%	1,29
88%	35.000	7.287.532.271	20%	1,37
75%	30.000	8.456.669.498	22%	1,46
63%	25.000	9.625.806.726	25%	1,56

When unit price for man-day increases by 150% comparing to the 2006 price or 60,000 Dong/man-day, the model 1 ha gives NPV=1.337.694 Dong and B/C=1.06. And as for the 1,406.7 ha model, the NPV=1.441.846.134 Dong and B/C=1.06.

(2) Analysis of sensibility by products unit price

When changing the selling price of products (up or down) by 10, 20 or 30% respectively, table 3-14 below shows that the selling price of products greatly impacts on the project.

Table 3.14 (a) Analysis of sensibility by selling price of products for 1 ha model (by total investment point of view)

Rate %	NPV (11%)	IRR	B/C
130%	13.172.452	25%	1,68
120%	10.673.778	23%	1,55
110%	8.175.104	21%	1,42
100%	5.676.430	18%	1,29
90%	3.177.756	15%	1,16
80%	679.083	12%	1,04
70%	(1.819.591)	8%	0,91

Table 3.14 (b) Analysis of sensibility by selling price of products for 1,406.7 ha model (by total investment point of view)

Rate %	NPV (11%)	IRR	B/C
130%	14.198.053.994	25%	1,68
120%	11.504.834.344	23%	1,55
110%	8.811.614.694	21%	1,42
100%	6.118.395.043	18%	1,29
90%	3.425.175.393	15%	1,16
80%	731.955.743	12%	1,04
70%	(1.961.263.908)	8%	0,91

When the selling price of product reduces by 70% (base price in 2006), labor price is 40.000 Dong/man-day, the inputs and outputs of Acacia hybrid is calculated by the fixed price (2006) then both models (1ha and 1.406,7ha) give NPV < 0; IRR = 8% and B/C = 0,91. This is not feasible time of the project

(3) Analysis of sensibility by selling price of products and volume

Implement analysis of sensibility, and rely on the selling price of Acacia and volume obtained when increasing or reducing the price of Acacia and volume by 10, 20 and 30% respectively. Table 3-15 shows the results of 2 models (1 ha and 1,406.7 ha).

Table 3.15 (a): Analysis of sensibility by selling price of Acacia and volume from 1 ha (by total investment point of view)*Unit: 1.000 VND*

Productivity	Timber price							
	NPV (11%)	130%	120%	110%	100%	90%	80%	70%
	130%	20.465.739	17.217.463	13.969.187	10.720.911	7.472.635	4.224.359	976.083
	120%	18.034.644	15.036.235	12.037.826	9.039.418	6.041.009	3.042.600	44.192
	110%	15.603.548	12.855.006	10.106.465	7.357.924	3.177.756	1.860.842	(887.700)
	100%	13.172.452	10.673.778	8.175.104	5.676.430	3.177.756	679.083	(1.819.591)
	90%	10.741.356	8.492.550	6.243.743	3.994.937	1.746.130	(502.676)	(2.751.483)
	80%	8.310.260	6.311.321	4.312.382	2.313.443	314.504	(1.684.435)	(3.683.374)
	70%	5.879.165	4.130.093	2.381.021	631.949	(1.117.122)	(2.866.194)	(4.615.266)

Table 3.15 (b): Analysis of sensibility by selling price of Acacia and volume from 1,406.7 ha model (by total investment point of view)*Unit: 1.000 VND*

Productivity	Timber price							
	NPV (11%)	130%	120%	110%	100%	90%	80%	70%
	130%	22.059.194	18.558.008	15.056.823	11.555.637	8.054.452	4.553.266	1.052.081
	120%	19.438.814	16.206.950	12.975.087	9.743.223	6.511.360	3.279.496	47.633
	110%	16.818.434	13.855.892	10.893.351	7.930.809	4.968.268	2.005.726	(956.816)
	100%	14.198.054	11.504.834	8.811.615	6.118.395	3.425.175	731.956	(1.961.264)
	90%	11.577.674	9.153.776	6.729.879	4.305.981	1.882.083	(541.814)	(2.965.712)
	80%	8.957.294	6.802.718	4.648.143	2.493.567	338.991	(1.815.585)	(3.970.160)
	70%	6.336.914	4.451.660	2.566.406	681.153	(1.204.101)	(3.089.355)	(4.974.609)

Look at the results analyzed in the table, with no change calculation conditions, when the price of product reduces by 30% and the volume of Acacia reduces from 110% to 70% and the price of Acacia reduces gradually from 90% to 70% which gives the same value of $NPV < 0$. The project is not feasible.

Through the analysis of sensibility by the total investment point of view, it is possible to say that the project is highly feasible

1.1.4.2 *Analysis of sensibility by the project holder point of view*

By the project holder point of view, the project cash flow is the real one, the inflation factor is rejected from the calculation process. Then analyze the sensibility by the project holder point of view with the change of unit price for labor and rate of interest.

Table 3.16 below shows results of analysis of unit price for labor changing from 25,000 to 60.000 Dong/man-day and the interest increases from 10 to 50% comparing to the present rate of interest.

Table 3.16 (a): Analysis of sensibility by rate of interest and unit price for labor for 1 ha (by project holder point of view)

Conditions change		Value	
Labor cost (VND)	Interest	NPV (11%)	IRR
35,000	15.36%	7,116,411	30%
	16.90%	6,657,810	29%
	18.43%	6,199,208	27%
	19.97%	5,740,607	26%
	21.50%	5,282,005	24%
	23.04%	4,823,404	23%
40,000	15.36%	6,069,193	27%
	16.90%	5,562,232	25%
	18.43%	5,055,272	24%
	19.97%	4,548,311	22%
	21.50%	4,041,351	21%
	23.04%	3,534,391	20%
Conditions change		Value	
Labor cost (VND)	Interest	NPV (11%)	IRR
50,000	15.36%	3,371,077	19%
	16.90%	3,371,077	19%
	18.43%	2,767,399	18%
	19.97%	2,163,721	16%
	21.50%	1,560,042	15%
	23.04%	956,364	13%
60,000	15.36%	1,880,319	16%
	16.90%	1,179,922	14%
	18.43%	479,526	12%
	19.97%	(220,870)	10%
	21.50%	(921,267)	9%
	23.04%	(1,621,663)	7%

Only when the unit price of labor is 50,000 Dong/man-day, while the rate of interest is increased by 50% or 23.04%/year the NPV<0 or unit price of labor is 60,000 Dong/man-day, and NPV<0, the project is very feasible.

Table 3.16 (b): Analysis of sensibility by rate of interest and the unit price of labor for 1,406.7 ha model (by project holder point of view)

Conditions change		Value	
Labor cost (VND)	Interest	NPV (10%)	IRR
35.000 Dong/man-day	15,36%	7.663.755.207	29%
	16,90%	7.178.143.081	27%
	18,43%	6.692.530.955	26%
	19,97%	6.206.918.830	24%
	21,50%	5.721.306.704	23%

	23,04%	5.235.694.578	21%
40.000 Dong/man-day	15,36%	11.898.191.394	45%
	16,90%	5.997.560.630	24%
	18,43%	5.461.139.652	22%
	19,97%	4.924.718.673	21%
	21,50%	4.388.297.695	19%
	23,04%	3.851.876.716	18%
Conditions change		Value	
Labor cost (VND)	Interest	NPV (10%)	IRR
50.000	15,36%	4.274.434.413	19%
	16,90%	3.636.395.729	17%
	18,43%	2.998.357.044	16%
	19,97%	2.360.318.360	14%
	21,50%	1.722.279.676	13%
	23,04%	1.084.240.992	11%
60.000	15,36%	2.014.887.217	13%
	16,90%	1.275.230.827	12%
	18,43%	535.574.437	10%
	19,97%	(204.081.953)	8%
	21,50%	(943.738.343)	7%
	23,04%	(1.683.394.733)	5%

Only when the unit price of labor is 60,000 Dong/man-day, while the rate of interest is increased by 30% or 19.97%/year, the NPV<0, the project is very feasible.

In general, the project is considered by total investment or project holder point of view, the scope of safety of the project is fairly large, and the project is very feasible.

1.2 Economic analysis

Economic analysis is the analysis of the feasibility of the project on national point of view. In economic analysis, the financial price is converted to be economic price through the calculation for amendment of taxes or subsidies. The identification of concerned index from financial price to economic price only carried out when Acacia timber is sold, and as for material cost and other costs as they only account for a very small rate comparing to the total cost of the project (7.75%), so it is not necessary to identify the conversion index. Identification of the conversion index for Acacia timber price with FOB price taken from Hai Phong Port in 2005 is 95 USD/ton of dry chip or 1,520,000 VND. Having calculated, we have determined the conversion index (CF) of Acacia timber price from financial price to economic price of 0.87 (*For details see also Annex 12*). Indicators used for assessment of the feasibility of project are NPV, IRR and B/C ratio as in financial analysis. Results of economic analysis are shown in the table below:

Table 3.17: Results of economic analysis for afforestation model

Indicators	Value	Unit
Total BPV (a)	23.431.010.958	VND
Total CPV (b)	20.813.801.460	VND
NPV	3.890.355.320	VND
IRR	14	%
BC Ratio (a)/(b)	1,1	

From the results in table 3.1-17, on national point of view, the project is of feasibility. NPV=3.890.355.320 Dong and B/C=1.10

2 Evaluation of environmental impacts

Within the framework of implementation and investment of improvement of exhausted natural forests of poor quality by growing Acacia hybrid of high productivity, the selection of technical solutions as well as arrangement of operational plan annually for planting, tending, protection and logging were well considered in order to mitigate negative impacts on the environment. The contents below are analyzed to evaluate key impacts on environment:

(1) Possibility of poisoning soil and living environment

In technical operation, a small quantity of chemicals to kill termite is used in early years when starting afforestation. But the use of this chemical thoroughly follows the GOV rules and regulations (allowable ones and regulations of use). On the other hand, the afforestation sites are far from the resident and agriculture production areas, therefore the possibility of poisoning soil and living environment is negligible.

(2) Impacts on water source

The clear cut of vegetation to grow new ones (or clear cut plantation forests) can possibly impact the surface water source. However, this is an only immediate impact as it does not last long, and replanting is carried out right after vegetation clearing or logging. As Acacia hybrid is the fast growing species, and intensive farming system is applied the plantation forests of Acacia hybrid well set up the canopy. On the other hand, afforestation areas annually arranged by groups of district forests greatly limits the clearance of vegetation or clear cut of plantation forests in large areas. Therefore negative impacts on water is limited mostly.

(3) Impacts on soil fertility and soil erosion:

The improvement of exhausted natural forests to grow economic plantation forests with Acacia hybrid, as this species can help improve soil conditions with 1.660 stem/ha- density is suitable, and the ground floor vegetation can grow well to halt soil erosion.

In general, the improvement of exhausted forests of low productivity to grow new ones of high productivity generates bigger positive impacts on socio-economy and environment. Through the analysis mentioned above, it is possible to say that the project activities may cause negative impacts on environment but just at mild and short term impacts. And they will be soonest overcome due to positive factor brought about by afforestation.

3 Evaluation of social impacts

(1) Area of exhausted natural forest replaced by high economic value plantation forest is a continuous site managed by Da Teh enterprise. Local people are of low technical skills in afforestation and of low capability possibility of accessing to markets to sell the timber products. Consequently, if land is allocated to farmers, it is difficult to get credit loan from the bank. Da Teh enterprise should be the key person to arrange necessary things relating to afforestation, sales and marketing. When local people have more job to do and have more income, their life is improved, the pressure on forests is reduced greatly.

(2) Paralleling to the mobilization of labors for afforestation is technical training on planting, dissemination on forest protection and step by step socialization of forestry in the community. Particularly the awareness of the community in forest protection is improved. Da Teh enterprise can bring into full play through subjective role of a forests enterprise and carries out well its social forestry effectively.

(3) Through monitoring, evaluation and organization for implementation of the project experience and knowledge of the technical staff of the enterprise is improved. Local people's awareness on socialization of forestry is also improved, while the enterprise more and more confirm its role and responsibility. The enterprise should upgrade the organizational and management machine to face the risks and challenges imposed by the market.

(4) Mobilization of local people to participate in the whole process of the production afforestation project will step by step improve the HH economy.

Scio-economic survey results on HH income shows that one person can get in average 4,178,571 Dong/year when they are involving in forestry activities. And the same person if he/she involves in this project the average income increases by 6,240,000 Mil. Dong/year (or 156 man-day/year), increases by 149.3%.

(5) This are has many different ethnic groups, when more ethnic groups and more people are mobilized to involve in the production afforestation project, solidarity in community is improved and the rich and poor gap is narrowed.

(6) Impact on women: In case of within- project, women, beside their home work, are ready to participate in the project to get income. They wish to participate in nursery work.

4 Project risks

The management cycle is 7 years. During the implementation of the project, there may be objective risks and the enterprise must consider to help the project avoid or limit negatives impacts on the final results of the project. Risks that the project may meet as:

(1) Unstable policy is an important risk. Any change can cause problem to an afforestation project as its management cycle is long (7 years). In addition to GOV policy, financial mechanism is also one of the negative impact on the implementation of an afforestation project if changes happen as loan term and rate of interest.

(2) Risks in market prices during the process of implementation of afforestation as product prices, price of labors and materials ... which are not stable. So solution is the setting up of reservation in both quantity of work and prices in total project budget.

(3) Locating in the Dong Nai River Basin and sub-zone of the Southeastern, so risks as natural disasters, forest fires, pests and diseases often happen, therefore it is necessary to pay great attention to the management and protection of forests (setting up fire break, and fire watch-tower)

PART IV CONCLUSIONS AND RECOMMENDATIONS

1 Conclusions

(1) The of improvement of exhausted natural forests of poor quality by growing high economic value plantation forests for timber materials and increasing the effectiveness of land use is the implementation of the production afforestation project with Acacia hybrid (cuttings) of 1,406.7 ha in 4 communes Manely Da Kho, Trieu Hai , An Nhon and Quoc Oai, Da Teh district, Lam Dong province. The project is fitting the policy of the GOV and Lam Dong province.

(2) The project is formulated on the basic of analysis of information sources updated on the natural and socio-economic conditions within and without the PA. Through the calculation it is seen that:

- As for economy (NPV =6.118.395.043; IRR = 18%; BCR = 1,3), this project can reach the objective of economic effectiveness

- As for society: 758,457 man-days is created, 350 labors are attracted annually which contributes to the improvement of local people. Through the implementation of the project, people's awareness on forest protection is improved step by step. Local people can understand that afforestation is not only for economic value to improve their daily life but also environmental value is also obtained. The enterprise is the person in charge to help the community to develop their HH economy. Also, the operations of the project is one of the accessibility solutions to improve the capacity of stakeholders involving in the project.

- As for environment: The exhausted forests of poor quality are replaced by Acacia hybrid plantation forests that contribute to soil improvement, increase in forest coverage, protection of soil against erosion and water protection.

(3) The contents presented above show that : The project of treatment of exhausted forests by production afforestation in Da Teh enterprise, Da Teh district, Lam Dong province is highly feasible. The success of the project will be a good model for multification in Lam Dong province.

2 Recommendations

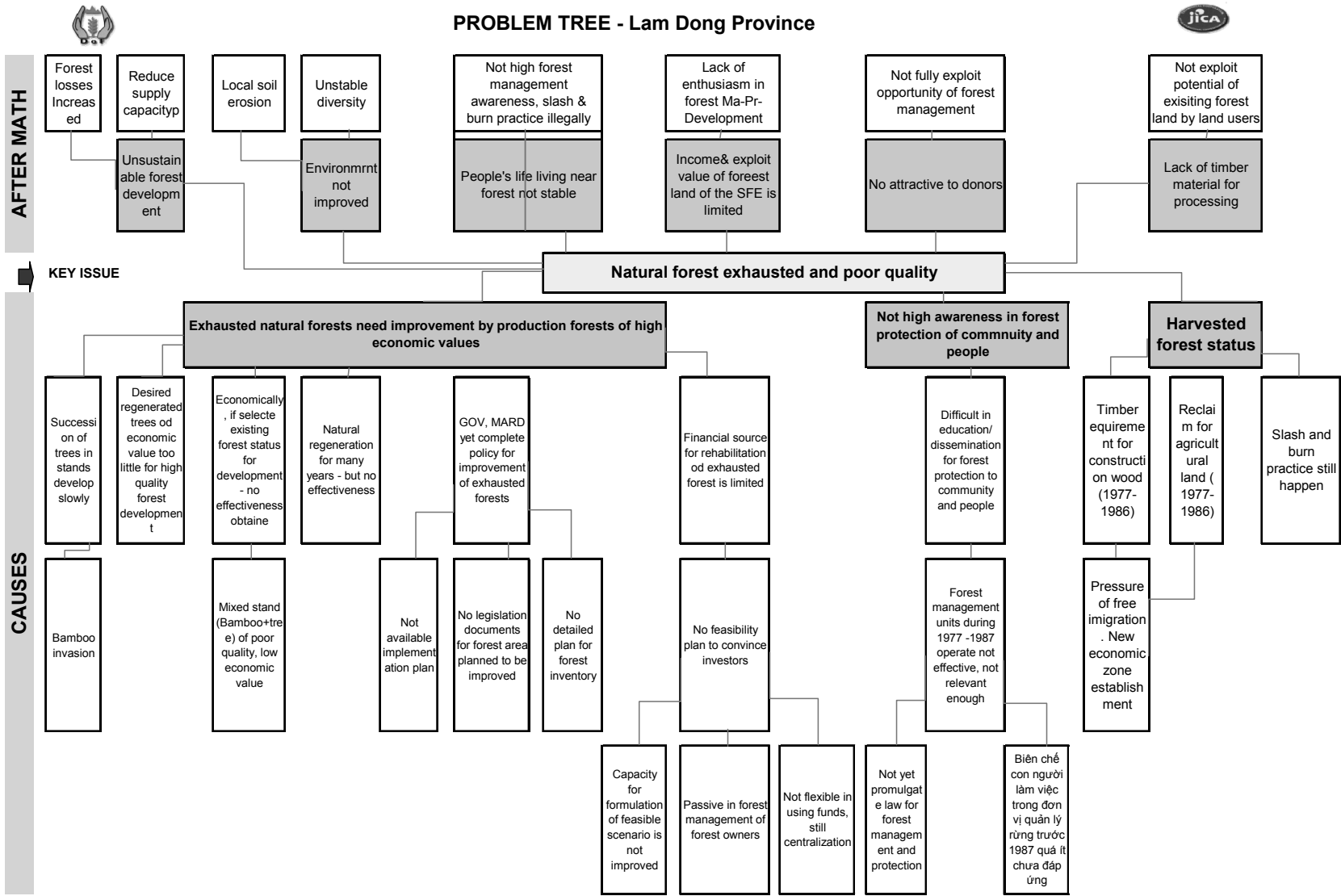
- It is proposed that the competence authority accepts, appraise and approve the project for soon organization for implementation

- As for borrowing money and disbursement of the Bank: The rate of loan interest and loan term should be stabilized. Disbursement should also be sufficiently and timely to ensure production as planned.

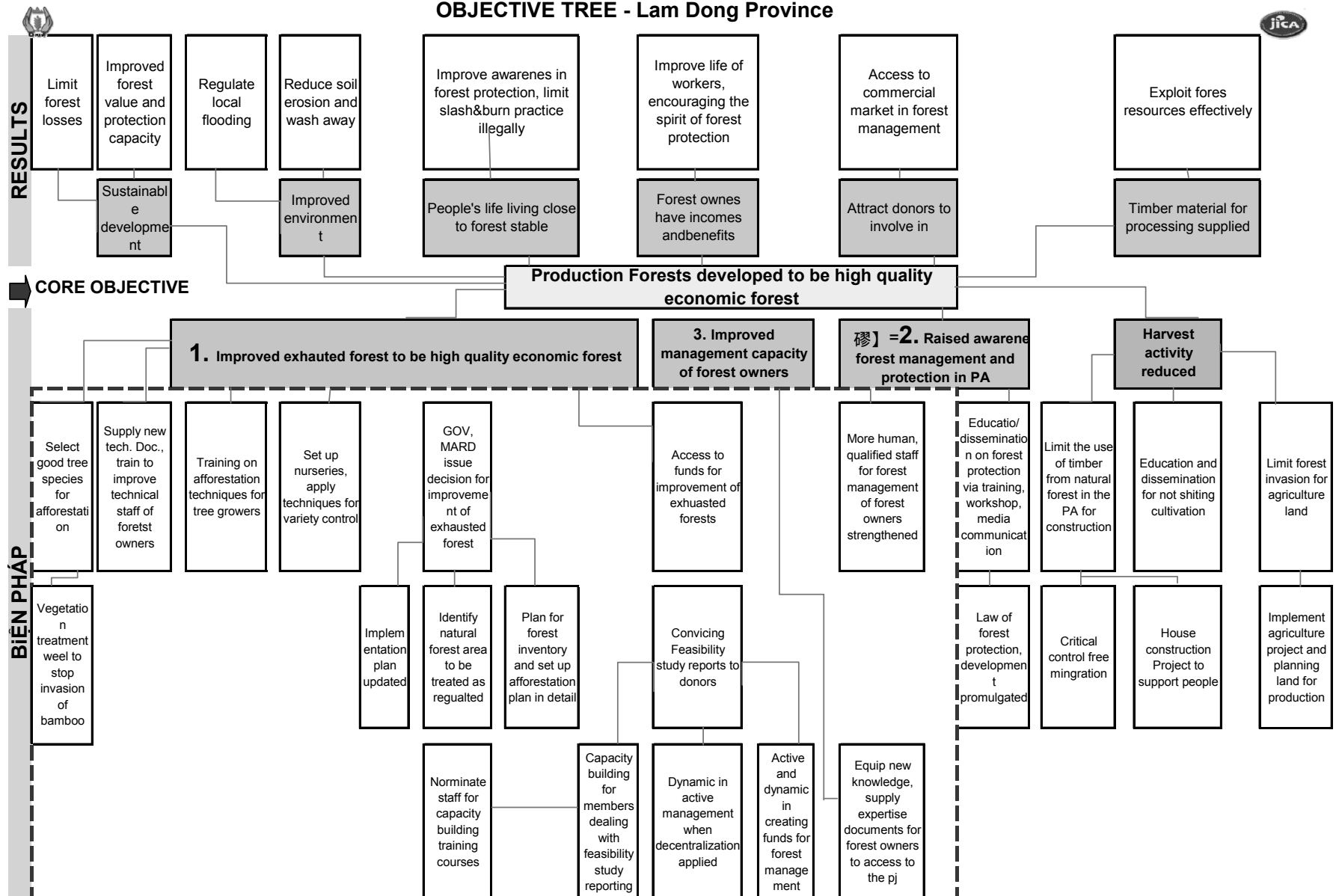
- And, it is also proposed that local government pays duly attention to the project for soon implementation as plans set up.

ANNEXES

Annex 1: Project design matrix



OBJECTIVE TREE - Lam Dong Province





PROJECT DESIGN MATRIX (Lamdong Province- -Logical Framework Analysis)



Project name: Treatment of exhausted forest to grow new forest in Da Teh SFE

Project Area: Quoc Oai, An Nhon, Trieu Hai, Da Kho - Da Teh - Lam Dong Province

Project life time: 2008-2021

	ITEM	INDICATORS	SOURCE	ASSUMPTIONS
Overall objectives	Sustainable reasonable forest development, attract investment, improve living conditions of communities	Implement indicators of economic development orientation of southern zone of Lam Dong province is to improve 15,000ha of natural exhausted forest to make it economic on. Attract 3.4 million labors in this locality	Follow the orientation of forestry development strategy of the province period 2006-2010; Data on timber consumption in the province	MARD maintains the policy and criteria for treatment of exhausted forest applied by local level in recent time. The criteria are mechanized to be a Circulation No. 99/2006/TT/BNN - 6/11/2006 to be widely applied in the forestry production
Immediate objectives	Improve exhausted forest to grow new one for pulp material	Within a management cycle timber quantity sold to processing companies is 202,282 m³ (harvest from 2015-2021). In average 152 m³/ha for productivity class I, and 137 m³/ha for class II	Annual data on afforestation in SFEs	No fires, diseases, stable weather; Prices and consumer markets stable;
	Time of implementation within a management cycle	7 years (2008-2014)		
Output	1. Total afforestation area in 4 communes: An Nhon, Trieu Hai, Quoc An, Da Kho. In which :	1406.7ha	- Related regulations promulgated - Afforestation plan approved by PPC compared to checked results by different process and years - Data, designed map completed	Stable unit price of labor, stable price of material Local people's enthusiasm, support local government, bring into full play capacity of forest owners in forest management
	1.1 Afforestation in poor exhausted natural forest sites that need to be improved	1042ha		
	1.2 Afforestation on would-be logged forest sites	364.7ha		
	2. Species	Acacia Hybrid (cuttings)		
	3. Density	1.660 stem/ha		
	4. Annual afforestation area	201 ha / year		
Activities	1.1 Agency that update implementation plan	Input Fund: total cost for whole model 80 vnd (+ reservation of quantity & price) Afforestation area: 1.406,7ha Labor days : 758.457 man-day Labors: 572 persons		Technical trained HHs must sign contract on afforestation
	1.2 Implement procedures of credit loan			Procedure for credit loan not delayed
	1.3 Set up nursery, seedlings for economic afforestation			
	1.4. Site prepare for afforestation			Pre-condition
	1.5. Canvass farmers to sign afforestation contract			Agriculture Bank has a long term loan policy relevant to project cycle.
	1.6. Technical training for farmers			Local government create conditions for forest owners to be active in forest management as GOV Decree 200/CP: Establishment of Forests Company.
	1.7. Planting, tending, protection, harvest and sales			
	1.8 SFE conducts, supervise, check quality upon delivery			
	2. SFE re-arrange personnel, more staff for forest protection and management			
	3. SFE supplies equipment knowledge, expertise documents to staff for coordinating project operations in an effective manner			

Annex 2: Assessment for Project Options

From survey findings on socio-economic conditions in the PA, in connection to market investigation and consultancy of local people, the assessment for project options consist of the following steps:

Step 1: Creation of scope for project proposed option

The production afforestation project for supplying Da Teh enterprise with materials is composed by 3 key components that are the implementer, products and financial sources. As for the implementer, who is specified at the beginning, is Da Teh enterprise, so the assessment bases on the examination of all possibilities that may happen to the project products and financial sources to be used for project implementation. After the assessment the Lam Dong study team has set up the scope of proposals as follow:

Table A.2.1: Scope for assessment

Implementer	Da Teh enterprise
Products	Domestic timber
	Laminated Finger Joint Board
	Chip
	Chip + Laminated Finger Joint Board
Financial Source	Enterprise's Own funds
	Loan + Own funds
	Joint venture fund

Step 2: Long list of options

Combining 3 key factors of the project we obtain a long list of options, consisting of 12 possibilities that may happen (in Table 2-2).

Table A.2.2: Long list for project option

No.	Implementer	Product	Financial Source
1	Da Teh enterprise	Domestic timber	Own funds
2	Da Teh enterprise	Domestic timber	Loan + Own funds
3	Da Teh enterprise	Domestic timber	Joint venture
4	Da Teh enterprise	Laminated Finger Joint Board	Own funds
5	Da Teh enterprise	Laminated Finger Joint Board	Loan + Own funds
6	Da Teh enterprise	Laminated Finger Joint Board	Joint venture
7	Da Teh enterprise	Chip	Own funds
8	Da Teh enterprise	Chip	Loan + Own funds
9	Da Teh enterprise	Chip	Joint venture
10	Da Teh enterprise	Chip + Laminated Finger Joint Board	Own funds
11	Da Teh enterprise	Chip + Laminated Finger Joint Board	Loan + Own funds
12	Da Teh enterprise	Chip + Laminated Finger Joint Board	Joint venture

Step 3: Short list for project options

The option based on the feasibility will be in-depth assessed on the suitability of 2 key factors - products and financial source.

Table A.2.3: Aggregation of assessments and comparison of options from long list

No	Implementer	Product	Financial Source	Rej/Sel.	Reasons
1	Da Teh enterprise	Domestic timber	Own fund	Reject	Products and financial source are not suitable. The enterprise cannot afford.
2	Da Teh enterprise	Domestic timber	Loan + Own fund	Reject	Products are not suitable
3	Da Teh	Domestic timber	Joint venture	Reject	Products are not suitable
4	Da Teh	Laminated Finger Joint Board	Own fund	Reject	Financial source is not suitable, product is not diverse to get best benefit
5	Da Teh	Laminated Finger Joint Board	Loan + Own fund	Reject	Product is not diverse to get best benefit
6	Da Teh enterprise	Laminated Finger Joint Board	Joint venture	Reject	Product is not diverse to get best benefit
7	Da Teh	Chip	Own fund	Reject	Financial source is not suitable, product is not diverse to get best benefit
8	Da Teh	Chip	Loan + Own fund	Reject	Product is not diverse to get best benefit
9	Da Teh	Chip	Joint venture	Reject	Product is not diverse to get best benefit
10	Da Teh	Chip + Laminated Finger Joint Board	Own fund	Reject	Financial source is not suitable
11	Da Teh enterprise	Chip + Laminated Finger Joint Board	Loan + Own fund	1 selected	
12	Da Teh enterprise	Chip + Laminated Finger Joint Board	Joint venture	2 selected	

Table A.2.4: Short list of options

No.	Implementer	Product	Financial Source
11	Da Teh enterprise	Chip + Laminated Finger Joint Board	Loan + Own fund
12	Da Teh enterprise	Chip + Laminated Finger Joint Board	Joint venture

Step 4: Most feasibility option

From the short list of afforestation project, basing on the assessment criteria to select best feasibility project. Linking to the CCM in Da Teh district with the participation of local authority of project communes as Quoc Oai, An Nhon, Trieu Hai, Da Kho, Da Teh enterprise, Agriculture Bank in the district, and HHs ... The assessment of options is carried out on the basic of allotting

scores to criteria. The scale is constructed for criteria to assess the feasibility of the project is discussed and analyzed by the CCM as follow:

- Consider the balance of core policies (economic, environmental and social equality policies)
 - Activities of project are selected meeting the rationales of silviculture techniques.
 - Assess the possibility of market accessing of selected project products (relating to market places, transport network, possibility of expansion of markets and technical specifications of the products)
 - Primary assessment of benefits (based on the in- and out-cash flow)
- Assess the sensible activities of the project to environment (water, soil, air) positively or negatively.
- Assess the sensible activities of the project to people's life (gap between rich and poor, gender inequality)
 - Assess the demand, priority of people as well as the implementer (Da Teh enterprise) to the project option
 - Assess the possibility of finding financial sources for project implementation...

Each criterion for selection is classified by 1 of 4 suitabilities as follow: Very suitable (score 3); suitable (score 2); less suitable (score 1); not suitable (score 0). Results of allotting of scores is presented in table 2-5 below:

No.	Criteria for assessment	Project No. 11	Project No. 12
1	Policy	3	3
2	Policy on environment	3	3
3	Policy on social equality	3	3
4	Suitability on silviculture technique	3	3
5	Possibility of accessing to markets of project products	3	3
6	Primary assessment on benefits	3	3
7	Assessment of sensibility to environment	3	3
8	Assessment of sensibility to people's life	3	3
9	Assessment of demands and priority of people on project option	3	3
10	Possibility of finding financial source	3	0
11	Priority of the enterprise	3	2
Total score		33	29

Based on the total score obtained from the assessment Project 11 is selected

No.	Implementer	Product	Financial source
11	Da Teh enterprise	Chip + Laminated Finger Joint Board	Loan + Own fund

Annex 3: Database on production afforestation sites - Da Teh enterprise, Lam Dong province

No.	Commune	Forest district	Compartment	Stand	Status	Stand area (ha)	Land us index	Afforested area (ha)	Red book	Land unit	Productivity soil class
1	Quoc Oai	550	10	4	Bamboo + IIIA1	22,3	0,8	17,8	Yes	ĐIFs	I
2	Quoc Oai	550	8	3	Acacia 02	20,3	1	20,3	Yes	ĐIFs	I
3	Quoc Oai	550	10	3	Acacia 03	13,5	1	13,5	Yes	ĐIFs	I
4	Quoc Oai	550	9	5	Acacia 03	7,7	1	7,7	Yes	ĐIFs	I
5	Quoc Oai	550	6	3	Bamboo + IIIA1	52,7	0,8	42,2	Yes	ĐIFs	I
6	Quoc Oai	550	6	2	Bamboo + IIIA1	9,4	0,8	7,5	Yes	N3IFk	I
7	Quoc Oai	550	10	2	Acacia 05	51,1	1	51,1	Yes	ĐIFs	I
8	Quoc Oai	550	9	2	Acacia 05	35,6	1	35,6	Yes	ĐIFs	I
9	Quoc Oai	550	8	1	Bamboo + IIIA1	3,2	0,8	2,6	Yes	ĐIFs	I
10	Quoc Oai	550	7	1	Bamboo + IIIA1	25,6	0,8	20,5	Yes	ĐIFs	I
11	Quoc Oai	550	5	1	Bamboo + IIIA1	91,5	0,8	73,2	Yes	ĐIFs	I
12	Quoc Oai	550	9	1	Bamboo + IIIA1	37,4	0,8	29,9	Yes	ĐIFs	I
13	Quoc Oai	550	3	3	Bamboo + IIIA1	26,8	0,8	21,4	Yes	ĐIFs	I
14	Quoc Oai	550	3	2	Bamboo + IIIA1	27,7	0,8	22,2	Yes	N3IFk	I
15	Quoc Oai	550	10	1	Bamboo + IIIA1	3,9	0,8	3,1	Yes	ĐIIFs	II
16	Quoc Oai	550	6	4	Bamboo + IIIA1	20	0,8	16	Yes	ĐIIFs	II
17	Quoc Oai	550	8	4	Acacia 02	37,1	1	37,1	Yes	ĐIIFs	II
18	Quoc Oai	550	9	4	Acacia 03	3	1	3	Yes	ĐIIFs	II
19	Quoc Oai	550	7	4	L.Ib	9,4	0,8	7,5	Yes	ĐIIFs	II
20	Quoc Oai	550	7	3	L.Ib	5,1	0,8	4,1	Yes	ĐIIFs	II
21	Quoc Oai	550	7	2	Bamboo + IIIA1	28,4	0,8	22,7	Yes	ĐIIFs	II
22	Quoc Oai	550	6	1	Bamboo + IIIA1	8,7	0,8	7	Yes	N3IIFk	II
23	Quoc Oai	550	9	3	Acacia 05	3,8	1	3,8	Yes	ĐIIFs	II
24	Quoc Oai	550	8	2	Bamboo + IIIA1	17,3	0,8	13,8	Yes	ĐIIFs	II
25	Quoc Oai	550	3	1	Bamboo + IIIA1	26,5	0,8	21,2	Yes	N3IIFk	II
26	An Nhon	551b	4	3	Acacia 98	12,4	1	12,4	Yes	ĐIFs	I
27	An Nhon	551b	4	4	L.Ib	23,4	0,8	18,7	Yes	ĐIFs	I
28	An Nhon	551b	3	2	L.Ib	24,4	0,8	19,5	Yes	ĐIFs	I
29	An Nhon	551b	2	1	L.Ib	7,4	0,8	5,9	Yes	ĐIFs	I
30	An Nhon	554b	6	2	Acacia 93	3,9	1	3,9	Yes	ĐIFs	I

No.	Commune	Forest district	Compartment	Stand	Status	Stand area (ha)	Land us index	Afforested area (ha)	Red book	Land unit	Productivity soil class
31	An Nhon	554b	6	1	Acacia 93	27,3	1	27,3	Yes	ĐIFs	I
32	An Nhon	554b	5	2	Acacia 93	3,5	1	3,5	Yes	ĐIFs	I
33	An Nhon	554b	2	2	Acacia 93	7,1	1	7,1	Yes	ĐIFs	I
34	An Nhon	554b	1	1	Acacia 98	6,4	1	6,4	Yes	ĐIFs	I
35	An Nhon	554b	6	3	Acacia 03	36,6	1	36,6	Yes	ĐIFs	I
36	An Nhon	554b	5	1	Acacia 03	20,6	1	20,6	Yes	ĐIFs	I
37	An Nhon	554b	2	1	Acacia 03	64,4	1	64,4	Yes	ĐIFs	I
38	An Nhon	554b	1	1	Acacia 03	5,4	1	5,4	Yes	ĐIFs	I
39	An Nhon	551b	4	2	Acacia 98	5	1	5	Yes	ĐIIFs	II
40	An Nhon	551b	4	1	L.Ib	28,9	0,8	23,1	Yes	ĐIIFs	II
41	An Nhon	551b	3	3	L.Ib	13,7	0,8	11	Yes	ĐIIFs	II
42	An Nhon	551b	3	1	L.Ib	1,4	0,8	1,1	Yes	ĐIIFs	II
43	An Nhon	551b	2	2	L.Ib	5,7	0,8	4,6	Yes	ĐIIFs	II
44	Trieu Hai	571	5	1	Bamboo + IIIA1	69,2	0,8	55,4	Yes	N3IIFk	II
45	Trieu Hai	571	4	1	Bamboo + IIIA1	15,6	0,8	12,5	Yes	N3IIFk	II
46	Đạ Kho	572a	1	1	Bamboo + IIa	63,7	0,8	51	Yes	ĐIFs	I
47	Đạ Kho	572a	6	4	Bamboo + IIIA1	19,5	0,8	15,6	Yes	ĐIFs	I
48	Đạ Kho	572a	6	1	Bamboo + IIa	4	0,8	3,2	Yes	ĐIFs	I
49	Đạ Kho	572a	5	3	Bamboo + IIIA1	2,8	0,8	2,2	Yes	ĐIFs	I
50	Đạ Kho	572a	2	1	Bamboo + IIa	28,6	0,8	22,8	Yes	ĐIFs	I
51	Đạ Kho	572a	3	2	Bamboo + IIIA1	5,3	0,8	4,2	Yes	ĐIIFs	II
52	Đạ Kho	572a	3	1	Bamboo + IIa	33	0,8	26,4	Yes	ĐIIFs	II
53	Đạ Kho	572a	1	3	Bamboo + IIIA1	7,6	0,8	6,1	Yes	ĐIIFs	II
54	Đạ Kho	572a	1	2	Bamboo + IIa	47	0,8	37,6	Yes	ĐIIFs	II
55	Đạ Kho	572a	7	5	Bamboo + IIIA1	23,4	0,8	18,7	Yes	ĐIIFs	II
56	Đạ Kho	572a	7	4	Bamboo + IIIA1	13,7	0,8	11	Yes	N3IIFk	II
57	Đạ Kho	572a	7	3	Bamboo + IIIA1	10,6	0,8	8,5	Yes	ĐIIFs	II
58	Đạ Kho	572a	7	2	Bamboo + IIIA1	9,2	0,8	7,4	Yes	N3IIFk	II
59	Đạ Kho	572a	6	5	Bamboo + IIIA1	8,2	0,8	6,6	Yes	ĐIIFs	II
60	Đạ Kho	572a	6	3	Bamboo + IIa	11,9	0,8	9,5	Yes	ĐIIFs	II
61	Đạ Kho	572a	6	2	Bamboo + IIa	2	0,8	1,6	Yes	N3IIFk	II

No.	Commune	Forest district	Compartment	Stand	Status	Stand area (ha)	Land us index	Afforested area (ha)	Red book	Land unit	Productivity soil class
62	Đạ Kho	572a	8	3	Bamboo + IIIA1	12,2	0,8	9,8	Yes	N3IIFk	II
63	Đạ Kho	572a	8	2	Bamboo + IIIA1	37,5	0,8	30	Yes	ĐIIFs	II
64	Đạ Kho	572a	8	1	Bamboo + IIa	25,9	0,8	20,7	Yes	ĐIIFs	II
65	Đạ Kho	572a	4	1	Bamboo + IIa	32,8	0,8	26,2	Yes	ĐIIFs	II
66	Đạ Kho	572a	7	1	Bamboo + IIa	4,2	0,8	3,4	Yes	ĐIIFs	II
67	Đạ Kho	572a	5	2	Bamboo + IIIA1	6,4	0,8	5,1	Yes	ĐIIFs	II
68	Đạ Kho	572a	5	1	Bamboo + IIa	10	0,8	8	Yes	ĐIIFs	II
69	Đạ Kho	572a	4	3	Bamboo + IIa	1,7	0,8	1,4	Yes	N3IIFk	II
70	Đạ Kho	572a	4	2	Bamboo + IIa	22,6	0,8	18,1	Yes	ĐIIFs	II
71	Đạ Kho	572b	3	3	Bamboo + IIIA1	30,7	0,8	24,6	Yes	N3IIFk	II
72	Đạ Kho	572b	3	2	Bamboo + IIIA1	80,6	0,8	64,5	Yes	ĐIIFs	II
73	Đạ Kho	572b	3	1	Bamboo + IIIA1	20,4	0,8	16,3	Yes	ĐIIFs	II
74	Đạ Kho	572b	5	3	Bamboo + IIIA1	37,7	0,8	30,2	Yes	N3IIFk	II
75	Đạ Kho	572b	5	2	Bamboo + IIIA1	19	0,8	15,2	Yes	ĐIIFs	II
76	Đạ Kho	572b	5	1	Bamboo + IIIA1	3,8	0,8	3	Yes	ĐIIFs	II
77	Đạ Kho	572b	4	3	Bamboo + IIIA1	7,1	0,8	5,7	Yes	ĐIIFs	II
78	Đạ Kho	572b	4	2	Bamboo + IIIA1	35,6	0,8	28,5	Yes	N3IIFk	II
79	Đạ Kho	572b	4	1	Bamboo + IIIA1	18	0,8	14,4	Yes	ĐIIFs	II

Annex 4: Aggregation of Annual Operational Plan

No.	Commune	District forest	Species	Planting year	Harvest year	Area (ha)	Seedling	Mean productivity (m³/ha)	Harvest productivity (m³/ha)	New road (m)
Total						1.406,7	2.568.635	11.303	203.102	23.500
1	Da Kho	Total commune				557,5	1.017.995	4.733	77.801	10.260,0
		572a	Acacia hybrid	Total district forest		355,1	648.413	3.500	50.072	6.250
				2008	2015	125,3	228.798	700	17.931	2.030
				2010	2017	82,1	149.915	1.263	11.530	1.320
				2012	2019	86,7	158.314	548	11.878	2.900
				2013	2020	61,0	111.386	989	8.733	0
		572b	Acacia hybrid	Total district forest		202,4	69.582	1.233	7.729	4.010
				2009	2016	105,4	192.461	411	14.440	1.710
				2011	2018	97,0	177.121	822	13.289	2.300
		2	An Nhon	Total commune				276,5	504.889	2.661
551b	Acacia hybrid			2008	2015	65,6	19.785	1.049	9.897	450
				2009	2016	52,8	6.413	426	7.514	330
				2010	2017	127,0	31.902	608	9.304	0
				2011	2018	31,1	6.789	578	4.642	0
				3	Quoc Oai	Total commune				504,8
550	Acacia hybrid	2008	2015			94,3	172.193	715	13.492	2.070
		2010	2017			24,2	4.189	441	3.633	240
		2011	2018			91,0	66.166	852	3.213	1.440
		2012	2019			106,9	95.201	730	5.985	2.690
		2013	2020			93,7	71.096	304	14.242	2.600
2014	2021	94,7	72.921	593	4.076	2.370				
4	Trieu Hai	571	Acacia hybrid	2014	2021	67,9	123.985	274	9.303	1.050

Annex 5: Work plan for each stand

No.	Commune	Forest district	Compartment	Stand	Afforested area (ha)	Planting year	Species	Seedling	Harvest year	Product. Class	Mean volume (m ³ /ha)	Harvest volume/stand (m ³)	New Road (m)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1	Quoc Oai	550	10	4	17,8	2008	Acacia hybrid	32.503	2015	I	152	2.706	
2	Quoc Oai	550	10	1	3,1	2008	Acacia hybrid	5.661	2015	II	137	425	870
3	Quoc Oai	550	6	4	16,0	2008	Acacia hybrid	29.216	2015	II	137	2.192	
4	An Nhon	551b	4	3	12,4	2008	Acacia hybrid	22.642	2015	I	152	1.885	
5	An Nhon	551b	4	2	5,0	2008	Acacia hybrid	9.130	2015	II	137	685	
6	An Nhon	554b	6	2	3,9	2008	Acacia hybrid	7.121	2015	I	152	593	
7	An Nhon	554b	6	1	27,3	2008	Acacia hybrid	49.850	2015	I	152	4.150	
8	An Nhon	554b	5	2	3,5	2008	Acacia hybrid	6.391	2015	I	152	532	
9	An Nhon	554b	2	2	7,1	2008	Acacia hybrid	12.965	2015	I	152	1.079	450
10	An Nhon	554b	1	1	6,4	2008	Acacia hybrid	11.686	2015	I	152	973	
11	Quoc Oai	550	8	4	37,1	2009	Acacia hybrid	67.745	2016	II	137	5.083	1200
12	Quoc Oai	550	8	3	20,3	2009	Acacia hybrid	37.068	2016	I	152	3.086	
13	An Nhon	551b	4	4	18,7	2009	Acacia hybrid	34.146	2016	I	152	2.842	330
14	An Nhon	551b	4	1	23,1	2009	Acacia hybrid	42.181	2016	II	137	3.165	
15	An Nhon	551b	3	3	11,0	2009	Acacia hybrid	20.086	2016	II	137	1.507	
16	Quoc Oai	550	10	3	13,5	2010	Acacia hybrid	24.651	2017	I	152	2.052	
17	Quoc Oai	550	9	5	7,7	2010	Acacia hybrid	14.060	2017	I	152	1.170	240
18	Quoc Oai	550	9	4	3,0	2010	Acacia hybrid	5.478	2017	II	137	411	
19	An Nhon	554b	6	3	36,6	2010	Acacia hybrid	66.832	2017	I	152	5.563	
20	An Nhon	554b	5	1	20,6	2010	Acacia hybrid	37.616	2017	I	152	3.131	
21	An Nhon	554b	2	1	64,4	2010	Acacia hybrid	117.594	2017	I	152	9.789	
22	An Nhon	554b	1	1	5,4	2010	Acacia hybrid	9.860	2017	I	152	821	
23	Quoc Oai	550	7	4	7,5	2011	Acacia hybrid	13.695	2018	II	137	1.028	
24	Quoc Oai	550	7	3	4,1	2011	Acacia hybrid	7.487	2018	II	137	562	
25	Quoc Oai	550	7	2	22,7	2011	Acacia hybrid	41.450	2018	II	137	3.110	
26	Quoc Oai	550	6	3	42,2	2011	Acacia hybrid	77.057	2018	I	152	6.414	1440
27	Quoc Oai	550	6	2	7,5	2011	Acacia hybrid	13.695	2018	I	152	1.140	

No.	Commune	Forest district	Compartment	Stand	Afforested area (ha)	Planting year	Species	Seedling	Harvest year	Product. Class	Mean volume (m ³ /ha)	Harvest volume/stand (m ³)	New Road (m)
28	Quoc Oai	550	6	1	7,0	2011	Acacia hybrid	12.782	2018	II	137	959	
29	An Nhon	551b	3	2	19,5	2011	Acacia hybrid	35.607	2018	I	152	2.964	
30	An Nhon	551b	3	1	1,1	2011	Acacia hybrid	2.009	2018	II	137	151	
31	An Nhon	551b	2	2	4,6	2011	Acacia hybrid	8.400	2018	II	137	630	
32	An Nhon	551b	2	1	5,9	2011	Acacia hybrid	10.773	2018	I	152	897	
33	Quoc Oai	550	10	2	51,1	2012	Acacia hybrid	93.309	2019	I	152	7.767	1170
34	Quoc Oai	550	9	3	3,8	2012	Acacia hybrid	6.939	2019	II	137	521	660
35	Quoc Oai	550	9	2	35,6	2012	Acacia hybrid	65.006	2019	I	152	5.411	860
36	Quoc Oai	550	8	2	13,8	2012	Acacia hybrid	25.199	2019	II	137	1.891	
37	Quoc Oai	550	8	1	2,6	2012	Acacia hybrid	4.748	2019	I	152	395	
38	Quoc Oai	550	7	1	20,5	2013	Acacia hybrid	37.433	2020	I	152	3.116	960
39	Quoc Oai	550	5	1	73,2	2013	Acacia hybrid	133.663	2020	I	152	11.126	1640
40	Quoc Oai	550	9	1	29,9	2014	Acacia hybrid	54.597	2021	I	152	4.545	1140
41	Quoc Oai	550	3	3	21,4	2014	Acacia hybrid	39.076	2021	I	152	3.253	720
42	Quoc Oai	550	3	2	22,2	2014	Acacia hybrid	40.537	2021	I	152	3.374	210
43	Quoc Oai	550	3	1	21,2	2014	Acacia hybrid	38.711	2021	II	137	2.904	300
44	Đạ Kho	572a	3	2	4,2	2008	Acacia hybrid	7.669	2015	II	137	575	850
45	Đạ Kho	572a	3	1	26,4	2008	Acacia hybrid	48.206	2015	II	137	3.617	600
46	Đạ Kho	572a	1	3	6,1	2008	Acacia hybrid	11.139	2015	II	137	836	
47	Đạ Kho	572a	1	2	37,6	2008	Acacia hybrid	68.658	2015	II	137	5.151	250
48	Đạ Kho	572a	1	1	51,0	2008	Acacia hybrid	93.126	2015	I	152	7.752	330
49	Đạ Kho	572b	3	3	24,6	2009	Acacia hybrid	44.920	2016	II	137	3.370	
50	Đạ Kho	572b	3	2	64,5	2009	Acacia hybrid	117.777	2016	II	137	8.837	600
51	Đạ Kho	572b	3	1	16,3	2009	Acacia hybrid	29.764	2017	II	137	2.233	1110
52	Đạ Kho	572a	7	5	18,7	2010	Acacia hybrid	34.146	2017	II	137	2.562	700
53	Đạ Kho	572a	7	4	11,0	2010	Acacia hybrid	20.086	2017	II	137	1.507	
54	Đạ Kho	572a	7	3	8,5	2010	Acacia hybrid	15.521	2017	II	137	1.165	300
55	Đạ Kho	572a	7	2	7,4	2010	Acacia hybrid	13.512	2017	II	137	1.014	320
56	Đạ Kho	572a	6	5	6,6	2010	Acacia hybrid	12.052	2017	II	137	904	

No.	Commune	Forest district	Compartment	Stand	Afforested area (ha)	Planting year	Species	Seedling	Harvest year	Product. Class	Mean volume (m ³ /ha)	Harvest volume/stand (m ³)	New Road (m)
57	Đà Kho	572a	6	4	15,6	2010	Acacia hybrid	28.486	2017	I	152	2.371	
58	Đà Kho	572a	6	3	9,5	2010	Acacia hybrid	17.347	2017	II	137	1.302	
59	Đà Kho	572a	6	2	1,6	2010	Acacia hybrid	2.922	2017	II	137	219	
60	Đà Kho	572a	6	1	3,2	2010	Acacia hybrid	5.843	2017	I	152	486	
61	Đà Kho	572b	5	3	30,2	2011	Acacia hybrid	55.145	2018	II	137	4.137	80
62	Đà Kho	572b	5	2	15,2	2011	Acacia hybrid	27.755	2018	II	137	2.082	840
63	Đà Kho	572b	5	1	3,0	2011	Acacia hybrid	5.478	2018	II	137	411	240
64	Đà Kho	572b	4	3	5,7	2011	Acacia hybrid	10.408	2018	II	137	781	360
65	Đà Kho	572b	4	2	28,5	2011	Acacia hybrid	52.041	2018	II	137	3.905	
66	Đà Kho	572b	4	1	14,4	2011	Acacia hybrid	26.294	2018	II	137	1.973	780
67	Đà Kho	572a	8	3	9,8	2012	Acacia hybrid	17.895	2019	II	137	1.343	
68	Đà Kho	572a	8	2	30,0	2012	Acacia hybrid	54.780	2019	II	137	4.110	1140
69	Đà Kho	572a	8	1	20,7	2012	Acacia hybrid	37.798	2019	II	137	2.836	930
70	Đà Kho	572a	4	1	26,2	2012	Acacia hybrid	47.841	2019	II	137	3.589	830
71	Đà Kho	572a	7	1	3,4	2013	Acacia hybrid	6.208	2020	II	137	466	
72	Đà Kho	572a	5	3	2,2	2013	Acacia hybrid	4.017	2020	I	152	334	
73	Đà Kho	572a	5	2	5,1	2013	Acacia hybrid	9.313	2020	II	137	699	
74	Đà Kho	572a	5	1	8,0	2013	Acacia hybrid	14.608	2020	II	137	1.096	
75	Đà Kho	572a	4	3	1,4	2013	Acacia hybrid	2.556	2020	II	137	192	
76	Đà Kho	572a	4	2	18,1	2013	Acacia hybrid	33.051	2020	II	137	2.480	
77	Đà Kho	572a	2	1	22,8	2013	Acacia hybrid	41.633	2020	I	152	3.466	
78	Triệu Hải	571	5	1	55,4	2014	Acacia hybrid	101.160	2021	II	137	7.590	1050
79	Triệu Hải	571	4	1	12,5	2014	Acacia hybrid	22.825	2021	II	137	1.713	

(1) No.

(4) Compartment

(6) Afforested Area

(10) Harvest year

(12) Commercial timber product per ha (=70% of standing volume)

(11) Productivity class

(13) Commercial timber product per stand

Annex 6: Afforestation plant and harvest in brief

Unit: ha

Activity		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
Planting	Vegetation treatment	227,8	215,6	233,3	219,1	193,6	154,7	162,6								1.406,7
	Hole digging	227,8	215,6	233,3	219,1	193,6	154,7	162,6								1.406,7
	Fertilizing and hole filling in	227,8	215,6	233,3	219,1	193,6	154,7	162,6								1.406,7
	Transport seedlings and planting	227,8	215,6	233,3	219,1	193,6	154,7	162,6								1.406,7
	Beating up	227,8	215,6	233,3	219,1	193,6	154,7	162,6								1.406,7
Tending	Year 1	227,8	215,6	233,3	219,1	193,6	154,7	162,6								1.406,7
	Year 2		227,8	215,6	233,3	219,1	193,6	154,7	162,6							1.406,7
	Year 3			227,8	215,6	233,3	219,1	193,6	154,7	162,6						1.406,7
Protection	Prevention of pests/diseases, damages by people and nature	227,8	443,4	676,7	895,8	1.089,4	1.244,1	1.406,7	1.178,9	963,3	730,0	510,9	317,3	162,6		9.846,9
Harvest	Felling, skidding								227,8	215,6	233,3	219,1	193,6	154,7	162,6	1.406,7
Afforested Area Annum		227,8	215,6	233,3	219,1	193,6	154,7	162,6	1.406,7							

Annex 7: Labor requirement estimation

Table A.7.1: Annual labor requirement estimation

Average: 22 man-day/month/man

Activity		Man-day/ha	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
Plan ting	Vegetation treatment	36,23	8.253	7.811	8.452	7.938	7.014	5.605	5.891								50.964
	Digging hole	12,62	2.875	2.721	2.944	2.765	2.443	1.952	2.052								17.752
	Fertilizing and filling	11,32	2.579	2.441	2.641	2.480	2.192	1.751	1.841								15.925
	Tran. Seedlings + planting	21,08	4.802	4.545	4.918	4.619	4.081	3.261	3.428								29.654
	Supplementary planting	3,03	690	653	707	664	587	469	493								4.263
Ten ding	Year 1: Time 1	14,58	3.321	3.143	3.402	3.194	2.823	2.256	2.371								20.510
	Year 1: Time 2	23,56	5.367	5.080	5.497	5.162	4.561	3.645	3.831								33.143
	Year 2: Time 1	14,58		3.321	3.143	3.402	3.194	2.823	2.256	2.371							20.510
	Year 2: Time 2	23,56		5.367	5.080	5.497	5.162	4.561	3.645	3.831							33.143
	Year 3: Time 1	12,5			2.848	2.695	2.916	2.739	2.420	1.934	2.033						17.585
	Year 3: Time 2	12,15			2.768	2.620	2.835	2.662	2.352	1.880	1.976						17.093
Prot ecti on	Prevention of damages	12,93	2.945	5.733	8.750	11.583	14.086	16.086	18.189	15.243	12.455	9.439	6.606	4.103	2.102		127.320
Har vest	Open	6,05								1.378	1.304	1.411	1.326	1.171	936	984	8.510
	Felling, skidding (man-day/m³)	1,79								57.874	54.212	61.606	55.180	49.896	41.023	41.637	361.428
Total		205,98	30.832	40.815	51.150	52.619	51.894	47.810	48.769	84.511	71.980	72.456	63.112	55.170	44.061	42.621	757.800
Annual labor need			208	259	336	346	339	308	292	572	454	445	392	347	280	277	
Afforested area annum			227,8	215,6	233,3	219,1	193,6	154,7	162,6	1.406,7							
Harvested quantity annum										32.332	30.286	34.417	30.827	27.875	22.918	23.261	201.916

Table A.7.2: Monthly labor requirement**Table A.7.2.1: Monthly labor requirement estimation (2008)**

Activity		Man-day/ha	Year	Man-day/unskilled labors monthly												Total
			2008	1	2	3	4	5	6	7	8	9	10	11	12	
Planting	Vegetation treatment	36,23	227,8		2.751	2.751	2.751									8.253
	Digging hole	12,62	227,8					1.438	1.438							2.875
	Fertilizing and filling	11,32	227,8					1.290	1.290							2.579
	Tran. Seedlings + planting	21,08	227,8						1.601	1.601	1.601					4.802
	Supplementary planting	3,03	227,8							345	345					690
Tending	Year 1: Time 1	14,58	227,8								1.661	1.661				3.321
	Year 1: Time 2	23,56	227,8											2.684	2.684	5.367
	Year 2: Time 1	14,58														
	Year 2: Time 2	23,56														
	Year 3: Time 1	12,5														
	Year 3: Time 2	12,15														
protection	Prevention of damages	12,93	227,8	245	245	245	245	245	245	245	245	245	245	245	245	2945
Harvest	Open	6,05														
	Felling, skidding (man-day/m ³)	1,79														
Total				245	2.996	2.996	2.996	2.973	4.574	2.191	3.852	1.906	245	2.929	2.929	30.832
Labor				11	136	136	136	135	208	100	175	87	11	133	133	

Table A.7.2.2: Monthly labor requirement estimation (2009)

Activity		Man-day/ha	Year	Man-day/unskilled labors monthly												Total
			2009	1	2	3	4	5	6	7	8	9	10	11	12	
Planting	Vegetation treatment	36,23	215,6		2.604	2.604	2.604									7.811
	Digging hole	12,62	215,6					1.361	1.361							2.721
	Fertilizing and filling	11,32	215,6					1.221	1.221							2.441
	Tran. Seedlings + planting	21,08	215,6						1.515	1.515	1.515					4.545
	Supplementary planting	3,03	215,6							327	327					653
Tending	Year 1: Time 1	14,58	215,6								1.572	1.572				3.143
	Year 1: Time 2	23,56	215,6											2.540	2.540	5.080
	Year 2: Time 1	14,58	227,8			1.661	1.661									3.321
	Year 2: Time 2	23,56	227,8											2.684	2.684	5.367
	Year 3: Time 1	12,5														
	Year 3: Time 2	12,15														
Protection	Prevention of damages	12,93	443,4	478	478	478	478	478	478	478	478	478	478	478	478	5733
Harvest	Open	6,05														
	Felling, skidding (man-day/m ³)	1,79														
Total				478	3.082	4.743	4.743	3.060	4.575	2.320	3.892	2.050	478	5.702	5.702	40.815
Labor				22	140	216	216	139	208	105	177	93	22	259	259	

Table A.7.2.3: Monthly labor requirement estimation (2010)

Activity		Man-day/ha	Year	Man-day/unskilled labors monthly												Total
			2010	1	2	3	4	5	6	7	8	9	10	11	12	
Planting	Vegetation treatment	36,23	233,3		2.817	2.817	2.817									8.452
	Digging hole	12,62	233,3					1.472	1.472							2.944
	Fertilizing and filling	11,32	233,3					1.321	1.321							2.641
	Tran. Seedlings + planting	21,08	233,3						1.639	1.639	1.639					4.918
	Supplementary planting	3,03	233,3							354	354					707
Tending	Year1:Time1	14,58	233,3								1.701	1.701				3.402
	Year1:Time2	23,56	233,3											2.749	2.749	5.497
	Year2:Time1	14,58	215,6			1.572	1.572									3.143
	Year2:Time2	23,56	215,6											2.540	2.540	5.080
	Year3:Time1	12,5	227,8			1.424	1.424									2.848
	Year3:Time2	12,15	227,8											1.384	1.384	2.768
Protection	Prevention of damages	12,93	676,7	729	729	729	729	729	729	729	729	729	729	729	729	8750
Harvest	Open	6,05														
	Felling, skidding (man-day/m ³)	1,79														
Total				729	3.546	6.542	6.542	3.522	5.161	2.722	4.423	2.430	729	7.402	7.402	51.150
Labor				33	161	297	297	160	235	124	201	110	33	336	336	

Table A.7.2.4: Monthly labor requirement estimation (2011)

Activity		Man-day/ha	Year	Man-day/unskilled labors monthly												Total
			2011	1	2	3	4	5	6	7	8	9	10	11	12	
Planting	Vegetation treatment	36,23	219,1		2.646	2.646	2.646									7.938
	Digging hole	12,62	219,1					1.383	1.383							2.765
	Fertilizing and filling	11,32	219,1					1.240	1.240							2.480
	Tran. Seedlings + planting	21,08	219,1						1.540	1.540	1.540					4.619
	Supplementary planting	3,03	219,1							332	332					664
Tending	Year 1: Time 1	14,58	219,1								1.597	1.597				3.194
	Year 1: Time 2	23,56	219,1											2.581	2.581	5.162
	Year 2: Time 1	14,58	233,3			1.701	1.701									3.402
	Year 2: Time 2	23,56	233,3											2.749	2.749	5.497
	Year 3: Time 1	12,5	215,6			1.348	1.348									2.695
	Year 3: Time 2	12,15	215,6											1.310	1.310	2.620
Protection	Prevention of damages	12,93	895,8	965	965	965	965	965	965	965	965	965	965	965	965	11583
Harvest	Open	6,05														
	Felling, skidding (man-day/m ³)	1,79														
Total				965	3.611	6.660	6.660	3.588	5.128	2.837	4.434	2.562	965	7.605	7.605	52.619
Labor				44	164	303	303	163	233	129	202	116	44	346	346	

Table A.7.2.5: Monthly labor requirement estimation (2012)

Activity		Man-day/ha	Year	Man-day/unskilled labors monthly												Total
			2012	1	2	3	4	5	6	7	8	9	10	11	12	
Planting	Vegetation treatment	36,23	193,6		2.338	2.338	2.338									7.014
	Digging hole	12,62	193,6					1.222	1.222							2.443
	Fertilizing and filling	11,32	193,6					1.096	1.096							2.192
	Tran. Seedlings + planting	21,08	193,6						1.360	1.360	1.360					4.081
	Supplementary planting	3,03	193,6							294	294					587
Tending	Year 1: Time 1	14,58	193,6								1.412	1.412				2.823
	Year 1: Time 2	23,56	193,6											2.281	2.281	4.561
	Year 2: Time 1	14,58	219,1			1.597	1.597									3.194
	Year 2: Time 2	23,56	219,1											2.581	2.581	5.162
	Year 3: Time 1	12,5	233,3			1.458	1.458									2.916
	Year 3: Time 2	12,15	233,3											1.418	1.418	2.835
Protection	Prevention of damages	12,93	1.089,40	1.174	1.174	1.174	1.174	1.174	1.174	1.174	1.174	1.174	1.174	1.174	1.174	14.086
Harvest	Open	6,05														
	Felling, skidding (man-day/m ³)	1,79														
Total				1.174	3.512	6.567	6.567	3.492	4.852	2.828	4.240	2.586	1.174	7.454	7.454	51.894
Labor				53	160	299	299	159	221	129	193	118	53	339	339	

Table A.7.2.6: Monthly labor requirement estimation (2013)

Activity		Man-day/ha	Year	Man-day/unskilled labors monthly												Total
			2013	1	2	3	4	5	6	7	8	9	10	11	12	
Planting	Vegetation treatment	36,23	154,7		1.868	1.868	1.868									5.605
	Digging hole	12,62	154,7					976	976							1.952
	Fertilizing and filling	11,32	154,7					876	876							1.751
	Tran. Seedlings + planting	21,08	154,7						1.087	1.087	1.087					3.261
	Supplementary planting	3,03	154,7							235	235					469
Tending	Year 1: Time 1	14,58	154,7								1.128	1.128				2.256
	Year 1: Time 2	23,56	154,7											1.823	1.823	3.645
	Year 2: Time 1	14,58	193,6			1.412	1.412									2.823
	Year 2: Time 2	23,56	193,6											2.281	2.281	4.561
	Year 3: Time 1	12,5	219,1			1.370	1.370									2.739
	Year 3: Time 2	12,15	219,1											1.331	1.331	2.662
Protection	Prevention of damages	12,93	1.244,10	1.341	1.341	1.341	1.341	1.341	1.341	1.341	1.341	1.341	1.341	1.341	1.341	16.086
Harvest	Open	6,05														
	Felling, skidding (man-day/m ³)	1,79														
Total				1.341	3.209	5.991	5.991	3.193	4.280	2.663	3.791	2.469	1.341	6.776	6.776	47.810
Labor				61	146	272	272	145	195	121	172	112	61	308	308	

Table A.7.2.7: Monthly labor requirement estimation (2014)

Activity		Man-day/ha	Year	Man-day/unskilled labors monthly												Total
			2014	1	2	3	4	5	6	7	8	9	10	11	12	
Planting	Vegetation treatment	36,23	162,6		1.964	1.964	1.964									5.891
	Digging hole	12,62	162,6					1.026	1.026							2.052
	Fertilizing and filling	11,32	162,6					921	921							1.841
	Tran. Seedlings + planting	21,08	162,6						1.143	1.143	1.143					3.428
	Supplementary planting	3,03	162,6							247	247					493
Tending	Year 1: Time 1	14,58	162,6								1.186	1.186				2.371
	Year 1: Time 2	23,56	162,6											1.916	1.916	3.831
	Year 2: Time 1	14,58	154,7			1.128	1.128									2.256
	Year 2: Time 2	23,56	154,7											1.823	1.823	3.645
	Year 3: Time 1	12,5	193,6			1.210	1.210									2.420
	Year 3: Time 2	12,15	193,6											1.176	1.176	2.352
Protection	Prevention of damages	12,93	1.406,70	1.516	1.516	1.516	1.516	1.516	1.516	1.516	1.516	1.516	1.516	1.516	1.516	18.189
Harvest	Open	6,05														
	Felling, skidding (man-day/m ³)	1,79														
Total				1.516	3.480	5.818	5.818	3.463	4.606	2.906	4.092	2.702	1.516	6.431	6.431	48.769
Labor				69	158	264	264	157	209	132	186	123	69	292	292	

Table A.7.2.8: Monthly labor requirement estimation (2015)

Activity		Man-day/ha	Year	Man-day/unskilled labors monthly												Total
			2015	1	2	3	4	5	6	7	8	9	10	11	12	
Planting	Vegetation treatment	36,23														
	Digging hole	12,62														
	Fertilizing and filling	11,32														
	Tran. Seedlings + planting	21,08														
	Supplementary planting	3,03														
Tending	Year 1: Time 1	14,58														
	Year 1: Time 2	23,56														
	Year 2: Time 1	14,58	162,6			1.186	1.186									2.371
	Year 2: Time 2	23,56	162,6											1.916	1.916	3.831
	Year 3: Time 1	12,5	154,7			967	967									1.934
	Year 3: Time 2	12,15	154,7											940	940	1.880
Protection	Prevention of damages	12,93	1.178,90	1.270	1.270	1.270	1.270	1.270	1.270	1.270	1.270	1.270	1.270	1.270	1.270	15.243
Harvest	Open	6,05	227,8	197	197	197	197						197	197	197	1.378
	Felling, skidding (man-day/m ³)	1,79	32.332	8.268	8.268	8.268	8.268						8.268	8.268	8.268	57.874
Total				9.735	9.735	11.888	11.888	1.270	1.270	1.270	1.270	1.270	9.735	12.591	12.591	84.511
Labor				443	443	540	540	58	58	58	58	58	443	572	572	

Table A.7.2.9: Monthly labor requirement estimation (2016)

Activity		Man-day/ha	Year	Man-day/unskilled labors monthly												Total
			2016	1	2	3	4	5	6	7	8	9	10	11	12	
Planting	Vegetation treatment	36,23														
	Digging hole	12,62														
	Fertilizing and filling	11,32														
	Tran. Seedlings + planting	21,08														
	Supplementary planting	3,03														
Tending	Year 1: Time 1	14,58														
	Year 1: Time 2	23,56														
	Year 2: Time 1	14,58														
	Year 2: Time 2	23,56														
	Year 3: Time 1	12,5	162,6			1.017	1.017									2.033
	Year 3: Time 2	12,15	162,6											988	988	1.976
Protection	Prevention of damages	12,93	963,3	1.038	1.038	1.038	1.038	1.038	1.038	1.038	1.038	1.038	1.038	1.038	1.038	12.455
Harvest	Open	6,05	215,6	186	186	186	186						186	186	186	1.304
	Felling, skidding (man-day/m ³)	1,79	30.286	7.745	7.745	7.745	7.745						7.745	7.745	7.745	54.212
Total				8.969	8.969	9.986	9.986	1.038	1.038	1.038	1.038	1.038	8.969	9.957	9.957	71.980
Labor				408	408	454	454	47	47	47	47	47	408	453	453	

Table A.7.2.10: Monthly labor requirement estimation (2017)

Activity		Man-day/ha	Year	Man-day/unskilled labors monthly												Total
			2017	1	2	3	4	5	6	7	8	9	10	11	12	
Planting	Vegetation treatment	36,23														
	Digging hole	12,62														
	Fertilizing and filling	11,32														
	Tran. Seedlings + planting	21,08														
	Supplementary planting	3,03														
Tending	Year 1: Time 1	14,58														
	Year 1: Time 2	23,56														
	Year 2: Time 1	14,58														
	Year 2: Time 2	23,56														
	Year 3: Time 1	12,5														
	Year 3: Time 2	12,15														
Protection	Prevention of damages	12,93	730	787	787	787	787	787	787	787	787	787	787	787	787	9.439
Harvest	Open	6,05	233,3	202	202	202	202						202	202	202	1.411
	Felling, skidding (man-day/m ³)	1,79	34.417	8.801	8.801	8.801	8.801						8.801	8.801	8.801	61.606
Total				9.790	9.790	9.790	9.790	787	787	787	787	787	9.790	9.790	9.790	72.456
Labor				445	445	445	445	36	36	36	36	36	445	445	445	

Table A.7.2.11: Monthly labor requirement estimation (2018)

Activity		Man-day/ha	Year	Man-day/unskilled labors monthly												Total
			2018	1	2	3	4	5	6	7	8	9	10	11	12	
Planting	Vegetation treatment	36,23														
	Digging hole	12,62														
	Fertilizing and filling	11,32														
	Tran. Seedlings + planting	21,08														
	Supplementary planting	3,03														
Tending	Year 1: Time 1	14,58														
	Year 1: Time 2	23,56														
	Year 2: Time 1	14,58														
	Year 2: Time 2	23,56														
	Year 3: Time 1	12,5														
	Year 3: Time 2	12,15														
Protection	Prevention of damages	12,93	510,9	551	551	551	551	551	551	551	551	551	551	551	551	6.606
Harvest	Open	6,05	219,1	189	189	189	189						189	189	189	1.326
	Felling, skidding (man-day/m ³)	1,79	30.827	7.883	7.883	7.883	7.883						7.883	7.883	7.883	55.180
Total				8.623	8.623	8.623	8.623	551	551	551	551	551	8.623	8.623	8.623	63.112
Labor				392	392	392	392	25	25	25	25	25	392	392	392	

Table A.7.2.12: Monthly labor requirement estimation (2019)

Activity		Man-day/ha	Year	Man-day/unskilled labors monthly												Total
			2019	1	2	3	4	5	6	7	8	9	10	11	12	
Planting	Vegetation treatment	36,23														
	Digging hole	12,62														
	Fertilizing and filling	11,32														
	Tran. Seedlings + planting	21,08														
	Supplementary planting	3,03														
Tending	Year 1: Time 1	14,58														
	Year 1: Time 2	23,56														
	Year 2: Time 1	14,58														
	Year 2: Time 2	23,56														
	Year 3: Time 1	12,5														
	Year 3: Time 2	12,15														
Protection	Prevention of damages	12,93	317,3	342	342	342	342	342	342	342	342	342	342	342	342	4.103
Harvest	Open	6,05	193,6	167	167	167	167						167	167	167	1.171
	Felling, skidding (man-day/m ³)	1,79	27.875	7.128	7.128	7.128	7.128						7.128	7.128	7.128	49.896
Total				7.637	7.637	7.637	7.637	342	342	342	342	342	7.637	7.637	7.637	55.170
			Labor	347	347	347	347	16	16	16	16	16	347	347	347	

Table A.7.2.13: Monthly labor requirement estimation (2020)

Activity		Man-day/ha	Year	Man-day/ unskilled labors monthly												Total
			2020	1	2	3	4	5	6	7	8	9	10	11	12	
Planting	Vegetation treatment	36,23														
	Digging hole	12,62														
	Fertilizing and filling	11,32														
	Tran. Seedlings + planting	21,08														
	Supplementary planting	3,03														
Tending	Year 1: Time 1	14,58														
	Year 1: Time 2	23,56														
	Year 2: Time 1	14,58														
	Year 2: Time 2	23,56														
	Year 3: Time 1	12,5														
	Year 3: Time 2	12,15														
Protection	Prevention of damages	12,93	162,6	175	175	175	175	175	175	175	175	175	175	175	175	2.102
Harvest	Open	6,05	154,7	134	134	134	134						134	134	134	936
	Felling, skidding (man-day/m ³)	1,79	22.918	5.860	5.860	5.860	5.860						5.860	5.860	5.860	41.023
Total				6.169	6.169	6.169	6.169	175	175	175	175	175	6.169	6.169	6.169	44.061
Labor				280	280	280	280	8	8	8	8	8	280	280	280	

Table A.7.2.14: Monthly labor requirement estimation (2021)

Activity		Man-day/ha	Year	Man-day/unskilled labors monthly												Total
			2021	1	2	3	4	5	6	7	8	9	10	11	12	
Planting	Vegetation treatment	36,23														
	Digging hole	12,62														
	Fertilizing and filling	11,32														
	Tran. Seedlings + planting	21,08														
	Supplementary planting	3,03														
Tending	Year 1: Time 1	14,58														
	Year 1: Time 2	23,56														
	Year 2: Time 1	14,58														
	Year 2: Time 2	23,56														
	Year 3: Time 1	12,5														
	Year 3: Time 2	12,15														
Protection	Prevention of damages	12,93														
Harvest	Open	6,05	162,6	141	141	141	141						141	141	141	984
	Felling, skidding (man-day/m ³)	1,79	23.261	5.948	5.948	5.948	5.948						5.948	5.948	5.948	41.637
Total				6.089	6.089	6.089	6.089						6.089	6.089	6.089	42.621
Labor				277	277	277	277						277	277	277	

Annex 8: The situations of production and doing business of Da Teh enterprise

Table A.8.1: Financial situation of Da Teh enterprise

No	Indicator	Unit	2003	2004	2005
I	TOTAL ASSETS	Dong	19.438.109.988	15.202.615.017	15.865.854.312
1	Working assets and short term investment	Dong	11.787.138.840	7.334.585.971	6.436.242.304
1.1	Cash	Dong	8.470.765.040	3.710.610.290	4.321.653.264
1.2	Short term financial investment	Dong	0	150.000.000	150.000.000
1.3	Short term items to be recovered	Dong	915.476.360	3.461.871.353	1.964.589.040
1.4	Stock-in-trade	Dong	0	0	0
1.5	Other working assets	Dong	64.193.661	12.104.328	0
1.6	Salary ...	Dong	2.336.703.779		0
2	Fixed assets and Long term investment	Dong	7.650.971.148	7.868.029.046	9.429.612.008
2.1	Long term items to be recovered	Dong	0	484.999.253	484.999.253
2.2	Fixed assets original value HH	Dong	1.837.108.515	1.761.192.241	1.748.486.568
-	Deducted value	Dong	-751.783.047	-946.873.429	-1.159.852.857
-	Remained value	Dong	1.085.325.468	814.318.812	588.633.711
2.3	Fixed assets belonging to plantation forests fund	Dong	1.349.271.350	1.349.271.350	977.931.639
2.4	Long term financial investment	Dong	40.250.000	35.000.000	65.000.000
2.5	Undone capital construction	Dong	5.176.124.330	5.184.439.631	7.313.047.405
II	TOTAL CAPITAL	Dong	19.438.109.988	15.202.615.017	15.865.854.312
1	Debt to be paid	Dong	9.073.961.425	5.794.499.488	5.023.553.344
-	Bank Loan	Dong	211.653.000	211.653.000	211.653.000
-	Short term debt	Dong	8.862.308.425	5.168.273.128	4.400.859.659
-	Long term debt	Dong	0	414.573.360	411.040.685
2	Owner's Capital	Dong	10.364.148.563	9.408.115.529	10.842.300.968
-	Business capital source	Dong	1.109.182.837	1.109.182.837	1.109.182.837
-	Others (Funds)	Dong	707.952.344	821.691.202	1.001.511.256
-	Source for salary ...	Dong	3.815.585.429	1.281.744.776	990.353.398
-	Others	Dong	43.727.925	24.477.925	267.090.639
-	Source for afforestation	Dong	4.687.700.028	6.171.018.789	7.474.162.838

Table A.8.2: Owner's capital as of 31/12/2005 of Da Teh enterprise

o.	Indicator	Unit	2003	2004	2005
1	Fixed capital	Dong	934.012.906	934.012.906	934.012.906
-	State capital	Dong	214.114.744	214.114.744	214.114.744
-	Own capital	Dong	719.898.162	719.898.162	719.898.162
2	Working capital	Dong	175.169.931	175.169.931	175.169.931
-	State capital	Dong	100.071.696	100.071.696	100.071.696
-	Own capital	Dong	75.098.235	75.098.235	75.098.235
3	Capital construction source	Dong	24.477.925	24.477.925	24.477.925
-	State capital	Dong	24.477.925	24.477.925	24.477.925
4	Plantation forests funds	Dong	4.687.700.028	6.171.018.789	7.474.162.838
-	State capital	Dong	4.687.700.028	6.171.018.789	7.474.162.838
-	Joint venture capital	Dong	0	0	0
5	Other funds (*)	Dong	707.952.344	821.691.202	1.001.511.256
6	Contribution from employees	Dong	19.250.000	19.250.000	19.250.000
7	Basic deduction fund	Dong	180.776.513	256.930.243	482.615.344

(*) Other funds:

Development Investment capital, Financial reservation, Fund to support job loss, Benefit fund which is not distributed,...

Annex 9: Estimated budget for 1 ha model

Table A.9.1: Parameters for 1 ha of Acacia hybrid in Da Teh enterprise

Item	Unit price	Unit	Quantity	Unit	Revenue /ha	Unit
Year 1						
A. Direct cost					7.160.621	Dong
I. Material + seedlings					2.217.021	Dong
1. Bulldozing	5.815.000	Dong/km	0,0167	Km	97.111	Dong
2. Seedlings at afforestation sites (Acacia hybrid -cuttings)	400	Dong/stem	1660	Stem	664.000	Dong
3. Beating up	400	Dong/stem	166	Stem	66.400	Dong
4. Insecticide (Pasudin)	15.000	Dong/kg	30	Kg	450.000	Dong
5. Fertilizers (NPK-14, 8, 6)	3.500	Dong/kg	162	Kg	567.000	Dong
6. Rent land	37.500	Dong/year	8	Year	300.000	Dong
7. Tent (fire tower)	2.000.000	Dong/pcs	0,036	Pcs	72.510	Dong
III. Labor (unit price: 40,000 dong/man-day)	40.000	Dong/man-day			4.943.600	Dong
1. Vegetation treatment	40.000	Dong/man-day	36,23	Man-day	1.449.200	Dong
2. Hole digging, filling in	40.000	Dong/man-day	12,62	Man	504.800	Dong
3. Transport/distribute seedlings + planting + beating up year 1	40.000	Dong/man-day	11,32	Man	452.800	Dong
4. Transport of fertilizer, fertilizing ...	40.000	Dong/man-day	10,54	Man	421.600	Dong
5. Beating up	40.000	Dong/man-day	3,03	Man	121.200	Dong
6. Tending in year 1 (twice)						
- Vegetation treatment (twice)	40.000	Dong/man-day	24,65	Man	986.000	Dong
- Digging round trees	40.000	Dong/man-day	12,07	Man	482.800	Dong
- Fire break	40.000	Dong/man-day	4,65	Man	186.000	Dong
7. Protection	40.000	Dong/man-day	7,28	Man	291.200	Dong
8. Check upon delivery, setting up document for management	48.000	Dong/man-day	1	Man-day	48.000	Dong
B. Management fee (6,5% x A)					465.440	Dong
C. Value predicted before tax (A+B)					7.626.061	Dong
D. Output VAT (10% xC)					762.606	Dong
E. Value predicted after tax (C+D)					8.388.667	Dong
F. Other costs					281.226	Dong
1. Design fee	57.287	Dong/Man-day	4,61	Man-day	264.093	Dong
2. Training cost					1.066	Dong
3. Appraisal and approval of design of budget estimation (0.325% labor cost)					16.067	Dong
Total baseline cost year 1 (E+F)					8.669.893	Dong
Year 2						
A. Direct cost					1.994.000	Dong
I. Material + seedlings cost					0	Dong
III. Labor cost					1.994.000	Dong
1. Tending (twice)						
- Vegetation treatment (twice)	40.000	Dong/man-day	24,65	Man-day	986.000	Dong
- Digging round trees	40.000	Dong/man-day	12,07	Man-day	482.800	Dong
- Fire break	40.000	Dong/man-day	4,65	Man-day	186.000	Dong
2. Management, protection	40.000	Dong/man-day	7,28	Man-day	291.200	Dong
3. Check upon delivery, setting up document for management	48.000	Dong/man-day	1	Man-day	48.000	Dong
B. Management fee (6,5% x A)					129.610	Dong
C. Value predicted before tax (A+B)					2.123.610	Dong
D. Output VAT (10% xC)					212.361	Dong

Item	Unit price	Unit	Quantity	Unit	Revenue /ha	Unit
E. Value predicted after tax (C+D)					2.335.971	Dong
F. Other costs					0	Dong
Total baseline cost year 2 (E+F)					2.335.971	Dong
Year 3						
A. Direct costs					1.511.200	Dong
I. Material, seedlings					0	Dong
III. Labor cost					1.511.200	Dong
1. Tending (twice)						
- Vegetation treatment (twice)	40.000	Dong/man-day	24,65	Man-day	986.000	Dong
- Digging round trees	40.000	Dong/man-day	4,65	Man-day	186.000	Dong
- Fire break	40.000	Dong/man-day	7,28	Man-day	291.200	Dong
3. Check upon delivery, setting up document for management	48.000	Dong/man-day	1	Man-day	48.000	Dong
B. Management fee (6,5%xA)					98.228	Dong
C. Value predicted before tax (A+B)					1.609.428	Dong
D. Output VAT (10% ×C)					160.943	Dong
E. Value predicted after tax (C+D)					1.770.371	Dong
F. Other costs					0	Dong
Total baseline cost year 3 (E+F)					1.770.371	Dong

Table A.9.1: Parameters for 1 ha of Acacia hybrid in Da Teh enterprise (contd)

Item	Unit price	Unit	Quantity	Unit	Revenue/ha	Unit
Years 4, 5, 6 and 7					291.200	Dong
A. Direct costs					291.200	Dong
I. Materials, seedlings					0	Dong
III. Labor costs (Management and protection)	40.000	Dong/man-day	7,28	Man-day	291.200	Dong
B. Management fee (6,5%xA)					18.928	Dong
C. Value predicted before tax (A+B)					310.128	Dong
D. Output VAT (10% ×C)					31.013	Dong
E. Value predicted after tax (C+D)					341.141	Dong
F. Other costs					0	Dong
Total baseline cost (years 4, 5, 6 & 7) (E+F)					341.141	Dong
Year 8 (logging)						
A. Direct cost					16.993.900	Dong
I. Materials, seedlings					0	Dong
III. Labor costs (preparation for logging, cutting saw, disbranching, loading in landing yard 1, transport uploading in yard 2)	121.385	Dong/m ³	140	m ³	16.993.900	Dong
B. Management fee (6,5%xA)					1.104.604	Dong
C. Value predicted before tax (A+B)					18.098.504	Dong
D. Output VAT (10% ×C)					1.809.850	Dong
E. Value predicted after tax (C+D)					19.908.354	Dong
F. Other costs					0	Dong
Total baseline cost year 8 (E+F)					19.908.354	Dong
Total estimation for 1 ha planting, tending, protection					14.140.798	Dong
Logging cost estimation 1 ha					19.908.354	Dong
Total estimation for 1 ha					34.049.152	Dong
Harvest quantity			140	m ³		
Selling price						
- Group 1 (D > 19 cm)	552.000	Dong/m ³	49	m ³	27.048.000	Dong
- Group 2 (D= 13 - 19 cm)	437.000	Dong/m ³	77	m ³	33.649.000	Dong
- Group (D= 6 - 12 cm)	230.000	Dong/m ³	14	m ³	3.220.000	Dong
Increased turnover					63.917.000	Dong

Table A.9.2: Indicators

Inflation	5%
Physical contingency	5%
Conditions	
Discounts rate	15,36%
Real discount rate	11,0%
Max loan	80% total project cost
Interest	1,28%/ month (15,36%/year)
Grace period	7 years
Term of payment	7 years
Loan sum	80% annual cost

Table A.9.3: Cost plan per 1 ha

Year	2008	2009	2010	2011	2012	2013	2014	2015	
Implementation year	2	3	4	5	6	7	8	9	
Materials, seedlings	2.217.021								
Others	281.226								
Labor cost									
Year 1	4.943.600								
Year 2		1.994.000							
Year 3			1.511.200						
Year 4				291.200					
Year 5					291.200				
Year 6						291.200			
Year 7							291.200		
Year 8 (logging)								16.993.900	
Total labor cost	4.943.600	1.994.000	1.511.200	291.200	291.200	291.200	291.200	16.993.900	
Direct cost	7.160.621	1.994.000	1.511.200	291.200	291.200	291.200	291.200	16.993.900	
Management fee (6.5% x direct cost)	465.440	129.610	98.228	18.928	18.928	18.928	18.928	1.104.604	
Value predicted before tax	7.626.061	2.123.610	1.609.428	310.128	310.128	310.128	310.128	18.098.504	
Output VAT (10% × Value predicted before tax)	762.606	212.361	160.943	31.013	31.013	31.013	31.013	1.809.850	
Value predicted after tax	8.388.667	2.335.971	1.770.371	341.141	341.141	341.141	341.141	19.908.354	
Total baseline cost	8.669.893	2.335.971	1.770.371	341.141	341.141	341.141	341.141	19.908.354	34.049.152
Physical contingency	433.495	116.799	88.519	17.057	17.057	17.057	17.057	995.418	1.702.458
Price contingency	933.097	386.618	400.602	98.963	121.822	145.822	171.024	11.524.839	13.782.787
Total estimation for planting, tending, protection for 1 ha including Physical contingency & Price contingency	10.036.485	2.839.387	2.259.492	457.161	480.019	504.020	529.221		17.105.786
Total estimation for harvest of 1 ha including Physical contingency & Price contingency	0	0	0	0	0	0	0	32.428.611	32.428.611
Total estimation for 1 ha including Physical contingency & Price contingency	10.036.485	2.839.387	2.259.492	457.161	480.019	504.020	529.221	32.428.611	49.534.397

Table A.9.4: Sales plan of products per 1 ha

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Implementation year	0	1	2	3	4	5	6	7	8	9
Inflation index	1,00	1,05	1,10	1,16	1,22	1,28	1,34	1,41	1,48	1,55
Harvest Area (ha)										1,00
Harvest quantity (m3)	- Group 1 (D >19 cm)									49
	- Group (D= 13 - 19 cm)									77
	- Group (D < 13 cm)									14
Sales plan	- Group 1 (D >19 cm)									27.048.000
	- Group 2 (D= 13 - 19 cm)									33.649.000
	- Group 3 (D < 13 cm)									3.220.000
Total turnover including inflation	0	0	0	0	0	0	0	0	0	99.156.246

Table A.9.5: Cash flow by project holder point of view (1 ha)

Year	2008	2009	2010	2011	2012	2013	2014	2015
Implementation year	2	3	4	5	6	7	8	9
Inflation index	1,10	1,16	1,22	1,28	1,34	1,41	1,48	1,55
Net cash flow by total investment point of view	(10.036.485)	(2.839.387)	(2.259.492)	(457.161)	(480.019)	(504.020)	(529.221)	66.727.635
Net cash flow of loan	8.029.188	1.038.227	225.406	(1.494.104)	(1.531.994)	(1.571.778)	(1.613.551)	(15.786.588)
Net cash flow by holder's point of view	(2.007.297)	(1.801.161)	(2.034.085)	(1.951.266)	(2.012.013)	(2.075.798)	(2.142.773)	50.941.047
Net cash flow by total investment point of view (real)	(9.103.387)	(2.452.770)	(1.858.889)	(358.198)	(358.198)	(358.198)	(358.198)	43.013.228
Net cash flow of loan (real)	7.282.710	896.859	185.442	(1.170.670)	(1.143.197)	(1.117.033)	(1.092.115)	(10.176.175)
Net cash flow by holder's point of view (real)	(1.820.677)	(1.555.910)	(1.673.447)	(1.528.868)	(1.501.395)	(1.475.231)	(1.450.313)	32.837.053
NPV with 10% of discount index (real)	6.069.193							
IRR	27%							

Table A.9.6: Status of cash flow by total investment point of view (1 ha)

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015
Implementation year	1	2	3	4	5	6	7	8	9
Inflation index	1,05	1,10	1,16	1,22	1,28	1,34	1,41	1,48	1,55
In-cash flow	0	0	0	0	0	0	0	0	99.156.246
Out-cash flow	0	10.036.485	2.839.387	2.259.492	457.161	480.019	504.020	529.221	32.428.611
Net cash flow (benefit - cost)	0	(10.036.485)	(2.839.387)	(2.259.492)	(457.161)	(480.019)	(504.020)	(529.221)	66.727.635
In-cash flow (real)	0	0	0	0	0	0	0	0	63.917.000
Out-cash flow (real)	0	9.103.387	2.452.770	1.858.889	358.198	358.198	358.198	358.198	20.903.772
Net cash flow (benefit - cost) (real)	0	(9.103.387)	(2.452.770)	(1.858.889)	(358.198)	(358.198)	(358.198)	(358.198)	43.013.228
Discount Factor	0,90	0,81	0,73	0,66	0,59	0,53	0,48	0,43	0,39
PVB (value attribute to present in-cash flow)	0	0	0	0	0	0	0	0	24.986.739
PVC (value attribute to present out-cash flow)	0	7.388.513	1.793.444	1.224.508	212.573	191.507	172.529	155.432	8.171.802
Value attribute to present net cash flow	0	(7.388.513)	(1.793.444)	(1.224.508)	(212.573)	(191.507)	(172.529)	(155.432)	16.814.937
Total value attribute to present of in-cash flow (a)	24.986.739	VND							
Total value attribute to present of out-cash flow (b)	19.310.308	VND							
Total value attribute to present of net cash flow (a-b)	5.676.430	VND							
Net Present Value (a)-(b)(NPV)	5.676.430	VND							
Internal Rate of Return (IRR)	18%								
BC Ratio (a)/(b)	1,29								

Annex 10: Estimated cost for the whole project (1,406.7 ha)

Table A.10.1: Plan of expenditure for 1,406.7 ha

Year	2008	2009	2010	2011	2012	2013	2014
Implementation year	2	3	4	5	6	7	8
Planting plan (ha)	227,8	215,6	233,3	219,1	193,6	154,7	162,6
Cost							
Year 1 (227,8 ha)	1.975.001.589	532.134.194	403.290.468	77.711.874	77.711.874	77.711.874	77.711.874
Year 2 (215,6 ha)		1.869.228.896	503.635.348	381.691.944	73.549.956	73.549.956	73.549.956
Year 3 (233,3 ha)			2.022.685.999	544.982.034	413.027.508	79.588.149	79.588.149
Year 4 (219,1 ha)				1.899.573.521	511.811.246	387.888.242	74.743.949
Year 5 (193,6 ha)					1.678.491.253	452.243.986	342.743.787
Year 6 (154,7 ha)						1.341.232.422	361.374.714
Year 7 (162,6 ha)							1.409.724.575
Total baseline cost for planting, tending, protection (real) 1,406.7 ha	1.975.001.589	2.401.363.090	2.929.611.815	2.903.959.374	2.754.591.838	2.412.214.629	2.419.437.005
Physical contingency	98.750.079	120.068.154	146.480.591	145.197.969	137.729.592	120.610.731	120.971.850
Price contingency	212.559.546	397.440.600	662.917.139	842.425.955	983.665.910	1.031.114.275	1.212.932.037
Total baseline cost for planting, tending, protection (including reservation)	2.286.311.214	2.918.871.844	3.739.009.545	3.891.583.297	3.875.987.339	3.563.939.636	3.753.340.892
Total baseline cost for harvest (real) 1,406.7 ha	0	0	0	0	0	0	0
Physical contingency	0	0	0	0	0	0	0
Price contingency	0	0	0	0	0	0	0
Total baseline cost for harvest (including reservation) 1,406.7 ha	0	0	0	0	0	0	0
Total baseline cost ((including reservation) 1,406.7 ha	2.286.311.214	2.918.871.844	3.739.009.545	3.891.583.297	3.875.987.339	3.563.939.636	3.753.340.892

Table A.10.1: Plan of expenditure for 1,406.7 ha (contd.)

Year	2015	2016	2017	2018	2019	2020	2021	
Implementation year	9	10	11	12	13	14	15	
Costs								
Year 1 (227,8 ha)	4.535.123.007	0	0	0	0	0	0	
Year 2 (215,6 ha)	73.549.956	4.292.241.090	0	0	0	0	0	
Year 3 (233,3 ha)	79.588.149	79.588.149	4.644.618.953	0	0	0	0	
Year 4 (219,1 ha)	74.743.949	74.743.949	74.743.949	4.361.920.329	0	0	0	
Year 5 (193,6 ha)	66.044.859	66.044.859	66.044.859	66.044.859	3.854.257.305	0	0	
Year 6 (154,7 ha)	273.876.363	52.774.482	52.774.482	52.774.482	52.774.482	3.079.822.341	0	
Year 7 (162,6 ha)	379.828.885	287.862.292	55.469.494	55.469.494	55.469.494	55.469.494	3.237.098.336	
Total baseline cost for planting, tending, protection (real) 1,406.7 ha	947.632.161	561.013.731	249.032.784	174.288.835	108.243.976	55.469.494	0	19.891.860.319
Physical contingency	47.381.608	28.050.687	12.451.639	8.714.442	5.412.199	2.773.475	0	994.593.016
Price contingency	548.579.166	370.459.447	185.742.677	145.644.315	100.659.494	57.074.126	0	6.751.214.686
Total baseline cost for planting, tending, protection (including reservation)	1.543.592.935	959.523.864	447.227.101	328.647.592	214.315.668	115.317.094	0	27.637.668.021
Total baseline cost for harvest (real) 1,406.7 ha	4.535.123.007	4.292.241.090	4.644.618.953	4.361.920.329	3.854.257.305	3.079.822.341	3.237.098.336	28.005.081.361
Physical contingency	226.756.150	214.612.055	232.230.948	218.096.016	192.712.865	153.991.117	161.854.917	1.400.254.068
Price contingency	2.625.358.341	2.834.335.726	3.464.218.428	3.645.034.981	3.584.195.661	3.168.915.994	3.667.226.445	22.989.285.576
Total baseline cost for harvest (including reservation) 1,406.7 ha	7.387.237.498	7.341.188.871	8.341.068.329	8.225.051.326	7.631.165.831	6.402.729.451	7.066.179.698	52.394.621.005
Total baseline cost (including reservation) 1,406.7 ha	8.930.830.433	8.300.712.735	8.788.295.430	8.553.698.918	7.845.481.499	6.518.046.546	7.066.179.698	80.032.289.025

Table A.10.2: Sales Plan of product removed from 1,406.7 ha

Planting year		2015	2016	2017	2018	2019	2020	2021
Implementation year		9	10	11	12	13	14	15
Inflation coefficient		1,55	1,63	1,71	1,80	1,89	1,98	2,08
Harvest Area (ha)		227,80	215,60	233,30	219,10	193,60	154,70	162,60
Harvest quantity (m3)	- Group 1 (D >19 cm)	11.162	10.564	11.432	10.736	9.486	7.580	7.967
	- Group 2 (D= 13 - 19 cm)	17.541	16.601	17.964	16.871	14.907	11.912	12.520
	- Group 3 (D < 13 cm)	3.189	3.018	3.266	3.067	2.710	2.166	2.276
Sales plan	- Group 1 (D >19 cm)	6.161.534.400	5.831.548.800	6.310.298.400	5.926.216.800	5.236.492.800	4.184.325.600	4.398.004.800
	- Group 2 (D= 13 - 19 cm)	7.665.242.200	7.254.724.400	7.850.311.700	7.372.495.900	6.514.446.400	5.205.500.300	5.471.327.400
	- Group 3 (D < 13 cm)	733.516.000	694.232.000	751.226.000	705.502.000	623.392.000	498.134.000	523.572.000
Total		22.587.792.743	22.446.990.875	25.504.300.184	25.149.557.560	23.333.647.014	19.577.484.260	21.606.101.407

Table A.10.3: Status of cash flow by total investment point of view (1,406.7 ha)

Planting year	2006	2007	2008	2009	2010	2011	2012	2013	2014
Implementation year	0	1	2	3	4	5	6	7	8
Inflation index	1	1,05	1,1	1,16	1,22	1,28	1,34	1,41	1,48
In-cash flow	0	0	0	0	0	0	0	0	0
Out-cash flow	0	0	2.286.311.214	2.918.871.844	3.739.009.545	3.891.583.297	3.875.987.339	3.563.939.636	3.753.340.892
Net cash flow (benefit - cost)	0	0	-2.286.311.214	-2.918.871.844	-3.739.009.545	-3.891.583.297	-3.875.987.339	-3.563.939.636	-3.753.340.892
In-cash flow (real)	0	0	0	0	0	0	0	0	0
Out-cash flow (real)	0	0	2.073.751.668	2.521.431.244	3.076.092.406	3.049.157.343	2.892.321.430	2.532.825.361	2.540.408.855
Net cash flow (benefit - cost) (real)	0	0	-2.073.751.668	-2.521.431.244	-3.076.092.406	-3.049.157.343	-2.892.321.430	-2.532.825.361	-2.540.408.855
Discount factor	1	0,9	0,81	0,73	0,66	0,59	0,53	0,48	0,43
PVB (value attribute to present in-cash flow)		0	0	0	0	0	0	0	0
PVC (value attribute to present out-cash flow)		0	1.683.103.375	1.843.648.794	2.026.317.347	1.809.526.474	1.546.353.147	1.219.956.638	1.102.350.714
Value attribute to present net cash flow		0	-1.683.103.375	-1.843.648.794	-2.026.317.347	-1.809.526.474	-1.546.353.147	-1.219.956.638	-1.102.350.714

Table A.10.3: Status of cash flow by total investment point of view (contd.)

Planting year	2015	2016	2017	2018	2019	2020	2021
Implementation year	9	10	11	12	13	14	15
Inflation index	1,55	1,63	1,71	1,8	1,89	1,98	2,08
In-cash flow	22.587.792.743	22.446.990.875	25.504.300.184	25.149.557.560	23.333.647.014	19.577.484.260	21.606.101.407
Out-cash flow	8.930.830.433	8.300.712.735	8.788.295.430	8.553.698.918	7.845.481.499	6.518.046.546	7.066.179.698
Net cash flow (benefit - cost)	13.656.962.311	14.146.278.140	16.716.004.754	16.595.858.642	15.488.165.515	13.059.437.714	14.539.921.710
In-cash flow (real)	14.560.292.600	13.780.505.200	14.911.836.100	14.004.214.700	12.374.331.200	9.887.959.900	10.392.904.200
Out-cash flow (real)	5.756.892.926	5.095.917.562	5.138.334.324	4.763.019.621	4.160.626.345	3.292.056.426	3.398.953.253
Net cash flow (benefit - cost) (real)	8.803.399.674	8.684.587.638	9.773.501.776	9.241.195.079	8.213.704.855	6.595.903.474	6.993.950.947
Discount factor	0,39	0,35	0,32	0,29	0,26	0,23	0,21
PVB (value attribute to present in-cash flow)	5.691.979.057	4.853.280.041	4.731.276.779	4.002.976.264	3.186.566.686	2.293.955.524	2.172.162.152
PVC (value attribute to present out-cash flow)	2.250.512.051	1.794.703.070	1.630.307.744	1.361.465.451	1.071.420.596	763.740.054	710.396.004
Value attribute to present net cash flow	3.441.467.005	3.058.576.971	3.100.969.035	2.641.510.812	2.115.146.091	1.530.215.471	1.461.766.148
Total value attribute to present of in-cash flow (a)	26.932.196.504	VND					
Total value attribute to present of out-cash flow (b)	20.813.801.460	VND					
Total value attribute to present of net cash flow (a-b)	6.118.395.043	VND					
Net Present Value (a)-(b)(NPV)	6.118.395.043	VND					
Internal Rate of Return (IRR)	18	%					
BC Ratio (a)/(b)	1,3						

Table A.10.4: Cash flow by project holder point of view (1,406.7 ha)

Planting year	2006	2007	2008	2009	2010	2011	2012	2013	2014
Implementation year	0	1	2	3	4	5	6	7	8
Inflation index	1,00	1,05	1,10	1,16	1,22	1,28	1,34	1,41	1,48
Net cash flow by total investment point of view	0	0	(2.286.311.214)	(2.918.871.844)	(3.739.009.545)	(3.891.583.297)	(3.875.987.339)	(3.563.939.636)	(3.753.340.892)
Net cash flow of loan	0	0	1.829.048.971	2.054.155.553	2.351.594.742	2.014.204.251	1.523.529.729	797.610.242	511.194.344
Net cash flow by project holder point of view	0	0	(457.262.243)	(864.716.291)	(1.387.414.803)	(1.877.379.047)	(2.352.457.610)	(2.766.329.394)	(3.242.146.548)
Net cash flow by total investment point of view (real)	0	0	(2.073.751.668)	(2.521.431.244)	(3.076.092.406)	(3.049.157.343)	(2.892.321.430)	(2.532.825.361)	(2.540.408.855)
Net cash flow of loan (real)	0	0	1.659.001.334	1.774.456.800	1.934.662.814	1.578.181.735	1.136.881.341	566.846.707	345.996.454
Net cash flow by project holder point of view (real)	0	0	(414.750.334)	(746.974.444)	(1.141.429.592)	(1.470.975.607)	(1.755.440.089)	(1.965.978.653)	(2.194.412.401)

Table A.10-4: Cash flow by project holder point of view (1,406.7 ha) (contd.)

Planting year	2015	2016	2017	2018	2019	2020	2021
Implementation year	9	10	11	12	13	14	15
Inflation index	1,55	1,63	1,71	1,80	1,89	1,98	2,08
Net cash flow by total investment point of view	13.656.962.311	14.146.278.140	16.716.004.754	16.595.858.642	15.488.165.515	13.059.437.714	14.539.921.710
Net cash flow of loan	(5.698.865.329)	(5.277.052.629)	(4.855.239.929)	(4.433.427.229)	(4.011.614.530)	(3.589.801.830)	(3.167.989.130)
Net cash flow by project holder point of view	7.958.096.982	8.869.225.511	11.860.764.825	12.162.431.412	11.476.550.985	9.469.635.884	11.371.932.579
Net cash flow by total investment point of view (real)	8.803.399.674	8.684.587.638	9.773.501.776	9.241.195.079	8.213.704.855	6.595.903.474	6.993.950.947
Net cash flow of loan (real)	(3.673.539.403)	(3.239.652.549)	(2.838.758.230)	(2.468.698.172)	(2.127.444.836)	(1.813.093.862)	(1.523.856.938)
Net cash flow by project holder point of view (real)	5.129.860.271	5.444.935.090	6.934.743.546	6.772.496.906	6.086.260.019	4.782.809.612	5.470.094.009
NPV with 10% of discount rate (real)	6.533.981.609						
IRR	25%						

Annex: 11: Budget Estimation for Each Year by Progress of Afforestation

Table A.11.1: Plan of expenditure per 227.8 ha of plantation forests in 2008

Unit: VND

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Implementation year	0	1	2	3	4	5	6	7	8	9	
Index of inflation	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	
Index of inflation	1,00	1,05	1,10	1,16	1,22	1,28	1,34	1,41	1,48	1,55	
Material and seedling costs			505.037.300								505.037.300
Other costs			64.063.230								64.063.230
Labor cost											0
Year 1			1.126.152.080								1.126.152.080
Year 2				454.233.200							454.233.200
Year 3					344.251.360						344.251.360
Year 4						66.335.360					66.335.360
Year 5							66.335.360				66.335.360
Year 6								66.335.360			66.335.360
Year 7									66.335.360		66.335.360
Year 8 (logging)										3.871.210.420	3.871.210.420
Total cost for labor			1.126.152.080	454.233.200	344.251.360	66.335.360	66.335.360	66.335.360	66.335.360	3.871.210.420	6.061.188.500
Direct cost			1.631.189.380	454.233.200	344.251.360	66.335.360	66.335.360	66.335.360	66.335.360	3.871.210.420	6.566.225.800
Management fee (6.5 % x direct cost)			106.027.310	29.525.158	22.376.338	4.311.798	4.311.798	4.311.798	4.311.798	251.628.677	426.804.677
Predicted value before hiring			1.737.216.689	483.758.358	366.627.698	70.647.158	70.647.158	70.647.158	70.647.158	4.122.839.097	6.993.030.477
Output VAT 10% × Predicted value before hiring)			173.721.669	48.375.836	36.662.770	7.064.716	7.064.716	7.064.716	7.064.716	412.283.910	699.303.048
Predicted value after hiring			1.910.938.358	532.134.194	403.290.468	77.711.874	77.711.874	77.711.874	77.711.874	4.535.123.007	7.692.333.524
Total baseline cost			1.975.001.589	532.134.194	403.290.468	77.711.874	77.711.874	77.711.874	77.711.874	4.535.123.007	7.756.396.755
Physical contingency			98.750.079	26.606.710	20.164.523	3.885.594	3.885.594	3.885.594	3.885.594	226.756.150	387.819.838
Price contingency			212.559.546	88.071.535	91.257.197	22.543.876	27.750.943	33.218.364	38.959.155	2.625.358.341	3.139.718.957
Total estimation budget for planting and tending, protection per 1 ha including Physical contingency and Price contingency			2.286.311.214	646.812.438	514.712.189	104.141.344	109.348.411	114.815.832	120.556.623	0	3.896.698.051
Total estimation budget for harvest per 1 ha including Physical contingency and Price contingency			0	0	0	0	0	0	0	7.387.237.498	7.387.237.498
Total estimation budget for 1 ha including Physical contingency and Price contingency			2.286.311.214	646.812.438	514.712.189	104.141.344	109.348.411	114.815.832	120.556.623	7.387.237.498	11.283.935.549

Table A.11.2: Plan of expenditure per 215.6 ha of plantation forests in 2009

Unit: VND

Year	2006	2007	2009	2010	2011	2012	2013	2014	2015	2016	Total
Implementation year	0	1	3	4	5	6	7	8	9	10	
Rate of inflation	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	
Coefficient of inflation	1,00	1,05	1,16	1,22	1,28	1,34	1,41	1,48	1,55	1,63	
Material and seedling costs			477.989.648	0	0	0	0	0	0	0	477.989.648
Other costs			60.632.276	0	0	0	0	0	0	0	60.632.276
Labor cost			0	0	0	0	0	0	0	0	0
Year 1			1.065.840.160	0	0	0	0	0	0	0	1.065.840.160
Year 2			0	429.906.400	0	0	0	0	0	0	429.906.400
Year 3			0	0	325.814.720	0	0	0	0	0	325.814.720
Year 4			0	0	0	62.782.720	0	0	0	0	62.782.720
Year 5			0	0	0	0	62.782.720	0	0	0	62.782.720
Year 6			0	0	0	0	0	62.782.720	0	0	62.782.720
Year 7			0	0	0	0	0	0	62.782.720	0	62.782.720
Year 8 (logging)			0	0	0	0	0	0	0	3.663.884.840	3.663.884.840
Total cost for labor			1.065.840.160	429.906.400	325.814.720	62.782.720	62.782.720	62.782.720	62.782.720	3.663.884.840	5.736.577.000
Direct cost			1.543.829.808	429.906.400	325.814.720	62.782.720	62.782.720	62.782.720	62.782.720	3.663.884.840	6.214.566.648
Management fee (6.5 % x DIRECT COST)			100.348.938	27.943.916	21.177.957	4.080.877	4.080.877	4.080.877	4.080.877	238.152.515	403.946.832
Predicted value before hiring			1.644.178.745	457.850.316	346.992.677	66.863.597	66.863.597	66.863.597	66.863.597	3.902.037.355	6.618.513.480
Output VAT 10% × Predicted value before hiring)			164.417.875	45.785.032	34.699.268	6.686.360	6.686.360	6.686.360	6.686.360	390.203.735	661.851.348
Predicted value after hiring			1.808.596.620	503.635.348	381.691.944	73.549.956	73.549.956	73.549.956	73.549.956	4.292.241.090	7.280.364.828
Total baseline cost			1.869.228.896	503.635.348	381.691.944	73.549.956	73.549.956	73.549.956	73.549.956	4.292.241.090	7.340.997.104
Physical contingency			93.461.445	25.181.767	19.084.597	3.677.498	3.677.498	3.677.498	3.677.498	214.612.055	367.049.855
Price contingency			309.369.065	113.963.393	110.727.169	26.264.721	31.439.329	36.872.668	42.577.675	2.834.335.726	3.505.549.747
Total estimation budget for planting and tending, protection per 1 ha including Physical contingency and Price contingency			2.272.059.406	642.780.508	511.503.711	103.492.175	108.666.784	114.100.123	119.805.129	0	3.872.407.835
Total estimation budget for harvest per 1 ha including Physical contingency and Price contingency			0	0	0	0	0	0	0	7.341.188.871	7.341.188.871
Total estimation budget for 1 ha including Physical contingency and Price contingency			2.272.059.406	642.780.508	511.503.711	103.492.175	108.666.784	114.100.123	119.805.129	7.341.188.871	11.213.596.706

Table A.11.3: Plan of expenditure per 233.3 ha of plantation forests in 2010

Unit: VND

Year	2006	2007	2010	2011	2012	2013	2014	2015	2016	2017	Total
Implementation year	0	1	4	5	6	7	8	9	10	11	
Rate of inflation	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	
Coefficient of inflation	1,00	1,05	1,22	1,28	1,34	1,41	1,48	1,55	1,63	1,71	
Material and seedling costs			517.230.913	0	0	0	0	0	0	0	517.230.913
Other costs			65.609.972	0	0	0	0	0	0	0	65.609.972
Labor cost			0	0	0	0	0	0	0	0	0
Year 1			1.153.341.880	0	0	0	0	0	0	0	1.153.341.880
Year 2			0	465.200.200	0	0	0	0	0	0	465.200.200
Year 3			0	0	352.562.960	0	0	0	0	0	352.562.960
Year 4			0	0	0	67.936.960	0	0	0	0	67.936.960
Year 5			0	0	0	0	67.936.960	0	0	0	67.936.960
Year 6			0	0	0	0	0	67.936.960	0	0	67.936.960
Year 7			0	0	0	0	0	0	67.936.960	0	67.936.960
Year 8 (logging)			0	0	0	0	0	0	0	3.964.676.870	3.964.676.870
Total cost for labor			1.153.341.880	465.200.200	352.562.960	67.936.960	67.936.960	67.936.960	67.936.960	3.964.676.870	6.207.529.750
Direct cost			1.670.572.793	465.200.200	352.562.960	67.936.960	67.936.960	67.936.960	67.936.960	3.964.676.870	6.724.760.663
Management fee (6.5 % x DIRECT COST)			108.587.232	30.238.013	22.916.592	4.415.902	4.415.902	4.415.902	4.415.902	257.703.997	437.109.443
Predicted value before hiring			1.779.160.025	495.438.213	375.479.552	72.352.862	72.352.862	72.352.862	72.352.862	4.222.380.867	7.161.870.106
Output VAT 10% x Predicted value before hiring)			177.916.002	49.543.821	37.547.955	7.235.286	7.235.286	7.235.286	7.235.286	422.238.087	716.187.011
Predicted value after hiring			1.957.076.027	544.982.034	413.027.508	79.588.149	79.588.149	79.588.149	79.588.149	4.644.618.953	7.878.057.117
Total baseline cost			2.022.685.999	544.982.034	413.027.508	79.588.149	79.588.149	79.588.149	79.588.149	4.644.618.953	7.943.667.089
Physical contingency			101.134.300	27.249.102	20.651.375	3.979.407	3.979.407	3.979.407	3.979.407	232.230.948	397.183.354
Price contingency			457.696.548	158.096.912	147.492.298	34.020.387	39.899.785	46.073.152	52.555.187	3.464.218.428	4.400.052.697
Total estimation budget for planting and tending, protection per 1 ha including Physical contingency and Price contingency			2.581.516.847	730.328.048	581.171.181	117.587.943	123.467.341	129.640.708	136.122.743	0	4.399.834.811
Total estimation budget for harvest per 1 ha including Physical contingency and Price contingency			0	0	0	0	0	0	0	8.341.068.329	8.341.068.329
Total estimation budget for 1 ha including Physical contingency and Price contingency			2.581.516.847	730.328.048	581.171.181	117.587.943	123.467.341	129.640.708	136.122.743	8.341.068.329	12.740.903.140

Table A.11.4: Plan of expenditure per 219.1ha of plantation forests in 2011

Unit: VND

Year	2006	2007	2011	2012	2013	2014	2015	2016	2017	2018	Total
Implementation year	0	1	5	6	7	8	9	10	11	12	
Rate of inflation	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	
Coefficient of inflation	1,00	1,05	1,28	1,34	1,41	1,48	1,55	1,63	1,71	1,80	
Material and seedling costs			485.749.220	0	0	0	0	0	0	0	485.749.220
Other costs			61.616.566	0	0	0	0	0	0	0	61.616.566
Labor cost			0	0	0	0	0	0	0	0	0
Year 1			1.083.142.760	0	0	0	0	0	0	0	1.083.142.760
Year 2			0	436.885.400	0	0	0	0	0	0	436.885.400
Year 3			0	0	331.103.920	0	0	0	0	0	331.103.920
Year 4			0	0	0	63.801.920	0	0	0	0	63.801.920
Year 5			0	0	0	0	63.801.920	0	0	0	63.801.920
Year 6			0	0	0	0	0	63.801.920	0	0	63.801.920
Year 7			0	0	0	0	0	0	63.801.920	0	63.801.920
Year 8 (logging)			0	0	0	0	0	0	0	3.723.363.490	3.723.363.490
Total cost for labor			1.083.142.760	436.885.400	331.103.920	63.801.920	63.801.920	63.801.920	63.801.920	3.723.363.490	5.829.703.250
Direct cost			1.568.891.980	436.885.400	331.103.920	63.801.920	63.801.920	63.801.920	63.801.920	3.723.363.490	6.315.452.470
Management fee (6.5 % x direct cost)			101.977.979	28.397.551	21.521.755	4.147.125	4.147.125	4.147.125	4.147.125	242.018.627	410.504.411
Predicted value before hiring			1.670.869.959	465.282.951	352.625.675	67.949.045	67.949.045	67.949.045	67.949.045	3.965.382.117	6.725.956.881
Output VAT 10% × Predicted value before hiring)			167.086.996	46.528.295	35.262.567	6.794.904	6.794.904	6.794.904	6.794.904	396.538.212	672.595.688
Predicted value after hiring			1.837.956.955	511.811.246	387.888.242	74.743.949	74.743.949	74.743.949	74.743.949	4.361.920.329	7.398.552.569
Total baseline cost			1.899.573.521	511.811.246	387.888.242	74.743.949	74.743.949	74.743.949	74.743.949	4.361.920.329	7.460.169.135
Physical contingency			94.978.676	25.590.562	19.394.412	3.737.197	3.737.197	3.737.197	3.737.197	218.096.016	373.008.457
Price contingency			551.057.997	182.768.012	165.804.941	37.471.251	43.268.871	49.356.371	55.748.247	3.645.034.981	4.730.510.672
Total estimation budget for planting and tending, protection per 1 ha including Physical contingency and Price contingency			2.545.610.194	720.169.821	573.087.595	115.952.397	121.750.017	127.837.518	134.229.394	0	4.338.636.937
Total estimation budget for harvest per 1 ha including Physical contingency and Price contingency			0	0	0	0	0	0	0	8.225.051.326	8.225.051.326
Total estimation budget for 1 ha including Physical contingency and Price contingency			2.545.610.194	720.169.821	573.087.595	115.952.397	121.750.017	127.837.518	134.229.394	8.225.051.326	12.563.688.264

Table A.11.5: Plan of expenditure per 193.6 ha of plantation forests in 2012

Unit: VND

Year	2006	2007	2012	2013	2014	2015	2016	2017	2018	2019	Total
Implementation year	0	1	6	7	8	9	10	11	12	13	
Rate of inflation	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	
Coefficient of inflation	1,00	1,05	1,34	1,41	1,48	1,55	1,63	1,71	1,80	1,89	
Material and seedling costs			429.215.194	0	0	0	0	0	0	0	429.215.194
Other costs			54.445.309	0	0	0	0	0	0	0	54.445.309
Labor cost			0	0	0	0	0	0	0	0	0
Year 1			957.080.960	0	0	0	0	0	0	0	957.080.960
Year 2			0	386.038.400	0	0	0	0	0	0	386.038.400
Year 3			0	0	292.568.320	0	0	0	0	0	292.568.320
Year 4			0	0	0	56.376.320	0	0	0	0	56.376.320
Year 5			0	0	0	0	56.376.320	0	0	0	56.376.320
Year 6			0	0	0	0	0	56.376.320	0	0	56.376.320
Year 7			0	0	0	0	0	0	56.376.320	0	56.376.320
Year 8 (logging)			0	0	0	0	0	0	0	3.290.019.040	3.290.019.040
Total cost for labor			957.080.960	386.038.400	292.568.320	56.376.320	56.376.320	56.376.320	56.376.320	3.290.019.040	5.151.212.000
Direct cost			1.386.296.154	386.038.400	292.568.320	56.376.320	56.376.320	56.376.320	56.376.320	3.290.019.040	5.580.427.194
Management fee (6.5 % x DIRECT COST)			90.109.250	25.092.496	19.016.941	3.664.461	3.664.461	3.664.461	3.664.461	213.851.238	362.727.768
Predicted value before hiring			1.476.405.404	411.130.896	311.585.261	60.040.781	60.040.781	60.040.781	60.040.781	3.503.870.278	5.943.154.962
Output VAT 10% × Predicted value before hiring)			147.640.540	41.113.090	31.158.526	6.004.078	6.004.078	6.004.078	6.004.078	350.387.028	594.315.496
Predicted value after hiring			1.624.045.944	452.243.986	342.743.787	66.044.859	66.044.859	66.044.859	66.044.859	3.854.257.305	6.537.470.458
Total baseline cost			1.678.491.253	452.243.986	342.743.787	66.044.859	66.044.859	66.044.859	66.044.859	3.854.257.305	6.591.915.767
Physical contingency			83.924.563	22.612.199	17.137.189	3.302.243	3.302.243	3.302.243	3.302.243	192.712.865	329.595.788
Price contingency			599.389.936	193.314.154	171.827.131	38.233.014	43.612.020	49.259.976	55.190.330	3.584.195.661	4.735.022.221
Total estimation budget for planting and tending, protection per 1 ha including Physical contingency and Price contingency			2.361.805.752	668.170.338	531.708.107	107.580.116	112.959.122	118.607.078	124.537.432	0	4.025.367.944
Total estimation budget for harvest per 1 ha including Physical contingency and Price contingency			0	0	0	0	0	0	0	7.631.165.831	7.631.165.831
Total estimation budget for 1 ha including Physical contingency and Price contingency			2.361.805.752	668.170.338	531.708.107	107.580.116	112.959.122	118.607.078	124.537.432	7.631.165.831	11.656.533.776

Table A.11.6: Plan of expenditure per 154.7 ha of plantation forests in 2013

Unit: VND

Year	2006	2007	2013	2014	2015	2016	2017	2018	2019	2020	Total
Implementation year	0	1	7	8	9	10	11	12	13	14	
Rate of inflation	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	
Coefficient of inflation	1,00	1,05	1,41	1,48	1,55	1,63	1,71	1,80	1,89	1,98	
Material and seedling costs			342.973.091	0	0	0	0	0	0	0	342.973.091
Other costs			43.505.627	0	0	0	0	0	0	0	43.505.627
Labor cost			0	0	0	0	0	0	0	0	0
Year 1			764.774.920	0	0	0	0	0	0	0	764.774.920
Year 2			0	308.471.800	0	0	0	0	0	0	308.471.800
Year 3			0	0	233.782.640	0	0	0	0	0	233.782.640
Year 4			0	0	0	45.048.640	0	0	0	0	45.048.640
Year 5			0	0	0	0	45.048.640	0	0	0	45.048.640
Year 6			0	0	0	0	0	45.048.640	0	0	45.048.640
Year 7			0	0	0	0	0	0	45.048.640	0	45.048.640
Year 8 (logging)			0	0	0	0	0	0	0	2.628.956.330	2.628.956.330
Total cost for labor			764.774.920	308.471.800	233.782.640	45.048.640	45.048.640	45.048.640	45.048.640	2.628.956.330	4.116.180.250
Direct cost			1.107.748.011	308.471.800	233.782.640	45.048.640	45.048.640	45.048.640	45.048.640	2.628.956.330	4.459.153.341
Management fee (6.5 % x DIRECT COST)			72.003.621	20.050.667	15.195.872	2.928.162	2.928.162	2.928.162	2.928.162	170.882.161	289.844.967
Predicted value before hiring			1.179.751.632	328.522.467	248.978.512	47.976.802	47.976.802	47.976.802	47.976.802	2.799.838.491	4.748.998.309
Output VAT 10% × Predicted value before hiring)			117.975.163	32.852.247	24.897.851	4.797.680	4.797.680	4.797.680	4.797.680	279.983.849	474.899.831
Predicted value after hiring			1.297.726.795	361.374.714	273.876.363	52.774.482	52.774.482	52.774.482	52.774.482	3.079.822.341	5.223.898.140
Total baseline cost			1.341.232.422	361.374.714	273.876.363	52.774.482	52.774.482	52.774.482	52.774.482	3.079.822.341	5.267.403.766
Physical contingency			67.061.621	18.068.736	13.693.818	2.638.724	2.638.724	2.638.724	2.638.724	153.991.117	263.370.188

Price contingency			573.317.100	181.167.341	158.545.555	34.849.067	39.362.181	44.100.950	49.076.658	3.168.915.994	4.249.334.846
Total estimation budget for planting and tending, protection per 1 ha including Physical contingency and Price contingency			1.981.611.143	560.610.790	446.115.736	90.262.273	94.775.387	99.514.156	104.489.864	0	3.377.379.349
Total estimation budget for harvest per 1 ha including Physical contingency and Price contingency			0	0	0	0	0	0	0	6.402.729.451	6.402.729.451
Total estimation budget for 1 ha including Physical contingency and Price contingency			1.981.611.143	560.610.790	446.115.736	90.262.273	94.775.387	99.514.156	104.489.864	6.402.729.451	9.780.108.801

Table A.11.7: Plan of expenditure per 162.6 ha of plantation forests in 2014

Unit: VND

Year	2006	2007	2014	2015	2016	2017	2018	2019	2020	2021	
Implementation year	0	1	8	9	10	11	12	13	14	15	
Rate of inflation	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	
Coefficient of inflation	1,00	1,05	1,48	1,55	1,63	1,71	1,80	1,89	1,98	2,08	
Material and seedling costs			360.487.554	0	0	0	0	0	0	0	360.487.554
Other costs			45.727.310	0	0	0	0	0	0	0	45.727.310
Labor cost			0	0	0	0	0	0	0	0	0
Year 1			803.829.360	0	0	0	0	0	0	0	803.829.360
Year 2			0	324.224.400	0	0	0	0	0	0	324.224.400
Year 3			0	0	245.721.120	0	0	0	0	0	245.721.120
Year 4			0	0	0	47.349.120	0	0	0	0	47.349.120
Year 5			0	0	0	0	47.349.120	0	0	0	47.349.120
Year 6			0	0	0	0	0	47.349.120	0	0	47.349.120
Year 7			0	0	0	0	0	0	47.349.120	0	47.349.120
Year 8 (logging)			0	0	0	0	0	0	0	2.763.208.140	2.763.208.140
Total cost for labor			803.829.360	324.224.400	245.721.120	47.349.120	47.349.120	47.349.120	47.349.120	2.763.208.140	4.326.379.500
Direct cost			1.164.316.914	324.224.400	245.721.120	47.349.120	47.349.120	47.349.120	47.349.120	2.763.208.140	4.686.867.054
Management fee (6.5 % x DIRECT COST)			75.680.599	21.074.586	15.971.873	3.077.693	3.077.693	3.077.693	3.077.693	179.608.529	304.646.359
Predicted value before hiring			1.239.997.514	345.298.986	261.692.993	50.426.813	50.426.813	50.426.813	50.426.813	2.942.816.669	4.991.513.413
Output VAT 10% × Predicted value before hiring)			123.999.751	34.529.899	26.169.299	5.042.681	5.042.681	5.042.681	5.042.681	294.281.667	499.151.341

Predicted value after hiring			1.363.997.265	379.828.885	287.862.292	55.469.494	55.469.494	55.469.494	55.469.494	3.237.098.336	5.490.664.754
Total baseline cost			1.409.724.575	379.828.885	287.862.292	55.469.494	55.469.494	55.469.494	55.469.494	3.237.098.336	5.536.392.064
Physical contingency			70.486.229	18.991.444	14.393.115	2.773.475	2.773.475	2.773.475	2.773.475	161.854.917	276.819.603
Price contingency			706.734.706	219.880.900	190.086.801	41.372.273	46.353.035	51.582.835	57.074.126	3.667.226.445	4.980.311.122
Total estimation budget for planting and tending, protection per 1 ha including Physical contingency and Price contingency			2.186.945.511	618.701.229	492.342.208	99.615.242	104.596.004	109.825.804	115.317.094	0	3.727.343.092
Total estimation budget for harvest per 1 ha including Physical contingency and Price contingency			0	0	0	0	0	0	0	7.066.179.698	7.066.179.698
Total estimation budget for 1 ha including Physical contingency and Price contingency			2.186.945.511	618.701.229	492.342.208	99.615.242	104.596.004	109.825.804	115.317.094	7.066.179.698	10.793.522.790

Annex 12: Conversion from Financial to Economic Price

FOB price (in USD)	95	US\$/BDMT
FOB price (in VND)	1.520	1000VND/BDMT
Coefficient conversion from ton to m ³	1,2	BDMT = m ³
FOB price of 1 m ³	1.267	VND/m ³
Port fee	-20	VND/m ³
Transport from chipping mill to port	-15	VND/m ³
Economic price at gate chipping mill	1.232	1000VND/m ³
Coefficient of quality conversion	54%	
Chipping price per 1 m ³	-150	1000VND/m ³
Transport cost from Da Teh to chipping mill	-120	1000VND/m ³
Economic price	395	1000VND/m ³
Financial price	456	1000VND/m ³
Conversion coefficient from Financial price to Economic price	0,87	

Annex 13: Description of afforestation activities

Species: Acacia hybrid (Cuttings) Density: 1,660 stem/ha

Key activities	Details	Description
1. Planting	1.1. Vegetation treatment	Time of vegetation treatment is from Jan. to Feb. As for exhausted forest sites, clear all to get timber and firewood. When dired, burn them. The remained articles, burn again. As for sites after logging, clear and chop the branches, then burn. Firebreaks must be set up to avoid the spreading of fires.
	1.2. Hole digging	Hole sizes: 30 cm x 30 cm x 30 cm. Quincunx arrangement, lines are paralleling to the contour lines, density is 1.660 per ha, line to line: 3 m, tree to tree: 2 m. When digging, set aside the top soil for filling in when planting.
	1.3. Hole filling in + fertilizing	Filling in with the top soil to cover ½ of hole depth, put 100 g of NPK, the soil + 1 kg of micro organism matter onto the hole. Then fertile up to 2/3 of the hole depth and mix up with fertilizer. Fulfil in up to the surface in tortoise-shelled shape 5 cm in height. . Somewhere if harmful insects available add 20g/hole of insecticide per hole is added to if harmful exist before planting.
	1.4. Seeding transport and planting	Seedlings should be ready at planting sites 7-10 days for recover before planting. Only plant the trees when soil is moist enough and in good weather. Planting happens in rainy season from mid-June to mid-July. Seedlings should be well distributed by the hole side before planting and plant them right after 7 putting them by hole side. Planting top-down. Materials in side the hole should well be beaten, put off the plastic coat then gently place the seedling in, cover the seedling with soil up to the root-top
	1.5. Beating - up	10 - 20 days after planting, check the site to see the rate of survival. Beating u- is applied if necessary.
2. Tending	2.1. Year 1: Twice	<u>Time 1</u> : Tending in month 8- month 9. Clear all the vegetations, digging round the trees, weeding along the tree line with 0,8 - 1 m in width + beating up.

Key activities	Details	Description
		<u>Time 2</u> : In month 11- month 12. Clear all the vegetations, set up fire break round the stand, protection.
	2.2. Year 2: Twice	<u>Time 1</u> : From month 5 to month 6. Clear all the vegetations, beating up.
		<u>Time 2</u> : From month 10 to month 12. Clear all the vegetations, digging round the trees 0,8 - 1m . set up fire break round the stand, protection.
	2.3. Year 3: Twice	<u>Time 1</u> : From month 5 to month 6. Clear all the vegetations.
		<u>Time 2</u> : From month 10 to month 12. Clear all the vegetations, branching poor branches. set up fire break round the stand, protection.
3. Protection	From year 1 to the end	<u>Fire prevention</u> : set up fire break round the stand in a form of clear vegetation transects where sensitive to fire, 8 m in width (total area of fire break = 10% area of designed stand)
		Prevention of other factors to harvest time: Pests and diseases, animals, damages by people and nature.

Annex 14: Result of Household survey

Table A.14. 1: Interviewing on labor and ethnic

No.	Household owner	Address		HH group	No. of person in the family			No. of main labor	No. of auxiliary labor	Ethnic group
		Village	Commune		Total	Man	Women			
1	Hoàng Thái	1A	Triệu Hải	Better-off	7	3	4	2	1	Kinh
2	Lê Mạnh Sơ	1A	Triệu Hải	Medium	6	3	3	4	2	Kinh
3	Trần Móc	1A	Triệu Hải	Medium	6	3	3	3	2	Kinh
4	Đặng Văn Chung	1B	Triệu Hải	Medium	4	1	3	2	0	Kinh
5	Nguyễn Văn Quốc	1B	Triệu Hải	Medium	10	5	5	4	3	Kinh
6	Trần Oai	1B	Triệu Hải	Medium	7	4	3	2	1	Kinh
7	Phạm Thị Thiện	2	Triệu Hải	Better-off	4	2	2	2	0	Kinh
8	Nguyễn Thị Lự	2	Triệu Hải	Poor	7	3	4	2	0	Kinh
9	Hoàng Thế Lợi	2	Triệu Hải	Medium	8	5	3	5	2	Kinh
10	Hồ Xuân Huệ	2	Triệu Hải	Poor	3	2	1	1	2	Kinh
11	Lê Văn Mẫn	2	Triệu Hải	Medium	6	3	3	3	0	Kinh
12	Võ Văn Ước	2	Triệu Hải	Medium	7	4	3	5	0	Kinh
13	Võ Văn Đạt	3B	Triệu Hải	Medium	7	4	3	4	3	Kinh
14	Đặng Hùng Vĩnh	3B	Triệu Hải	Poor	5	4	3	4	1	Kinh
15	Trịnh Xuân Cảnh	1	Đạ Kho	Medium	4	2	2	2	0	Kinh
16	Hoàng Văn Hùng	1	Đạ Kho	Medium	7	2	5	3	2	Kinh
17	Kiều Văn Nhiếp	1	Đạ Kho	Poor	7	3	4	2	0	Kinh
18	Kiều Thị Lung	1	Đạ Kho	Medium	5	3	2	2	2	Kinh
19	Phạm Văn Tái	1	Đạ Kho	Poor	8	3	5	3	5	Kinh
20	Kiều Quang Thà	1	Đạ Kho	Poor	7	3	4	2	2	Kinh
21	Từ Văn Quyên	1	Đạ Kho	Medium	5	3	2	4	1	Kinh
22	Lê Văn Nhân	1	Đạ Kho	Medium	8	4	4	6	0	Kinh
23	Nghiêm Văn Êm	1	Đạ Kho	Medium	6	3	3	4	2	Kinh
24	Phạm Văn Cước	1	Đạ Kho	Better-off	4	2	2	4	0	Kinh
25	Nguyễn Văn Luyến	1	Đạ Kho	Medium	8	5	3	2	0	Kinh
26	Phạm Văn Lợi	2	Đạ Kho	Poor	6	1	5	2	2	Kinh
27	Nguyễn Văn Thực	2	Đạ Kho	Poor	8	2	6	2	1	Kinh
28	Nguyễn Thế Man	2	Đạ Kho	Better-off	4	2	2	2	1	Kinh
29	Nguyễn Văn Tiến	2	Đạ Kho	Medium	2	1	1	1	0	Kinh
30	Nguyễn Văn Luân	2	Đạ Kho	Medium	5	2	3	3	2	Kinh
31	Nguyễn Văn Sơn	2	Đạ Kho	Medium	7	6	1	4	0	Kinh

No.	Household owner	Address		HH group	No. of person in the family			No. of main labor	No. of auxiliary labor	Ethnic group
		Village	Commune		Total	Man	Women			
32	Chữ Quốc Vạn	2	Đạ Kho	Medium	6	2	4	2	2	Kinh
33	Phí Xuân Liên	2	Đạ Kho	Medium	10	5	5	6	4	Kinh
34	K'Brim	Tổ Lan	An Nhơn	Poor	8	2	6	3	0	Châu mạ
35	K'Miêu	Tổ Lan	An Nhơn	Poor	5	2	3	2	1	Châu mạ
36	K'Thu	Tổ Lan	An Nhơn	Poor	6	3	3	3	2	Châu mạ
37	K'Wệ	Tổ Lan	An Nhơn	Poor	5	1	4	2	0	Châu mạ
38	K'Xi	Tổ Lan	An Nhơn	Poor	6	5	1	2	4	Châu mạ
39	K'Vái	Tổ Lan	An Nhơn	Medium	4	2	2	2	2	Châu mạ
40	K'My	Tổ Lan	An Nhơn	Poor	7	4	3	2	5	Châu mạ
41	K'Liêng	Tổ Lan	An Nhơn	Medium	7	4	3	3	4	Châu mạ
42	Đoàn Văn Huân	CNLT		Better-off	6	2	4	0	2	Kinh
43	Nguyễn Công Dũng	CNLT		Better-off	5	3	2	2	0	Kinh
44	Bùi Quang Tuyển	CNLT		Medium	3	2	1	2	0	Kinh
45	Nguyễn Văn Hiếu	CNLT		Better-off	5	2	3	2	0	Kinh
46	Tạ Văn Quang	CNLT		Better-off	6	3	3	3	3	Kinh
47	Đỗ Văn Thịnh	CNLT		Better-off	7	4	3	2	2	Kinh
48	Lê Thái Hiền	CNLT		Better-off	6	3	3	3	0	Kinh
49	Lê Hữu Hiệp	CNLT		Better-off	5	2	3	2	0	Kinh
50	Đỗ Văn Hòa	CNLT		Better-off	4	1	3	2	0	Kinh
51	K'Tiéc	CNLT		Medium	5	2	3	4	1	Châu mạ
52	Đỗ Xuân Thu	CNLT		Better-off	4	2	2	2	0	Kinh
53	Trần Trọng Hùng	CNLT		Medium	3	1	2	2	0	Kinh
54	Nguyễn Văn Nga	CNLT		Medium	4	2	2	2	0	Kinh
55	Đinh Nhựt Hiếu	CNLT		Better-off	4	2	2	2	0	Kinh
56	Nguyễn Văn Quát	CNLT		Medium	4	1	3	2	2	Kinh
57	Nguyễn Xuân Hiếu	CNLT		Medium	7	3	4	2	1	Kinh
58	Phan Xuân Lực	CNLT		Medium	4	3	1	2	0	Kinh

Table A.14. 2: Project HH interview on income and expenditure

TT	Name of HH	Village	Commune	Income per year					Expenditure per year		
				Total	Cultivation	Livestock	Forest	Others/Salary	Food	Life services	Others
1	Hoàng Thái	1A	Triệu Hải	50,0	30,0	20,0	0	0	15,0	5,0	2,2
2	Lê Mạnh Sơ	1A	Triệu Hải	15,0	13,0	1,0	1,0	0	9,0	3,0	3,0
3	Trần Mộc	1A	Triệu Hải	30,0	28,0	2,0	0	0	15,0	5,0	2,4
4	Đặng Văn Chung	1B	Triệu Hải	19,0	2,0	12,0	0	5,0	5,0	9,0	6,0
5	Nguyễn Văn Quốc	1B	Triệu Hải	37,0	10,0	10,0	17,0	0	15,0	10,0	5,0
6	Trần Oai	1B	Triệu Hải	25,0	10,0	10,0	5,0	0	10,0	5,0	5,0
7	Phạm Thị Thiện	2	Triệu Hải	47,0	15,0	20,0	0	12,0	18,0	9,6	9,5
8	Nguyễn Thị Lự	2	Triệu Hải	12,5	10,0	0	0	2,5	5,6	4,0	0
9	Hoàng Thế Lợi	2	Triệu Hải	30,0	7,0	13,0	0	10,0	18,0	10,0	2,0
10	Hồ Xuân Huệ	2	Triệu Hải	17,0	7,0	10,0	0	0	9,0	5,0	3,0
11	Lê Văn Mẫn	2	Triệu Hải	25,0	15,0	10,0	0	0	10,0	5,0	5,0
12	Võ Văn Ước	2	Triệu Hải	20,0	8,0	12,0	0	0	10,0	6,0	3,0
13	Võ Văn Đạt	3B	Triệu Hải	17,0	15,0	2,0	0	0	3,7	3,7	3,0
14	Đặng Hùng Vĩnh	3B	Triệu Hải	58,0	18,0	20,0	0	20,0	20,0	18,0	10,0
15	Trịnh Xuân Cảnh	1	Đạ Kho	28,0	13,0	15,0	0	0	11,0	6,0	3,0
16	Hoàng Văn Hùng	1	Đạ Kho	30,0	20,0	10,0	0	0	12,0	3,0	2,0
17	Kiều Văn Nhiếp	1	Đạ Kho	22,0	15,0	7,0	0	0	13,0	2,0	3,0
18	Kiều Thị Lung	1	Đạ Kho	5,0	5,0	0	0	0	12,0	5,0	0
19	Phạm Văn Tái	1	Đạ Kho	23,0	15,0	8,0	0	0	13,0	4,0	2,0
20	Kiều Quang Thà	1	Đạ Kho	16,0	16,0	0	0	0	0	0	0
21	Từ Văn Quyên	1	Đạ Kho	40,0	20,0	16,0	0	4,0	15,0	3,0	2,0
22	Lê Văn Nhân	1	Đạ Kho	21,0	21,0	0	0	0	11,8	2,0	2,0
23	Nghiêm Văn Êm	1	Đạ Kho	16,0	10,0	5,0	1,0	0	11,8	2,5	2,0
24	Phạm Văn Cước	1	Đạ Kho	25,0	15,0	10,0	0	0	10,0	5,0	3,0
25	Nguyễn Văn Luyến	1	Đạ Kho	20,0	5,0	5,0	0	10,0	12,0	4,0	4,0
26	Phạm Văn Lợi	2	Đạ Kho	12,6	3,6	3,0	6,0	0	9,0	2,0	1,0
27	Nguyễn Văn Thực	2	Đạ Kho	12,4	2,4	5,0	0	5,0	9,5	2,0	1,0
28	Nguyễn Thế Man	2	Đạ Kho	23,0	0	13,0	10,0	0	11,0	3,0	2,0
29	Nguyễn Văn Tiến	2	Đạ Kho	0	0	0	0	0	0	0	0
30	Nguyễn Văn Luân	2	Đạ Kho	0	0	0	0	0	0	0	0
31	Nguyễn Văn Sơn	2	Đạ Kho	32,5	2,5	20,0	0	10,0	15,0	5,0	5,0
32	Chữ Quốc Vạn	2	Đạ Kho	0	0	0	0	0	0	0	0

TT	Name of HH	Village	Commune	Income per year					Expenditure per year		
				Total	Cultivation	Livestock	Forest	Others/Salary	Food	Life services	Others
33	Phí Xuân Liên	2	Đạ Kho	30,0	10,0	15,0	0	5,0	15,0	3,0	1,0
34	K'Brim	Tổ Lan	An Nhơn	8,5	6,0	2,0	0,5	0	5,0	1,0	1,0
35	K'Miêu	Tổ Lan	An Nhơn	7,0	5,0	2,0	0	0	5,0	1,5	1,0
36	K'Thu	Tổ Lan	An Nhơn	8,0	2,0	2,0	4,0	0	5,0	2,0	1,0
37	K'Wê	Tổ Lan	An Nhơn	5,0	0	3,0	2,0	0	5,0	0	0
38	K'Xi	Tổ Lan	An Nhơn	8,0	0	5,0	3,0	0	5,0	2,0	0
39	K'Vai	Tổ Lan	An Nhơn	6,0	0	3,5	2,5	0	5,0	2,0	0
40	K'My	Tổ Lan	An Nhơn	7,5	0	5,0	2,5	0	5,0	1,0	0
41	K'Liêng	Tổ Lan	An Nhơn	9,0	6,0	0	3,0	0	6,0	2,0	0
42	Đoàn Văn Huân	CNLT		23,0	3,0	0	0	20,0	10,8	7,0	5,0
43	Nguyễn Công Dũng	CNLT		18,0	1,0	5,0	0	12,0	10,0	4,0	2,0
44	Bùi Quang Tuyền	CNLT		27,0	0	0	0	27,0	10,8	13,5	2,5
45	Nguyễn Văn Hiếu	CNLT		28,2	0	0	0	28,2	11,0	14,6	2,4
46	Tạ Văn Quang	CNLT		37,6	0	0	0	37,6	14,5	18,4	2,5
47	Đỗ Văn Thịnh	CNLT		31,2	0	0	0	31,2	12,8	16,4	1,8
48	Lê Thái Hiền	CNLT		36,4	0	0	0	36,4	10,0	12,0	2,6
49	Lê Hữu Hiệp	CNLT		40,0	0	0	0	40,0	11,0	16,0	5,0
50	Đỗ Văn Hòa	CNLT		30,0	10,0	4,0	0	16,0	10,8	7,2	10,0
51	K'Tiéc	CNLT		11,0	5,0	3,0	1,0	2,0	10,0	0	3,0
52	Đỗ Xuân Thu	CNLT		25,0	25,0	0	0	0	10,0	8,0	1,0
53	Trần Trọng Hùng	CNLT		20,0	0	0	0	20,0	10,0	3,0	2,0
54	Nguyễn Văn Nga	CNLT		15,0	5,0	4,0	0	6,0	9,8	3,0	3,0
55	Đinh Nhứt Hiếu	CNLT		24,0	20,0	0	0	4,0	10,8	5,0	4,2
56	Nguyễn Văn Quát	CNLT		15,0	0	0	0	15,0	9,5	3,0	2,0
57	Nguyễn Xuân Hiếu	CNLT		30,0	0	0	0	30,0	20,0	5,0	0
58	Phan Xuân Lực	CNLT		31,0	10,0	3,0	0	18,0	1,8	7,2	10,0

Table A.14. 3: Interviewing on area of agricultural land

TT	Name of HH	Village	Commune	Total	One rice crop	Double crops	Supplemented crop	Water body	Industrial / fruit tree	Special food trees	Livestock	Other land
1	Hoàng Thái	1A	Triệu Hải	3,35	0,21		0,20	0,08		2,86		
2	Lê Mạnh Sơ	1A	Triệu Hải	1,75	0,30	0,60	0,15			0,70		
3	Trần Móc	1A	Triệu Hải	1,39	0,50	0,40	0,30			0,19		
4	Đặng Văn Chung	1B	Triệu Hải	0,21	0,10					0,11		
5	Nguyễn Văn Quốc	1B	Triệu Hải	1,70	0,70				0,50	0,40	0,10	
6	Trần Oai	1B	Triệu Hải	0,85		0,70						0,15
7	Phạm Thị Thiện	2	Triệu Hải	3,62	0,40		2,60		0,26	0,26	0,10	
8	Nguyễn Thị Lự	2	Triệu Hải	0,50	0,10		0,40					
9	Hoàng Thế Lợi	2	Triệu Hải	1,40	0,20	0,30			0,90			
10	Hồ Xuân Huệ	2	Triệu Hải	0,70	0,20	0,50						
11	Lê Văn Mẫn	2	Triệu Hải	1,00	0,80	0,20						
12	Võ Văn Ước	2	Triệu Hải	1,50					1,50			
13	Võ Văn Đạt	3B	Triệu Hải	0,41		0,07		0,04	0,30			
14	Đặng Hùng Vĩnh	3B	Triệu Hải	0,07	0,02	0,02		0,03				
15	Trịnh Xuân Cảnh	1	Đạ Kho	0,28				0,28				
16	Hoàng Văn Hùng	1	Đạ Kho	0,50		0,20	0,30					
17	Kiều Văn Nhiếp	1	Đạ Kho	0,90	0,90							
18	Kiều Thị Lung	1	Đạ Kho	0,25	0,25							
19	Phạm Văn Tái	1	Đạ Kho	0,80	0,40		0,40					
20	Kiều Quang Thà	1	Đạ Kho	0,20		0,20						
21	Từ Văn Quyên	1	Đạ Kho	0,13		0,13						
22	Lê Văn Nhân	1	Đạ Kho	0,95		0,25	0,70					
23	Nghiêm Văn Êm	1	Đạ Kho	0,20	0,20							
24	Phạm Văn Cước	1	Đạ Kho	0,45	0,30			0,15				
25	Nguyễn Văn Luyến	1	Đạ Kho	0,42	0,42							
26	Phạm Văn Lợi	2	Đạ Kho	0,45		0,20		0,10		0,15		
27	Nguyễn Văn Thực	2	Đạ Kho	0,30		0,20						0,10
28	Nguyễn Thế Man	2	Đạ Kho	0,00								
29	Nguyễn Văn Tiến	2	Đạ Kho	0,20	0,20							
30	Nguyễn Văn Luân	2	Đạ Kho	0,30		0,30						
31	Nguyễn Văn Sơn	2	Đạ Kho	1,10		0,30	0,20	0,10		0,50		
32	Chữ Quốc Vạn	2	Đạ Kho	0,20		0,20						

TT	Name of HH	Village	Commune	Total	One rice crop	Double crops	Supplemented crop	Water body	Industrial / fruit tree	Special food trees	Livestock	Other land
33	Phí Xuân Liên	2	Đạ Kho	0,30		0,30						
34	K'Brim	Tổ Lan	An Nhơn	0,00								
35	K'Miêu	Tổ Lan	An Nhơn	0,20	0,10					0,10		
36	K'Thu	Tổ Lan	An Nhơn	0,97	0,10	0,20				0,51		0,16
37	K'Wệ	Tổ Lan	An Nhơn	0,00								
38	K'Xi	Tổ Lan	An Nhơn	0,00								
39	K'Vài	Tổ Lan	An Nhơn	0,00								
40	K'My	Tổ Lan	An Nhơn	0,00								
41	K'Liêng	Tổ Lan	An Nhơn	0,50	0,50							
42	Đoàn Văn Huân	CNLT		0,47					0,47			
43	Nguyễn Công Dũng	CNLT		0,20		0,20						
44	Bùi Quang Tuyền	CNLT		0,00								
45	Nguyễn Văn Hiếu	CNLT		0,00								
46	Tạ Văn Quang	CNLT		0,15		0,08		0,07				
47	Đỗ Văn Thịnh	CNLT		0,00								
48	Lê Thái Hiền	CNLT		3,10	0,30	0,10	0,30			0,70		1,70
49	Lê Hữu Hiệp	CNLT		0,00								
50	Đỗ Văn Hòa	CNLT		0,00								
51	K'Tiéc	CNLT		0,00								
52	Đỗ Xuân Thu	CNLT		5,00			5,00					
53	Trần Trọng Hùng	CNLT		0,00								
54	Nguyễn Văn Nga	CNLT		0,00								
55	Đinh Nhật Hiếu	CNLT		0,96	0,96							
56	Nguyễn Văn Quát	CNLT		0,13	0,13							
57	Nguyễn Xuân Hiếu	CNLT		0,00								
58	Phan Xuân Lực	CNLT		0,00								

Table A.14. 4: Interviewing on area of forestry and other land

TT	Name of HH	Village	Commune	Allocated forestry land (ha)				Residential area	HH garden	Special use land	Other land
				Red book	Without red book	Natural forest	Plantation forest				
1	Hoàng Thái	1A	Triệu Hải					0,08			
2	Lê Mạnh Sơ	1A	Triệu Hải					0,14			
3	Trần Mốc	1A	Triệu Hải					0,04	0,19		
4	Đặng Văn Chung	1B	Triệu Hải					0,04	0,11		
5	Nguyễn Văn Quốc	1B	Triệu Hải		1,00		1,00	0,04	0,12	0,34	0,50
6	Trần Oai	1B	Triệu Hải		0,70	0,70		0,04	0,11	0,20	
7	Phạm Thị Thiện	2	Triệu Hải					0,04	0,26		
8	Nguyễn Thị Lự	2	Triệu Hải					0,04	0,26		0,30
9	Hoàng Thế Lợi	2	Triệu Hải					0,04	0,14		0,14
10	Hồ Xuân Huệ	2	Triệu Hải					0,04	0,11		
11	Lê Văn Mẫn	2	Triệu Hải		0,30			0,04	0,14		
12	Võ Văn Ước	2	Triệu Hải					0,04	0,15		0,42
13	Võ Văn Đạt	3B	Triệu Hải		0,08			0,04	0,30		
14	Đặng Hùng Vinh	3B	Triệu Hải					0,04			0,43
15	Trịnh Xuân Cảnh	1	Đạ Kho		7,00		7,00	0,36			
16	Hoàng Văn Hùng	1	Đạ Kho	0,60				0,04	0,11		
17	Kiều Văn Nhiếp	1	Đạ Kho					0,04	0,15	0,80	
18	Kiều Thị Lung	1	Đạ Kho					0,04		0,30	
19	Phạm Văn Tái	1	Đạ Kho		1,80		1,00	0,04			
20	Kiều Quang Thà	1	Đạ Kho					0,04	0,19		
21	Từ Văn Quyên	1	Đạ Kho					0,04	0,27	0,35	
22	Lê Văn Nhân	1	Đạ Kho					0,04		0,40	
23	Nghiêm Văn Êm	1	Đạ Kho	4,00		4,00		0,04			
24	Phạm Văn Cựơc	1	Đạ Kho					0,04		0,30	
25	Nguyễn Văn Luyến	1	Đạ Kho					0,04	0,04	0,34	
26	Phạm Văn Lợi	2	Đạ Kho		1,50	1,50		0,04			
27	Nguyễn Văn Thực	2	Đạ Kho					0,04	0,10		
28	Nguyễn Thế Man	2	Đạ Kho		1,50						
29	Nguyễn Văn Tiến	2	Đạ Kho					0,04		0,30	
30	Nguyễn Văn Luân	2	Đạ Kho		1,00		1,00	0,04			
31	Nguyễn Văn Sơn	2	Đạ Kho					0,01	0,20		
32	Chữ Quốc Vạn	2	Đạ Kho		1,00	1,00		0,04			

TT	Name of HH	Village	Commune	Allocated forestry land (ha)				Residential area	HH garden	Special use land	Other land
				Red book	Without red book	Natural forest	Plantation forest				
33	Phí Xuân Liên	2	Đạ Kho					0,04	0,26		
34	K'Brim	Tổ Lan	An Nhơn		0,60			0,04	0,60		
35	K'Miêu	Tổ Lan	An Nhơn		0,50			0,04	0,20		
36	K'Thu	Tổ Lan	An Nhơn	0,37		0,37		0,04	0,20		
37	K'Wệ	Tổ Lan	An Nhơn	36,00		36,00		0,04	0,20		
38	K'Xi	Tổ Lan	An Nhơn	53,00		53,00		0,04	0,40		1,00
39	K'Vải	Tổ Lan	An Nhơn	40,00		40,00		0,04	0,40		1,00
40	K'My	Tổ Lan	An Nhơn	42,00		42,00		0,04	0,60		1,00
41	K'Liêng	Tổ Lan	An Nhơn	56,00		56,00		0,04	0,60		1,00
42	Đoàn Văn Huân	CNLT						0,24			
43	Nguyễn Công Dũng	CNLT						0,04	0,14		
44	Bùi Quang Tuyên	CNLT						0,02			
45	Nguyễn Văn Hiếu	CNLT						0,02	0,02		
46	Tạ Văn Quang	CNLT						0,04	0,40		
47	Đỗ Văn Thịnh	CNLT						0,02	0,66		
48	Lê Thái Hiền	CNLT						0,02	0,12		
49	Lê Hữu Hiệp	CNLT						0,01	0,01		
50	Đỗ Văn Hòa	CNLT						0,03			
51	K'Tiéc	CNLT						0,04			
52	Đỗ Xuân Thu	CNLT						0,09			
53	Trần Trọng Hùng	CNLT									
54	Nguyễn Văn Nga	CNLT						0,03			
55	Đinh Nhựt Hiếu	CNLT						0,04			
56	Nguyễn Văn Quát	CNLT						0,04			
57	Nguyễn Xuân Hiếu	CNLT						0,03	0,11		
58	Phan Xuân Lực	CNLT						0,02	1,00		

Table A.14. 5: HH interviewing on production tool and property

TT	Name of HH	Village	Commune	Production tool			Other property	Total property			
				Buffalo, cow	Rice processing mill	Tractors		< 5 million	5-10 million	10-30 million	> 30 million
1	Hoàng Thái	1A	Triệu Hải	15							x
2	Lê Mạnh Sơ	1A	Triệu Hải	4						x	
3	Trần Mốc	1A	Triệu Hải	1						x	
4	Đặng Văn Chung	1B	Triệu Hải	1					x		
5	Nguyễn Văn Quốc	1B	Triệu Hải	1						x	
6	Trần Oai	1B	Triệu Hải	1						x	
7	Phạm Thị Thiện	2	Triệu Hải								x
8	Nguyễn Thị Lự	2	Triệu Hải	1						x	
9	Hoàng Thế Lợi	2	Triệu Hải							x	
10	Hồ Xuân Huệ	2	Triệu Hải							x	
11	Lê Văn Mẫn	2	Triệu Hải	1							x
12	Võ Văn Ước	2	Triệu Hải							x	
13	Võ Văn Đạt	3B	Triệu Hải	1							
14	Đặng Hùng Vinh	3B	Triệu Hải	4					x		
15	Trịnh Xuân Cảnh	1	Đạ Kho	1							x
16	Hoàng Văn Hùng	1	Đạ Kho	1							x
17	Kiều Văn Nhiếp	1	Đạ Kho	1							x
18	Kiều Thị Lung	1	Đạ Kho	1							x
19	Phạm Văn Tái	1	Đạ Kho	1						x	
20	Kiều Quang Thà	1	Đạ Kho	1						x	
21	Từ Văn Quyên	1	Đạ Kho	1						x	
22	Lê Văn Nhân	1	Đạ Kho		1					x	
23	Nghiêm Văn Êm	1	Đạ Kho							x	
24	Phạm Văn Cựơc	1	Đạ Kho	1							x
25	Nguyễn Văn Luyện	1	Đạ Kho								x
26	Phạm Văn Lợi	2	Đạ Kho	1				x			
27	Nguyễn Văn Thực	2	Đạ Kho	1					x		
28	Nguyễn Thế Man	2	Đạ Kho	1						x	
29	Nguyễn Văn Tiến	2	Đạ Kho	1					x		
30	Nguyễn Văn Luân	2	Đạ Kho	1					x		
31	Nguyễn Văn Sơn	2	Đạ Kho	6						x	

Table A.14. 6: Data on house, means of transportation and mass information

TT	Name of HH	Village	Commune	House					Means of transportation				Means of mass information		
				Permanent	Semi-permanent	ClassIV	Temporary house	Others	Motorbike	Bicycle	Boat	Others	Television	Radio	Others
1	Hoàng Thái	1A	Triệu Hải		2				1				1		
2	Lê Mạnh Sơ	1A	Triệu Hải		1				1				1	1	
3	Trần Mốc	1A	Triệu Hải			1				1			1	1	
4	Đặng Văn Chung	1B	Triệu Hải			1							1	1	
5	Nguyễn Văn Quốc	1B	Triệu Hải			1			1	1				1	
6	Trần Oai	1B	Triệu Hải			1			1	1			1		
7	Phạm Thị Thiện	2	Triệu Hải		1				1	1			1		1
8	Nguyễn Thị Lự	2	Triệu Hải		1					1					
9	Hoàng Thế Lợi	2	Triệu Hải		1					1			1		
10	Hồ Xuân Huệ	2	Triệu Hải		1				1				1		
11	Lê Văn Mẫn	2	Triệu Hải				1		1	1			1		
12	Võ Văn Ước	2	Triệu Hải		1				1				1		
13	Võ Văn Đạt	3B	Triệu Hải			1			1	1			1		
14	Đặng Hùng Vĩnh	3B	Triệu Hải		1					1			1		
15	Trịnh Xuân Cảnh	1	Đạ Kho	1						1			1		
16	Hoàng Văn Hùng	1	Đạ Kho			1			1	1			1	1	
17	Kiều Văn Nhiếp	1	Đạ Kho			1			1	1			1		
18	Kiều Thị Lung	1	Đạ Kho			1				1			1		
19	Phạm Văn Tái	1	Đạ Kho			1			1	1			1		
20	Kiều Quang Thà	1	Đạ Kho		1	1				1			1	1	
21	Từ Văn Quyên	1	Đạ Kho			1			1	1			1		
22	Lê Văn Nhân	1	Đạ Kho				1				1				
23	Nghiêm Văn Êm	1	Đạ Kho			1			1	1			1	1	
24	Phạm Văn Cựơc	1	Đạ Kho			1			1	1			1		
25	Nguyễn Văn Luyến	1	Đạ Kho			1			1	1			1		
26	Phạm Văn Lợi	2	Đạ Kho		1					1			1		
27	Nguyễn Văn Thực	2	Đạ Kho		1					1			1		
28	Nguyễn Thế Man	2	Đạ Kho		1				1				1		
29	Nguyễn Văn Tiến	2	Đạ Kho		1					1			1		
30	Nguyễn Văn Luân	2	Đạ Kho			1			1	1			1		

TT	Name of HH	Village	Commune	House					Means of transportation				Means of mass information		
				Permanent	Semi-permanent	ClassIV	Temporary house	Others	Motorbike	Bicycle	Boat	Others	Television	Radio	Others
31	Nguyễn Văn Sơn	2	Đạ Kho			1			1	1			1	1	
32	Chữ Quốc Vạn	2	Đạ Kho		1				1				1		
33	Phí Xuân Liên	2	Đạ Kho			1			1	1			1	1	
34	K'Brim	Tổ Lan	An Nhơn			1			1						
35	K'Miêu	Tổ Lan	An Nhơn			1			1				1	1	
36	K'Thu	Tổ Lan	An Nhơn					Woody house	1				1	1	
37	K'Wê	Tổ Lan	An Nhơn					Woody house	1				1	1	
38	K'Xi	Tổ Lan	An Nhơn					Woody house		1			1	1	
39	K'Vãi	Tổ Lan	An Nhơn			1			1	1				1	
40	K'My	Tổ Lan	An Nhơn			1			1	1				1	
41	K'Liêng	Tổ Lan	An Nhơn			1			1	1			1		
42	Đoàn Văn Huân	CNLT			1	1			1	1			1	1	
43	Nguyễn Công Dũng	CNLT				1			1	1			1		
44	Bùi Quang Tuyển	CNLT					1		1				1		
45	Nguyễn Văn Hiếu	CNLT			1	1			1				1		
46	Tạ Văn Quang	CNLT				1			1	1			1		
47	Đỗ Văn Thịnh	CNLT					1		1	1			1	1	
48	Lê Thái Hiền	CNLT				1			1	1			1		
49	Lê Hữu Hiệp	CNLT			1				1	1			1	1	
50	Đỗ Văn Hòa	CNLT				1			1				1		
51	K'Tiéc	CNLT					1		1						
52	Đỗ Xuân Thu	CNLT			1				1				1		
53	Trần Trọng Hùng	CNLT						Dormitory	1				1		
54	Nguyễn Văn Nga	CNLT					1		1	1			1	1	
55	Đinh Nhứt Hiếu	CNLT						Woody house	1				1	1	
56	Nguyễn Văn Quát	CNLT				1			1	1			1		
57	Nguyễn Xuân Hiếu	CNLT				1			1	1			1	1	
58	Phan Xuân Lực	CNLT				1			1				1		

Table A.14. 7: HH interviewing on off-farm time

TT	Name of HH	Address		Month											
		Village	Commune	1	2	3	4	5	6	7	8	9	10	11	12
1	Hoàng Thái	1A	Triệu Hải					20	20	20					
2	Lê Mạnh Sơ	1A	Triệu Hải	20	15	15									
3	Trần Móc	1A	Triệu Hải	15	20	20									
4	Đặng Văn Chung	1B	Triệu Hải	10	20	25	20	20	20	10	20	20	20	20	10
5	Nguyễn Văn Quốc	1B	Triệu Hải	10	15	15	15	15	15		15	20	20	15	
6	Trần Oai	1B	Triệu Hải	15		20	20	20	15		15	20	20	20	
7	Phạm Thị Thiện	2	Triệu Hải												
8	Nguyễn Thị Lự	2	Triệu Hải		30	30			30	30			30	30	
9	Hoàng Thế Lợi	2	Triệu Hải												
10	Hồ Xuân Huệ	2	Triệu Hải												
11	Lê Văn Mẫn	2	Triệu Hải												
12	Võ Văn Ước	2	Triệu Hải												
13	Võ Văn Đạt	3B	Triệu Hải	20	20	20	20	20	20	20	20	20	20	20	20
14	Đặng Hùng Vinh	3B	Triệu Hải	20	20	10	10	15	25	25	20	15	10	20	20
15	Trịnh Xuân Cảnh	1	Đạ Kho												
16	Hoàng Văn Hùng	1	Đạ Kho	30	30					30	30				
17	Kiều Văn Nhiếp	1	Đạ Kho												
18	Kiều Thị Lung	1	Đạ Kho	5	5					10	10	10			
19	Phạm Văn Tái	1	Đạ Kho												
20	Kiều Quang Thà	1	Đạ Kho	30	30					30	30				
21	Từ Văn Quyền	1	Đạ Kho	30	30						30				
22	Lê Văn Nhân	1	Đạ Kho	30	30					30	30				30
23	Nghiêm Văn Êm	1	Đạ Kho	30	30					30	30				30
24	Phạm Văn Cước	1	Đạ Kho	30						30	30	30			
25	Nguyễn Văn Luyến	1	Đạ Kho												
26	Phạm Văn Lợi	2	Đạ Kho						30	30	30				
27	Nguyễn Văn Thực	2	Đạ Kho					30	30	30	30				
28	Nguyễn Thế Man	2	Đạ Kho												
29	Nguyễn Văn Tiến	2	Đạ Kho						30	30	30	30			
30	Nguyễn Văn Luân	2	Đạ Kho												
31	Nguyễn Văn Sơn	2	Đạ Kho												
32	Chừ Quốc Vạn	2	Đạ Kho					30	30	30	30				

[illegible]

Table A.14. 8: HH interviewing on tree species, disadvantage, recommendation, training need for forestry development

TT	Name of HH	Address		Species	Type of production		Risk			Disadvantage	Recommendation on afforestation	Training need
		Village	Commune		Standing tree	Pre-process	Wood price	Disease	Disaster			
1	Hoàng Thái	1A	Triệu Hải	Keo tai tượng		x		x	X	Lack of seedlings	Support on seedlings	
2	Lê Mạnh Sơ	1A	Triệu Hải	Acacia hybrid						Lack of seedling	Support on seedlings	Training Technique & Science
3	Trần Móc	1A	Triệu Hải	Keo tai tượng				x	x	Lack of seedling	Support on seedlings	
4	Đặng Văn Chung	1B	Triệu Hải	Acacia hybrid			x		x	Lack of capital and technique	Support on seedlings and fund	Technical training
5	Nguyễn Văn Quốc	1B	Triệu Hải	Acacia hybrid			x		x	Has not been provided with investment	Like to participate into afforestation activity to solve off-season unemployment and redundancies of labor	Technical training
6	Trần Oai	1B	Triệu Hải	Keo tai tượng			x		x	Lack of capital and seedlings	Allocated with land	Technical training
7	Phạm Thị Thiện	2	Triệu Hải	Acacia hybrid hom		x	x	x		Lack of capital	Cho phép chuyển đổi những DT rừng TN ko có hiệu quả sang trồng rừng	Technical training
8	Nguyễn Thị Lự	2	Triệu Hải	Acacia hybrid hom		x	x	x		Lack of capital, Lack of forestry land		Technical training
9	Hoàng Thế Lợi	2	Triệu Hải	Acacia hybrid	x			x		Lack of forestry land and fund	Support on Capital and forestry land	Technique & Science
10	Hồ Xuân Huệ	2	Triệu Hải	Acacia hybrid	x			x		Lack of forestry land and fund	Support on Capital and forestry land	Technique & Science
11	Lê Văn Mẫn	2	Triệu Hải	Acacia hybrid							Support on funding issue, fertilizer, pesticide and seedlings	Training on technique
12	Võ Văn Ước	2	Triệu Hải	Acacia hybrid	x			x		Lack of forestry land and fund	Support on Capital and forestry land	Technique & Science
13	Võ Văn Đạt	3B	Triệu Hải	Acacia hybrid	x					Lack of forestry land and fund	Support on funding issue, land and technique	Training on technique
14	Đặng Hùng	3B	Triệu Hải	Acacia	x		x			Lack of capital	Support on funding issue,	Training on technique

TT	Name of HH	Address		Species	Type of production		Risk			Disadvantage	Recommendation on afforestation	Training need
		Village	Commune		Standing tree	Pre-process	Wood price	Disease	Disaster			
	Vinh			hybrid							land	
15	Trịnh Xuân Cảnh	1	Đạ Kho	Acacia hybrid	x			x		No Redbook	Allocate land and issue Redbook for farmers	Technique & Science
16	Hoàng Văn Hùng	1	Đạ Kho	Acacia hybrid	x			x	x	Lack of capital	Support on products consumption	Technique & Science
17	Kiều Văn Nhiếp	1	Đạ Kho	Acacia hybrid	x		x	x		Lack of capital, TECHNIQUES & SCIENCE, seedling	Support on prevention & protection or disease & forest fire	Planting technique
18	Kiều Thị Lung	1	Đạ Kho	Acacia hybrid	x		x	x		Lack of capital and technique	Support on funding issue	Planting technique
19	Phạm Văn Tái	1	Đạ Kho	Acacia hybrid	x		x	x		Lack of capital	Allocated with land	Planting technique
20	Kiều Quang Thà	1	Đạ Kho	Acacia hybrid		x	x	x	x	Lack of capital, seedlings & techniques	Allocate land and issue Redbook for farmers	Planting technique
21	Từ Văn Quyên	1	Đạ Kho	Acacia hybrid		x	x	x		Lack of forestry land and fund	Allocate exhausted forest land for farmer	Technique & Science
22	Lê Văn Nhân	1	Đạ Kho	Acacia hybrid		x	x	x		Lack of forestry land and technique	Allocated with land	Technique & Science
23	Nghiêm Văn Êm	1	Đạ Kho	Acacia hybrid		x		x	x	Lack of capital, forestry land and technique		
24	Phạm Văn Cước	1	Đạ Kho	Acacia hybrid	x		x	x		Lack of capital and labor	Allocating natural poor forest to HH for plantation	Planting technique
25	Nguyễn Văn Luyến	1	Đạ Kho	Acacia hybrid	x		x	x	x	Planting and tending technique	Forest and forestry land allocation	Planting technique
26	Phạm Văn Lợi	2	Đạ Kho	Acacia hybrid		x	x	x		Planting and tending technique	HH land allocation	Training on planting and tending
27	Nguyễn Văn Thực	2	Đạ Kho	Acacia hybrid	x		x	x		Planting and tending technique	Forest and forestry land allocation	Planting technique
28	Nguyễn Thế Man	2	Đạ Kho	Acacia hybrid	x		x	x		Planting and tending technique	Forest and forestry land allocation	Planting technique
29	Nguyễn Văn Tiến	2	Đạ Kho	Acacia hybrid		x		x	x	Planting and tending technique	Forest and forestry land allocation	Training on planting and tending
30	Nguyễn Văn Luân			Acacia hybrid	x					Disease		
31	Nguyễn Văn	2	Đạ Kho	Acacia	x		x	x	x	Planting and tending	Forest and forestry land	Training on planting

TT	Name of HH	Address		Species	Type of production		Risk			Disadvantage	Recommendation on afforestation	Training need
		Village	Commune		Standing tree	Pre-process	Wood price	Disease	Disaster			
	Son			hybrid						technique	allocation	and tending
32	Chữ Quốc Vượng	2	Đạ Kho	Acacia hybrid	x		x			Disease	Forest and forestry land allocation	Training on planting and tending
33	Phí Xuân Liên	2	Đạ Kho	Acacia hybrid	x		x	x	x	Lack of forestry land	Allocating natural poor forest to HH for plantation	Training on technique
34	K'Brim	Tổ Lan	An Nhơn	Acacia hybrid	x					Lack of capital	Considering the Chau Ma ethnic group	
35	K'Miêu	Tổ Lan	An Nhơn	Acacia hybrid	x					Lack of capital and technique	Considering the Chau Ma ethnic group	Training on technique
36	K'Thu	Tổ Lan	An Nhơn	Acacia hybrid	x					Lack of capital and technique	Supporting capital and seedling	Training on technique
37	K'Wê	Tổ Lan	An Nhơn	Acacia hybrid	x			x	x	Lack of capital and technique	Supporting capital and seedling	Training on technique
38	K'Xi	Tổ Lan	An Nhơn	Acacia hybrid	x			x	x	Lack of capital and technique	Supporting capital and seedling	Training on technique
39	K'Vai	Tổ Lan	An Nhơn	Acacia hybrid	x			x	x	Lack of capital and technique	Supporting capital and seedling	Training on technique
40	K'My	Tổ Lan	An Nhơn	Acacia hybrid	x			x	x	Lack of capital and technique	Supporting capital and seedling	Training on technique
41	K'Liêng	Tổ Lan	An Nhơn	Acacia hybrid	x		x	x	x	Lack of capital and technique	Supporting capital and seedling	Training on technique
42	Đoàn Văn Huân	CNLT		Acacia hybrid		x	x	x	x	Capital and nursery	Supporting capital, technique, production selling	Training on technique
43	Nguyễn Công Dũng	CNLT		Acacia hybrid		x	x	x		Capital	Supporting capital	Training on technique
44	Bùi Quang Tuyền	CNLT		Acacia hybrid		x	x	x	x	Capital, Disease	Capital and forestry land allocation	Training on technique
45	Nguyễn Văn Hiếu	CNLT		Acacia hybrid		x	x	x	x	Capital, Disease	Capital and forestry land allocation	Training on technique
46	Tạ Văn Quang	CNLT		Acacia hybrid		x	x	x	x	Capital and forestry land	Land allocation, loaning and production selling	Training on technique
47	Đỗ Văn Thịnh	CNLT		Acacia hybrid		x	x	x	x	Capital and forestry land	Land allocation, loaning and production selling	Training on technique
48	Lê Thái Hiền	CNLT		Acacia hybrid		x	x	x	x	Capital and forestry land	Land allocation, loaning and production selling	Training on technique
49	Lê Hữu Hiệp	CNLT		Acacia		x	x	x	x	Capital and forestry	Land allocation, loaning	Training on technique

TT	Name of HH	Address		Species	Type of production		Risk			Disadvantage	Recommendation on afforestation	Training need
		Village	Commune		Standing tree	Pre-process	Wood price	Disease	Disaster			
				hybrid						land	and production selling	
50	Đỗ Văn Hòa	CNLT		Acacia hybrid		x	x			Capital and forestry land	Land allocation, loaning and production selling	Training on technique
51	K'Tiểu	CNLT		Acacia hybrid		x	x			Technique	Land allocation, loaning and production selling	Training on technique
52	Đỗ Xuân Thu	CNLT		Acacia hybrid		x	x			Technique	Price	Training on technique
53	Trần Trọng Hùng	CNLT		Acacia hybrid	x		x	x	x	Lack of capital		
54	Nguyễn Văn Nga	CNLT		Acacia hybrid		x		x	x	Technique	Land allocation, loaning and production selling	Training on technique
55	Đinh Nhật Hiếu	CNLT		Acacia hybrid	x		x	x	x	Lack of capital	Supporting capital and production selling	Training on technique
56	Nguyễn Văn Quất	CNLT		Acacia hybrid	x		x	x	x	Lack of capital	Supporting capital and production selling	Training on technique
57	Nguyễn Xuân Hiếu	CNLT		Acacia hybrid	x		x	x	x	Capital, Labor	Forestry land allocation	Training on technique
58	Phan Xuân Lực	CNLT		Acacia hybrid	x		x			Technique	Supporting capital, technique, production selling	Training on technique

Training Package

Book 1:	Training Plan on Capacity Building for Preparing Feasibility Studies and Implementation Plans for Production Forest/Agroforestry Development Projects in Vietnam
Book 2:	Manual for Preparation of Feasibility Study Reports for Production Forest/Agroforestry Development Projects in Vietnam
Book 3:	Manual for Preparation of Implementation Plans for Production Forest/Agroforestry Development Projects in Vietnam
Book 4:	Model F/S of Thai Nguyen Province
	Book 4-1: Model Feasibility Study Report for Smallholder Production Forest Development Project in Thai Nguyen Province
	Book 4-2: Model Feasibility Study Report for Agroforestry Development Project in Thai Nguyen Province
Book 5:	Model IP of Thai Nguyen Province
	Book 5-1: Model Implementation Plan for Smallholder Production Forest Development Project in Thai Nguyen Province
	Book 5-2: Model Implementation Plan for Agroforestry Development Project in Thai Nguyen Province
Book 6:	Monitoring and Evaluation Report on Technical Training of Participating Provinces
Book 7:	Market Trend Reference Book on Wood-based and Agroforestry Products
Book 8:	Feasibility Study Reports of Participating Provinces
	Book 8-1: Feasibility Study Report on Agroforestry Project in Ta Hoc Commune, Mai Son District, Son La Province
	Book 8-2: Feasibility Study Report on Production Forest Establishment Project in Nui Thanh District, Quang Nam Province
	Book 8-3: Feasibility Study Report on Treatment of Exhausted Natural Forest and Production Forest Establishment Project in Da Teh District, Lam Dong Province
	Book 8-4: Feasibility Study Report on Afforestation Project for Serving Biodiversity Conservation in Long An Province
Book 9:	Implementation Plans of Participating Provinces
	Book 9-1: Implementation Plan on Agroforestry Project in Ta Hoc Commune, Mai Son District, Son La Province
	Book 9-2: Implementation Plan on Production Forest Establishment Project in Nui Thanh District, Quang Nam Province
	Book 9-3: Implementation Plan on Treatment of Exhausted Natural Forest and Production Forest Establishment Project in Da Teh District, Lam Dong Province
	Book 9-4: Implementation Plan on Afforestation Project for Serving Biodiversity Conservation in Long An Province