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"Improving The Enabling Conditions For Sustainable Management of Sandalwood Forest Resources In East Nusa Tenggara (ENT) Indonesia"

ANALYSES OF POLICIES AND ECONOMIC INCENTIVES TO IMPROVE LOCAL PEOPLE PARTICIPATION IN SUSTAINING SANDALWOOD RESOURCE IN EAST NUSA TENGGARA PROVINCE

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ANALYSES OF POLICIES AND ECONOMIC INCENTIVES TO IMPROVE LOCAL PEOPLE PARTICIPATION IN SUSTAINING SANDALWOOD RESOURCE IN EAST NUSA TENGGARA PROVINCE

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Jakarta, September, 2010

Preface

Sandalwood (*Santalum Album Linn.*) is an important tree species in East Nusa Tenggara province because of its economic value and the best endemic tree in the world.

Past regulations and policies are identified as the main reasons behind the decrease of Sandalwood population particularly in Timor island. Regulations and policies which excluded communities resulted in the scarcity of Sandalwood. Supported by ITTO (International Tropical Timber Organization) through Project PD 459/07 Rev.1 (F); "Improving the Enabling Conditions for Sustainable Management of Sandalwood Forest Resources in East Nusa Tenggara" , the Ministry of Forestry of Indonesia currently supports Sandalwood conservation in East Nusa Tenggara through strengthening policy frameworks, economic incentive, and local institution for sustainable Sandalwood management. It becomes a priority program to deal with Sandalwood-related issues in East Nusa Tenggara.

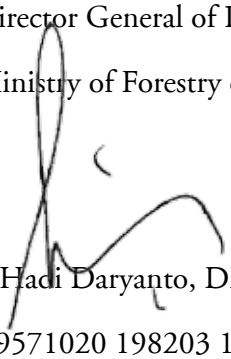
At the inial stage with a support from ITTO, policy analysis and economic incentive for Sandalwood management in East Nusa Tenggara as the realisation of the Action Plan and the Master Plan of Sandalwood management, have been conducted. From the study, inputs from communities, the elders and NGOs should be considered and applied for sustainable Sandalwood management in East Nusa Tenggara.

We thank the Formulation Team and the ITTO PD 459/07 Rev.1 Team who have worked hard to prepare this book. I hope that important information in this book can be shared with all agencies to manage Sandalwood sustainably in East Nusa Tenggara.

Jakarta, August 2010

The Director General of Production Forest Management

The Ministry of Forestry of Indonesia



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Chapter I
INTRODUCTION

1. Background

Sandalwood (*Santalum album* Linn.) is an important natural asset for the East Nusa Tenggara (ENT) Province. The wood has a specific characteristic with its pleasant odor and used for various products, from handicrafts, wood carvings, joss sticks or extracted for sandalwood oil for perfume and cosmetics industries. Due to its specific characteristics, sandalwood had been attracting many visitors and commercially traded since the 10th century (Husain, 1983). Sandalwood had been contributing significantly to the regional economic. During 1986 and 1992, sandalwood had contributed to the regional income at the average of Rp 2.5 billion annually, or about 40% of the total ENT provincial income (Suara Pembaharuan *in* Rohadi *et al*, 2000).

Since the last two decades, sandalwood population in the ENT province has been decreasing with an alarming rate. During 1970 and 1998, legally production of sandalwood (based on statistic) was fluctuated between 87 to 995 tones annually, with the average of about 600 tones (Rohadi *et al*, 2004). Agonize with the extinction of sandalwood population, the provincial government had banned sandalwood harvesting since 1997 through the ENT Governor Instruction No. 12/1997. It was expected that this moratorium and the followed up rehabilitation efforts will recover sandalwood population in the province, but this expectation so far is not materialized.

Concern with the future sustainability of sandalwood, the Ministry of Forestry, in collaboration with the Government of ENT province, and by the support of the International Tropical Timber Organization (ITTO) is implementing a study on sandalwood through an ITTO funded project PD 459/07 (F) Rev. 1, "*Improving The Enabling Conditions For Sustainable Management of Sandalwood Forest Resources In East Nusa Tenggara (ENT) Indonesia*". The project is aiming at developing sustainable sandalwood resource managment through strengthening policies, economic incentives and local institution capacity. The project's specific objectives are decided through public consultation process completed by the Ministry of Forestry in 2006. The consultation process concluded that the root problems on sustaining *s*andalwood resource were stemming from poor policies, lack of economic incentives available for the people engaged in sandalwood management, low awareness from local people and low capacity of local instituions.

This report presents analyses results on the management strategies of sandalwood resources in ENT province, based on field activities of the project. Report analyses focus on government policies in sandalwood management practices and the available economic incentives for local people participated

in sustaining sandalwood resources. The report is structured by problem and key question formulations, and then followed by the explanation of analytical methods. The methods cover analytical framework, study site selection, data collection and analyses. The main content of the report, i.e. the results and discussions starts with general description of the study sites and chronological summary of policies on sandalwood. The discussion is followed by presenting some findings on policies and economic incetives on sandalwood management. The report concludes wih some recommendations based on the findings and discussions in this study.

2. Problem formulation and key questions

Sandalwood plays important roles to livelihood of people in ENT province. The long history of the importance of sandalwood to people in ENT province, both economically and culturally has been well known (see for the examples McWilliam, 2001 and Rohadi *et al*, 2004). Sandalwood has long been used to make various products, such as handicrafts, joss sticks and sandalwood oil for perfumes and cosmetics (Husein, 1983). Naturally, sandalwood has been adapting to harsh local environment, such limited rainfall, long dry season and infertile and rocky soils.

Human intervention, however, has decreased sandalwood adaptation capability for its sustainability. Over cutting, wild grazing and land conversion to support agriculture activities has caused sandalwood population in ENT province continuously decreasing. Unsustainable wood harvesting, such as by digging up sandalwood stumps and roots, which otherwise play important roles for its natural regeneration, has accelerated sandalwood extinction (Rohadi *et al*, 2004). Efforts on sandalwood plantations are limited to government pilot projects with limited areas as well as their survival. In the mean time, demand on sandalwood by handicrafts and sandalwood oil industries remains high to fulfill both domestic and export markets. These conditions have been continuing since long time and may direct to sandalwood extinction in the region.

Previous studies (see among others Rohadi *et all*, 2000; Rohadi *et all*, 2004; McWilliam, 2001; Marks, 2002) have identified root problems in sandalwood management. The studies concluded that low participation of local people on sustaining or cultivating sandalwood resources was caused by previous government policies that neglecting local people's rights. The local people have low benefits on sustaining sandalwood resources, and even was burdened by some obligatory. Benefits from sandalwood were only received by rent seeker's groups, who take it for granted while ignoring resource sustainability.

Some revised policies have been taken to provide more rooms for local people needs, but people participation remains low. Provincial government has revoked Government Regulation No. 16/1986 which believed neglecting the people rights and devolved the authority on sandalwood regulation into district governments. Not all of the districts have taken necessary follow up actions, creating a status quo condition on sandalwood regulation. Some districts have introduced new regulation on sandalwood, although the regulations seem have not yet sufficiently accommodate local people's rights and stimulate people participations.

The analysis indicates that new approach to create more conducive policies is necessary to increase people participation to sustain sandalwood resources, by providing a better economic incentive to local people. Based on this problem formulation, there are four key questions need to be addressed to find out more appropriate policies. These four key questions are:

a. Are the current policies related to sandalwood resource uses and management at provincial and district levels sufficiently addressing local people interests?
b. What are the perceptions of local people regarding to the existing policies?
c. To what extend the economic incentives are available for local people who involved in sandalwood management and or plantation?
d. What kind of policies and economic incentives options are required to stimulate optimal participation of local community in sustaining sandalwood resources in the region?

Chapter II
RESEARCH METHODS

1. Research approach and analytical framework

This study involved two research teams who work in parallel. The first team (Team 1) consisted of national consultants and worked in four districts, i.e. the district of Alor, East Flores, East Sumba and South Central Timor. The second team (Team 2) consisted of international consultant, supported by local partners and focused their study in South Central Timor. Both teams exchanged and synthesized their findings in a seminar completed in the provincial capital city, Kupang.

Both teams applied rapid appraisal method on data collection and analyses. The method was chosen due to limited available time in the field data collection. By this method, the teams conducted direct observations to the selected sites, completed interviews and discussions with individuals or community groups. Site selection, individuals and community groups selected for interviews were consulted by the local district forestry offices.

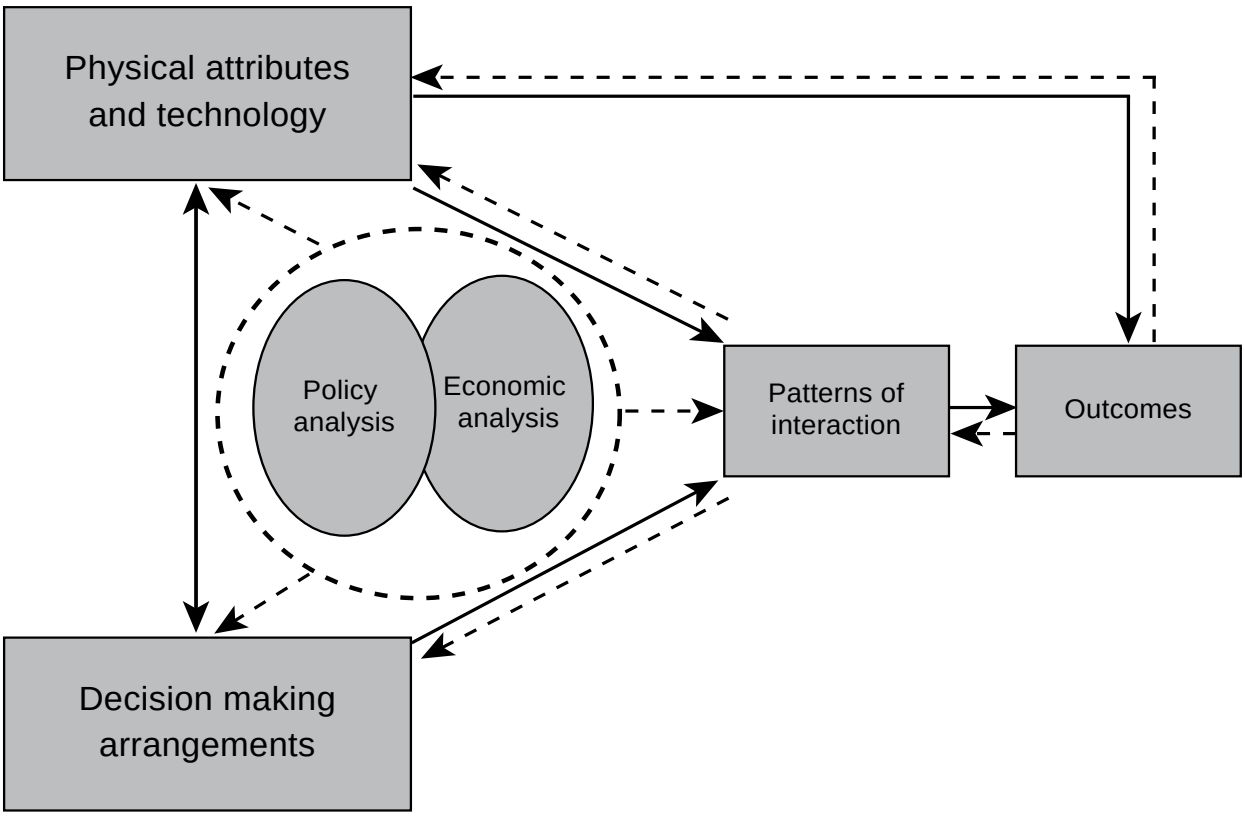
In data collection and analyses, the Team 1 adopted analytical framework as proposed by Oakerson (1992), as presented in the Figure 1. Based on this analytical framework, the sustainability of sandalwood resources inside the box outcomes is determined by two attributes, i.e. the physical and technology, and the pattern of interactions. Physical and technological attribute covers three main aspects, i.e. jointness or the degree of substractability, excludability and indivisibility. Jointness explains the impact of resource uses by any individual or party to the use of others on the same resources, in this case the sandalwood resources. Excludability explains the access to resources by different users; in this case, one can exclude the access of others to use a specific resource. Indivisibility explains the condition of existing borders of any particular resource from the use by other parties. A resource may have high degree of indivisibility when the border that control access by the users is unclear or very difficult to apply.

The pattern of interactions explains how behaviour of actors is formed on utilizing a particular resource. In general, the patterns of interactions are divided into cooperative and non cooperative behaviours. Cooperative behaviour brings towards sustainable use of resources. Whether or not the cooperative strategy will be chosen by the actors depends on four main factors, i.e. the availability of information concerning to the resources and the way how to manage them, reciprocity behaviours from other actors or users, the effective monitoring on the resources and the effective enforcement of the agreed rules. Weakness on one of these factors will generally bring towards unsustainable use of the resources.

The third attribute under Oakerson (1992) model is the decision making arrangement. Under this attribute there are three aspects that should be considered, i.e. the operational rules that govern operational procedures on how resources are used, condition of collective choice applied within the user groups and the external arrangements or rules originated from the outsiders but affect to the way on how resources are used within the user groups. The Figure 1 shows that the physical and technological attribute, and the decision making arrangements could influence the pattern of interactions among the actors in the use and management of the resources and determine particular outcome.

With the analytical framework based on the Oakerson (1992) model, the Team 1 was collecting data and information in the four selected district. Data was collected through direct observation at the study sites, interviews, community group discussions and reviews on the available secondary data, such as reports, regulations and statistical data at various government offices at national level (Ministry of Forestry), provincial level (Provincial Forestry Office) and district levels (District Forestry Offices). Detail explanation on how data was collected is presented under the sub section of data collection.

Figure 1. Research analytical framework on the study of policies and economic incentives in sustaining sandalwood resource in East Nusa Tenggara Province (Oakerson, 1992).



The Team 2 completed the rapid appraisal by initially visiting the District Forestry Office at South Central Timor. The visit was objected to gain general understanding on the regulatory frameworks related with sandalwood management within the district, as well as general understanding on forest management system. Visits, interviews and discussions were then completed at several selected villages, taking into account the variability of demographic conditions in the district. Semi structure interviews and discussions were completed with several key informants under several key questions as follow:

- Forest condition in the area and changes over time (farm land as well as State Forest land);
- Land tenure situation of the farm/village (particularly tenure security);
- Proximity to State Forest land;
- Interest in growing Sandalwood (source of seedlings, number of seedlings planted, extent of natural regeneration, etc.) on farm land (as well as other trees);
- Success rates of plantings-reasons and other problems associated with Sandalwood management;
- Compliance requirements needed to sell Sandalwood (certificates, taxes, etc.);
- Constraints (policy or other) that inhibit expanded planting Sandalwood seedlings and management of naturally occurring Sandalwood on private land;
- Incentives needed to increase Sandalwood plantings on private land;
- Value of Sandalwood in the market;
- Sale of Sandalwood in past 10 years (pressure from buyers);
- Problems with security of Sandalwood (stealing);
- Attitudes to Sandalwood planting and management on State Forest land;

In addition to the visits and interviews for data collecting, the Team 2 analyzed sandalwood inventory data which has been collected earlier in April 2010 in 23 selected villages by the District Forestry Office. The data consists of numbers and tree diameter (measured by tree circumferences of greater than 20 cm).

2. Study sites

The visited sites by both teams are presented on the Table1. The sites were selected based on consultation process with the Provincial Forestry Office and the respective district forestry offices. The four districts, which were visited by the Team 1 (Alor, East Flores, South Central Timor and East Sumba), were selected based on their variations of the region, in term of demographic and historical aspects on sandalwood management practices, that expectedly represent the condition within ENT province. Similar consideration was applied on selecting the seven villages within the South Central Timor district, where they could represent the variation within the district.

Table 1. Study sites on the policy and economic incentives analyses to strengthen local community participation in sustaining sandalwood resources.

Districts/ Consultant Team Members	Locations/ Villages and key informants	Brief description of the locations
Team 1:		
Alor: • Dede Rohadi • Rudi Lismono • Yoseph Plaituha	District Forestry Office and Omtel conservation area, sub district of Teluk Mutiara: • Buce Huan (Head of District Forestry Office); • Johanis Kewatung (Head of Forest Land Uses Division of the District Forestry Office).	Conservation area with some registered enclaves/villages. The site has an area of sandalwood seed orchard (5.4 ha) and a pilot project of forest rehabilitation where sandalwood is included among some tree species (40 ha).
	Village of West Wolwal, sub district of South West Alor: • Rahman (Head of farmers group) • Jacob Moca (The founder of farmer group "Ohedoy", Omtel)	The village consists of 96 households with the total of 470 members. Several farmer groups are actively cultivating sandalwood.
	Village of Maokoro, sub district of East Alor: • Sholeh (key informant) and some sandalwood planters.	The village consists of 200 households with the total population around 400 to 500 persons. The village is located near the coast. Community sandalwood plantations are concentrated at *Bukit Gundul* area, outside the state forest area.
East Flores: • Retno Maryani • Alfonso Jehamat • Smart Manaon	District Forestry Office: • Anton Tonce Matutina SH (Head of the District Forestry Office); • Ir. Paulus Demoor (Land Rehabilitation Officer at the District Forestry Office); • Darmo Waton, Yan Letou and Wungubelen (all are staffs in the District Forestry Office).	
	Village of Lewogeka, Sub District of East Solor: • Aba Nurdin (Head of village) • Aba Dosi (Secretary of village); • Yusuf Ahmad, Hutlatif and Mahling (key informants) and around 20 persons of the village members.	The village has been intensively assisted on land rehabilitation and communitry forestry program by the District Forestry Office. The total popualtion was 484 persons, within 126 households. The village has some sandalwood mother trees and sandalwood nursery. The District Forestry Office has recorded at least 148 sandalwood trees at different ages in the village. Some local people plant sandalwood at their home garden.
	Village of Tana Lein, Sub District of West Solor: • Head of the village; • F. Sina Hokeng (member of village assembly); • AA Kelodo and Frans Nuho Kelore (Heads of sub village) • Some other village members (17 participants in total).	The village consists of about 1000 population within 200 households. The District Forestry Office has recorded at least 25 sandalwood trees at different ages in the village. There was village member whose profession is as a sandalwood seed collector to supply seeds to some sandalwood nurseries. Some local people plant sandalwood at their home garden, school yard and church.

Districts/ Consultant Team Members	Locations/ Villages and key informants	Brief description of the locations
Team 1:		
	Village of Muda Eputu, Sub District of Ile Mandiri: • Anton Leton (Head of village). • Some village functionalities and other village members (23 participants in total).	The village is close to the district capital city, Larantuka. There were some sandalwood plantations under government's reforestation and community forestry projects, as well as a sandalwood nursery. The local people are eagerly participating in sandalwood plantations initiated by the district government and hoping this species could generate income for the household in addition to the currently cultivated species, such as cashew nuts, teak and mahogany. The people expect the district government to develop market information for sandalwood and its products.
East Sumba: • Titiek Setyawati • Tyty Chandra • Erick Mustika • Pieter Dethan • Nikolas Dose	• Gibeon Bilikora (Head of the district); • John Londoawang (Head of District Forestry Office).	
	Village of Kaliuda, Sub District of Pahunga Lodu: • Bapak Ishak (owner of sandalwood garden).	The village is well known as the best producer of traditional clothes (*kain tenun*) in the island. The village is also well known as the natural shellac producer. Shellac is extracted from Kesambi (*Schleichera oleosa*) tree. Naturally regenerated sandalwood is maintained in relatively good condition on farmers' lands.
	Village of Pamburu, Sub District of Pahunga Lodu: • Pak Markus M. Hinggiranja (Head of village)	Sandalwood population in this village was very limited, but some big sizes of sandal trees were found and maintained by the local people. There were lot of Dalinga (*Excocarpus latifolius*) trees found in his village which have similar characteristics with sandal trees.
	Village of Kuruwaki, Sub District of Pahunga Lodu: • Erick Luhaumbela • Martinus Padjaruaka	Some sandalwood plantations were established in the village by the District Forestry Office in 2005.
	Village of Palaka Hembi, Sub District of Pandawai: • Ishak Ignacio (Head of village)	A lot of Kesambi (*Schleichera oleosa*) trees were found in the village, which have been used by the local people for its oil. Very limited sandal trees were found and the local people were not too interested in planting sandalwood.
	Village of Maka Minggit, Sub District of Nggaha Orianggu: • Albertus Hensen Wau (owner of sandalwood garden) • Pak Junus (owner of sandalwood garden) • Domesianus (farmer)	Some sandalwood plantations are maintained by the local people. The village has a pilot project of sandalwood plantation with about 400 sandal trees. The pilot project was initiated by the District Forestry Office in collaboration with the National Science Institute of Indonesia (LIPI).

Districts/ Consultant Team Members	Locations/ Villages and key informants	Brief description of the locations
Team 1:		
	Village of Ngadulangi, Sub District of Nggaha Orianggu	The village population consists of 646 persons within 175 households, and located around 55 km from the district capital city Waingapu. Sandal trees were difficult to find and its existence was only limited in the protection forest areas.
South Central Timor: • L. Michael Riwu Kaho • Palulun Boroh • Elisabeth Lukas • Frans Fobia • Paul Soe	Village of Nekemunifeto, Sub District of Central Mollo: • Yan Sanam (Head of village) • Simon Tasekeb (Adat key informant) • Antonius Sanam, Fredrik Bessie, Benyamin Topenu (key informants)	The village consists of 212 household. The total village area is 26 km^2.
	Village of Binaus, Sub District of Central Mollo: • Nahor Tasekeb (Head of village) • Welem Nau, Lukas Otu, Missa (key informants).	The village consists of 256 households. The village has sufficient sandal trees for seed production. Some local people cultivate sandalwood on their farm lands.
	Village of Kuale'u, Sub District of Central Mollo: • Dance Kase and Hendrik Oematan (key informants) • Neno Saban (Adat chief).	The village consists of 379 households with the total village area of 15 km^2. Sandalwood is cultivated on home gardens.
	Village of Tetaf, Sub District of Kuatnana: • Marthen Kause (Head of village) • Yulius (Head of village assembly) • Normalina Kause (Head of sub village) • Simon Kause, Yermias Kause, Zet Nesimnasi and Musa Faot (other key informants).	The village consists of 1,318 households with the total village area of 12 km^2. Sandalwood population is very low, but the local people are still interested in cultivating it.
	Village of Pusu, Sub District of Amanuban Barat: • Selan (key informant) • Fobia (Head of Adat Community Empowerment Forum)	Sandalwood is almost extinct in this village.
	Village of Abi and Neke, Sub District of Oenino.	The total areas of Abi and Neke villages respectively are 1,921.1 ha and 2,774.8 ha. Both villages are dominated by savannah, and hence are more appropriate for developing silvopastures. In the past, both villages were among the sandalwood producers, but now the tree was relatively extinct in these villages.
	Village of Kuan Noel, Sub District of Fatumnasi	The village belong to the upstream Benain-Noelmina watershed area.

Districts/ Consultant Team Members	Locations/ Villages and key informants	Brief description of the locations
Team 2:		
• Don Gilmour • L. Michael Riwu Kaho • Palulun Boroh • Christian Koenunu	Village of Binaus, Sub District of Central Mollo: • Nahor Tasakeb (Head of village).	The village is located at the altitude of 997m above sea level (asl). Half of the village area belongs to state forest area.
	Village of Oelbubuk, Sub District of Central Mollo: • Rosalina Mnune (farmer) and her family members.	The village is located at the altitude of 1,069 m asl. All of the village areas are located in state forest area.
	Village of Kuale'u, Sub District of Central Mollo: • Yohanis Banoet (Head of farmers group) and his family members.	The village is located at the altitude of 630 m asl. This is an *enclave* village.
	Village of Nule, Sub District of West Amanuban: • Christian Koenunu (Staff of District Forestry Office)	The village lies at the altitude of 841 m asl. The visited site was sandalwood plantation plot initiated by the District Forestry Office.
	Village of Boti, Sub District of Ki'e: • Namah Benu (Chief of Boti)	The village lies at the altitude of 590 m asl. The visited site was an adat area.
	Village of Bikekneno, Sub District of Central Mollo: • Martincea Mella (household wife)	The village lies at 759 m asl and outside state forest area.
	Village of Fatukoto, Sub District of North Mollo: • Abdis Kase (Farmer)	The village lies at 1,144 m asl. This is an enclave village.

3. Data collection

During the rapid appraisal, data collection was conducted by both teams through interviews, group discussions and collection of secondary data. Interviews were completed with various key informants as presented on the Table 1. The key informants consisted of government officers (in particular the staffs within the forestry offices at provincial and district levels), community leaders and local farmers. The Team 1 used questionnaires to guide the interviews with some key questions. The questions related with respondent identity, respondent involvement in sandalwood cultivation or in maintaining naturally regenerated sandal trees, respondent knowledge and perception on policies that applied in sandalwood management, respondent motivation on sandalwood cultivation and other information related with government programs on sustaining sandalwood resources. The questionnaire is presented in the Annex 1. The Team 2 used the list of questions as explained earlier (see section II. 1). Details of targeted respondents, objectives and themes of the interviews are presented on the Table 2.

Table 2. Targeted respondents, objectives and themes of interview during data collection.

No.	Targeted respondents/ key informants	Objectives of the interview	Themes of interview
1.	Government officers/staffs	1. To understand current policies that applied on sandalwood uses and management. 2. To understand the role of sandalwood in regional economic development.	1. Laws and rules, operational guidelines and programs related with sandalwood management and development efforts. 2. Decision making process. 3. Sandalwood population. 4. Economic benefits from sandalwood.
2.	Community leaders	1. To understand people awareness on sandalwood sustainability. 2. To understand people perception on current policies in sandalwood uses and management. 3. To understand people perception on the economic benefits of sandalwood to household livelihood.	1. Adat rights/local traditions on sandalwood. 2. Local knowledge on sandalwood management system. 3. Conflicts among adat and formal rules.
3.	Private company representatives.	1. To understand private company perceptions on government policies applied to sandalwood. 2. To understand company strategies on fulfilling the required sandalwood intake.	1. Transaction costs. 2. Amount of sandalwood intake. 3. Sandalwood allocation system by government. 4. Qualities and prices of sandalwood. 5. Alternative wood species to substitute sandalwood. 6. Investment on sandalwood cultivation.
4.	Farmer respondents	1. To understand farmer's awareness on sandalwood sustainability. 2. To understand local people perceptions on government policies applied to sandalwood management. 3. To understand local people perceptions on the economic benefits of sandalwood in household livelihood.	1. Farmers' expectation s on sandalwood plantations. 2. Share of sandalwood to household income.

In addition to individual interviews, data collection was also conducted through group discussions. In group discussion, interviews were completed with group of respondents and so the information was verified by the group during the interviews. Beside the primary data which was collected through interviews and discussions, the teams collected various secondary data, in the form of reports, maps and references. The secondary data was collected from various sources, among others:

(i) Provincial Forestry Office and the selected District Forestry Offices (South Central Timor, Alor, East Flores and East Sumba);

(ii) Forestry Implementing Units under the Ministry of Forestry, which cover: Forestry Implementing Unit on Watershed Management (*Balai Pengelolaan Daerah Aliran Sungai*) of Benain Noelmina, Forestry Implementing Unit on Forest Area Stabilization (*Balai Pemantapan Kawasan Hutan*) Kupang, Forestry Research Institute (*Balai Penelitian Kehutanan*) Kupang, and Forest Seed Institute (*Balai Perbenihan Tanaman Huta*n) Bali;

(iii) Other forestry related government offices within the ENT province;

(iv) Ministry of Forestry Office in Jakarta.

4. Data analyses

Policy can be defined in many ways. One particular definition which fit with this proposal is provided by Djogo *et al* (2003). According to this definition, policy is defined as government methods and actions to solve specific development problems or to achieve development goals through decisions, strategies, plans as well as their implementations on the ground using specific instruments. In this research context, the policy refers to government decisions, strategies, plans and their implementations on the ground to achieve sustainable condition of sandalwood resources in the ENT province.

The study uses policy analysis techniques as proposed by Runhaar *et al* (2005). The techniques explain that policy analysis is a complex process and it at least involves three main factors. The first, policy analysis needs to optimize three values (i.e., ecological, social, and economic) at the same time and the associate human behavior that affects these three values. The second, policy analysis deals with knowledge gaps that exist in the policy domain of sustainable development and structural uncertainties in this area. The third is that policy analysis needs to operate in a multi-actor policy context. These imply that policy analysts, who support policy-makers, must be able to produce knowledge that is scientifically valid, relevant to the policy debate, and accepted by stakeholders.

Runhaar (2005) proposed five methods in policy analysis that include the reconstruction of policy theory or content analysis, stakeholder analysis, impact assessment, cost-benefit analysis and discourse analysis. Three of these proposed methods are relevant and seem possible to be applied in this study. These methods are the content analysis, stakeholder analysis and discourse analysis. More detail explanation of these methods is provided below:

a. Content analysis

This analysis is objected to gain understanding of the logic or argumentations behind the policy. Focus of analysis are on the relations between objectives and means, relations between causes and effects related to policy problem definition and normative relations between the principles and norms in one hand and the existing or expected conditions on the other hand. The analysis studied the content of policy to understand the argumentations underlying policy problem definition; ways of thinking of the decision makers that explained the chosen policy instruments will meet the targeted objectives and the assumptions used in these policies.

b. Stakeholder analysis

Stakeholder analysis was conducted to identify the main actors who have interest to policy problems. Actors are considered as stakeholders when they contribute to policy problems, have interest to solve the problems or affected by the activities on solving the policy problems. The analysis focused on some aspects, such as the perceptions of stakeholders on policy problems, position and relationship among these actors and resources that under control by these stakeholders.

c. Discourse analysis

Discourse analysis was conducted to understand the way of thinking of various actors or stakeholders to particular phenomena causing to policy problems. Discourse analysis was objected to explore patterns of statements from stakeholders, both written and orally, related to a particular policy problems. In this study, discourse analysis was conducted to know how and why particular policies evolved, what kinds of arguments underlying the decisions that have been made, who are the actors that involved in the decision making process and what sort of conflict or controversies that had arisen during the decision making process.

The economic incentive is an important driving factor which strongly influence how local people allocating their resources (such as labor, time and assets) on specific economic activities. In this research context, the analysis of economic incentive was focused on understanding the economic benefits that may be available for the local people to engage in sandalwood uses and management activities. Due to limited time, economic analyses in this study was only completed qualitatively based on local people perceptions, collected during the interviews and group discussions.

The analyzed data was presented in qualitative descriptive discussion to answer the four key questions as explained in the introduction section. Results of the analyses were then used as inputs in the Strength, Weakness, Opportunity and Threat (SWOT) analyses to formulate alternative strategies for policy interventions.

Chapter III
RESULTS AND DISCUSSIONS

1. The condition of sandalwood plantation in East Nusa Tenggara Province

Sandalwood in the ENT province has possibly become the only tree species that was periodically inventoried in detail by the regional government due to several reasons. Prior to the regional autonomy, sandalwood inventories have been carried out every five years by the Forestry Offices, both at province and district levels. However, since the sandalwood management has been handed over to the district level, the inventory has no longer continued. The last sandalwood inventory was completed in 1987 which indicated the decrease of sandalwood population at tree level[1] as much as 28.1% and seedling level of 39.7%. The total decrease of sandalwood population has reached 36.6% (see Table 3 below).

Table 3. Report on sandalwood inventory during 1987 and 1997 from East Nusa Tenggara Province (Dinas Kehutanan Provinsi NTT, 2010).

No.	District	Total number of tree stage (1987)			Total number of tree stage (1997)		
		Mother trees	Seedlings	Total	Mother trees	Seedlings	Total
1	Kupang	10.521	17.069	27.59	2.23	10.952	13.182
2	South Central Timor	80.655	193.365	274.02	16.968	95.742	112.71
3	North Central Timor	42.266	85.235	107.501	16.09	17.988	34.078
4	Belu	43.507	92.334	135.841	16.129	74.841	90.97
5	East Sumba	5.127	107.52	110.693			
6	West Sumba	822	90.584	90.882			
	Total	**182.933**	**502.584**	**685.527**	**51.417**	**199.523**	**250.94**

Recent data on sandalwood population in ENT province is not available except partial data collected from several districts. Some media has even stated that sandalwood population in ENT region has been considered extinct due to difficulty in finding the tree in the wild. This statement seems exaggerated the real condition as almost every year the Province Forestry Office has carried out sandalwood planting program in many districts. The total area of sandalwood plantations in various districts of the ENT province within 5 years from 2004 up to 2008 is presented in the Table 4. In 2010, the Province Forestry Office has targeted to distribute 450,000 sandalwood seedlings to district regions.

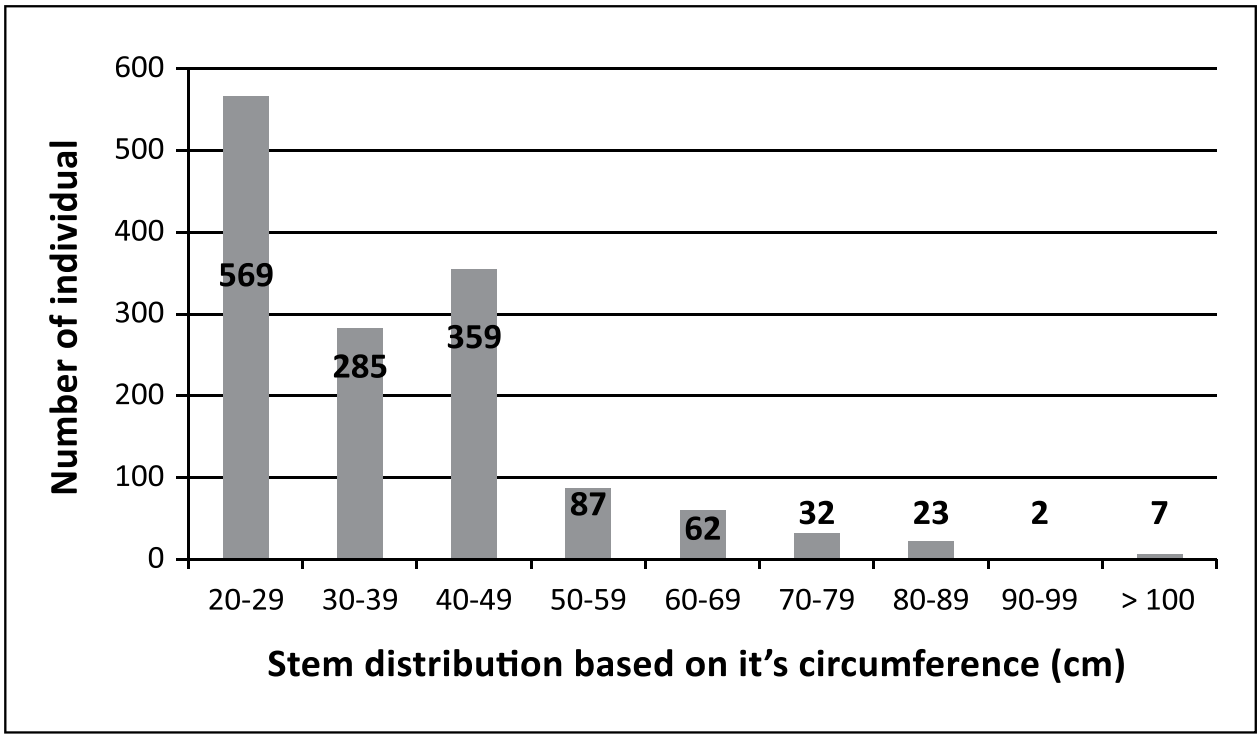
1. In sandalwood inventory, tree is defined as wood stand with diameter above 5 cm, while those below 5 cm are categorized as pole or seedling (Christian Koenunu, District Forestry Officer of South Central Timor, personal contact).

Table 4. Total area of sandalwood plantations during 2004 – 2008, in ENT Province (Dinas Kehutanan Provinsi NTT, 2010).

No.	Districts	Years (Hectare)					Total
		2004	2005	2006	2007	2008	
1	Kupang	-	-	-	15	-	15
2	South Central Timor	75	-	-	10	-	85
3	North Central Timor	-	-	-	-	-	-
4	Belu	3	2	2	2	-	9
5	Alor	20	70	88	32	40	250
6	East Flores	-	-	-	-	20	20
7	East Sumba	50	-	-	-	-	50
	Total	**148**	**72**	**90**	**59**	**60**	**429**

In the district of South Central Timor, the Team 2 has carried out sandalwood survey in 23 villages representing around 9.6% of the total number of villages in this district. The survey has successfully inventoried as much as 1,426 sandalwood trees from various classes of tree circumference (see Figure 2). It was shown that almost all sandalwood plantations are below 50 cm tree circumference or at diameter of approximately 16 cm. If the survey can be considered to represent 50% of the actual sandalwood potency from each village, the rough estimation of sandalwood population in the district is around 29,700 trees with size class distributions as described on Figure 2. The results also indicated that sandalwood genetic resources are sufficiently available and well distributed around the district.

Figure 2. Sandalwood stem distribution based on inventory in 23 villages in South Central Timor District (Christian Koenunu, personal contact)



Data on sandalwood population in other districts was not as complete as those collected from South Central Timor. Sandalwood population in Alor district in 2007, as was reported by *Badan Pusat Statistik Kabupaten Alor* (2008), is presented in Table 5. The data, however, was not explaining diameter or circumference distribution of the plants.

Table 5. Population and size of area of sandalwood distribution in Alor district (Badan Pusat Statistik Kabupaten Alor, 2008).

No.	Sub-districts	Size of area (ha)	Total number of trees
1	South West Alor	90	45,000
2	South Alor	5	6,000
3	North East Alor	5	6,000
4	North West Alor	87	43,500
	Total	**187**	**100,500**

The survey done by Team 1 at several locations of Alor District indicated that sandalwood planting activities have been carried out by local community at many places under some supports from the District Forestry Offices. For example, in Adang Buom village, Teluk Mutiara Sub-district, Alor District, where the region is still included into conservation areas of Omtel, there was sandalwood seed orchard area of 5.4 hectare. This seed orchard was built in 1986 by Balai Perbenihan Tanaman Hutan (BPTH) or Forest Tree Seeds Institute of Bali and Nusa Tenggara Region – Directorate General of Land Rehabilitation and Social Forestry (*Ditjen RLPS*) in collaboration with Alor District Forestry Office. Sandalwood and candle nut (*Aleurites mollucana*) plantings have been done in this area through reforestation project that applied in an area of 40 ha in 1987.

Information from various sources reported that planting activities of sandalwood have been started since the last several years with the support of district and province budgets (APBD II and APBD I) and deconcentration fund (central government allocated budget that devolved to the region). Plantations by the APBD I and deconcentration fund were done on area-bass. For example, about 150 hectare of sandalwood plantation has been established during 2006. Besides planting activities, the District Forest Office of Alor has distributed sandalwood seedlings to local community during the last past years. Around 23,000 sandalwood seedlings have been distributed for planting on community private lands.

During the survey, Team 1 has visited sandalwood plantations grown in community land. One of those is belonging to Bapak Rahman from West Wolwal village, South West Alor Sub-district. Bapak Rahman has been managing his 5 ha garden since 1996 and grown by various plants including sandalwood. Other cultivated plants recorded from the survey were jambu mete (*Anacardium occidentale*), candle nut (*Aleurites moluccana*), teak (*Tectona grandis*), mahogany (*Swietenia mahogany*), white teak (*Gmelina arborea*), Javanese tamarind (*Tamarindus indica*), kenari (*Canarium sp.*), sukun (*Artocarpus communis*) and jarak pagar (*Jathropa curcas*). Sandalwood has been planted since 2005 amounting of 200 trees

using project budget from District Forest Office of Alor. The plantation grows fairly well and currently they have reached 7 meter height. Other than Bapak Rahman, there were about 10 farmers' households who actively involved in planting trees including sandalwood in their own yards.

Other community sandalwoods plantations were reported at *Bukit Gundul* in Maokoro village, East Alor Sub-district (Sholeh, *personal contact*). Pak Sholeh has planted about 10,000 sandalwood trees on his 10 ha land. Some of the trees are now ready for harvest. This information however needs to be verified as the surveyor team could not directly observe the plantation areas.

In East Flores, it was reported that the total number of registered and naturally grown sandalwood in community private land was 438 trees which were distributed in five villages (see Table 6). In 2010, District Forestry Office of East Flores has targeted about 250 ha of sandalwood to be planted at seven sub-districts.

Table 6. The distribution of naturally grown sandalwood in East Flores District (District Forestry Office of East Flores, 2010).

Villages/Sub-districts	Total number of sandalwood
Lewogeka / East Solor	148
Menanga / East Solor	78
Ritaebang / West Solor	138
Lamaole / West Solor	49
Tanah Lein / West Solor	25
Total	**438**

The sandalwood population in 2001 in East Sumba was reported of 31, 723 individuals, consisted of tree stage (diameter of above 5 cm) amounting of 3,253 individuals, sapling stage (diameter < 5 cm) amounting of 22,605 individuals and seedling of 5,865 individuals. The data was based on inventory that was carried out in four sub-districts, i.e. Haharu, Pandawai, Pahunga Lodu and Wulla Waijelu. It is also reported that almost all plantations were of young ages and of less than 35 years (John Londoawang[2], *personal contact*). In one of the surveyed villages, Pamburu, Sub district of Pahunga Lodu, surveyor recorded a number of Dalinga (*Excocarpus latifolius*) trees, which has similar characteristics to sandalwood but with smaller size of leaves. Most of the sandalwood plantations in the district of East Sumba belong to local community. There were several private lands visited during the survey, such as Makamenggit village, located in Sub-district of Nggaha Oriangu, with total areas of 5 ha and the total planted trees was estimated of 500, which were planted in 2004 (Bapak Domisianus, *personal contact*). The other location is Palakahembi village located in Sub-district of Pandawai, where around 2,000 sandalwood trees was planted during 1989 and 1999 (Bapak Ishak Inganio, *personal contact*).

2. John Londoawang is the Head of Forest District Office in East Sumba.

General overview obtained from information provided by various sources including direct field observations indicated that the present sandalwood population in ENT province is mainly dominated by young plantations. Apparently, almost all remaining sandalwood plantations were found on private lands, while information on sandalwood grows in state forest is very limited. Looking at current condition, the updating of sandalwood inventory in ENT province is necessary as basis for developing strategies on sandalwood management in the future. Regardless of its population trend which is likely to decrease over time compared to the condition in the past or during the 90's, sandalwood germ plasma in form of young stands and seedlings remain widely distributed across the province. Thus, this condition may support efforts to develop sandalwood population in the future.

2. History of sandalwood management prior to autonomy era

Sandalwood has long been used as an icon of East Nusa Tenggara (ENT) region. Sandalwood has been predicted intensively traded in ENT region since the early BC (Before Christ) era. Based on literature review done by Butarbutar and Faah (2008), it is mentioned that Indian sailors has arrived in ENT islands during early BC and then they were followed by Chinese traders and traders coming from the western part of Indonesia. They all came for sandalwoods. These traders brought sandalwood to Sriwidjaya harbor in Sumatra, Malaya and further shipped it to India and China (Rohadi *et al*, 2004). During that time, sandalwood trading in ENT region was monopolized by kings and landlords that bought sandalwood from local community with very cheap price. Sandalwood was then traded or bartered by these elites for gold, silver, ivory, and ceramics as well as other daily needs. Trading was done by paying taxes to the king (Ormeling, 1955).

Ormeling (1955) described that during Portuguese colonialism around year 1566, Portuguese traders based in Portuguese colony in Lawajong of East Flores have traded sandalwood to Macau. During this period, the kings and landlords possessed all sandalwood grown either in forest or in community lands. Local community only received wages from cutting the trees and transporting them in the trade. The benefit sharing system, for example, was 50% for the king, 20% for *fetor* (king's subordinate), 10% for *temukung* (king's staff) and only 20% for the tree fellers. Sanction from the king or landlords in the form of a fine to submit cattle, such as cow and pigs was applied to land owners, if the sandalwood that grown in their private lands could not survive due to improper maintenance. During the Portuguese colonialism, 2/3 of the products generated from sandalwood grown in the king's land will be owned by the colonial government and the remaining stock goes to the king or local government.

In 1613, Dutch government through VOC has conquered Portuguese government and occupied Fort Concordia in Kupang. Since then the sandalwood trade was ruled by the VOC. During the Dutch colonialism, VOC pushed the leaders of Timor to sell sandalwood with lower price than the price offered by the Chinese and Portuguese. A wage system was introduced during the Dutch colonialism on sandalwood exploitation, and the system was further changed into tax system where one third of the sandalwood exploitation has to be handed over to the colonial government, which was known as Swapraja government during that time (Rohadi *et al*, 2004). During this period, heavy punishment is

also introduced to local community who was proven to harm or damage sandalwood that grown either in the forest or within their private lands.

Concern with sandalwood population decrease across the ENT region has been emerged during the Dutch occupation. Efforts have been initiated to secure and increase sandalwood population, among of those were through the establishment of seed orchards and sandalwood plantations in some places. However, many of these efforts have failed due to massive pest invasion over sandalwood plantations. Forestry service during the Dutch colonialism have taken serious actions to conserve sandalwood plantations by implementing allowable cutting system based on inventory result as well as protection of sandalwood plantations from cattle grazing and wild fire by involving police officers to conduct monitoring.

After the Indonesian gain its independence, the authority of sandalwood has been taken over by the republic government. Sandalwood authority was then regulated by regional laws (*Peraturan Daerah* or PERDA). For example, the PERDA of ENT No. 11/Pd/1966 stated that government occupied all of sandalwood regardless of its condition, dead or alive and in form of logs or pieces that grows within or outside the state forests. Based on this, a series of PERDA and governor decrees was then enacted aiming at protecting sandalwood population in NTT areas. Basically, all of these policies and regulations were objected to sustain sandalwood resources in the ENT region. At the same time, these policies were objected to secure regional income, but the policies ignored or neglected the rights and benefits for the local people. Summary of these policies and regulations are presented in Box 1.

Box 1. Summary of policies and regulations on sandalwood management at ENT region prior to autonomy era (summarized from Rohadi et al, 2000 with additional up-dated information):

a. All sandalwood grows in the wild or naturally (living plants, dead plants and wood sortimens) is owned by the government. People are allowed to grow sandalwood on their private lands, but most of the wood sales (85%) should go to government (PERDA No. 16/1986). Sandalwood owners can claim over part of the sales amounting to 15% to the local government after showing evidence of their land title's status (Governor Decree of ENT No 7/1993).

b. Province Forestry Office carry out sandalwood inventory at every 5 years and determine the annual allowable cut for the next consecutive five years (PERDA No. 16/1986, Governor Decree of ENT No 7/1993 and Governor Letter No. 112/SKEP/HK/1995).

c. The Regional Government conducts sandalwood exploitation, determine standard costs of exploitation and prepare the necessary documents to process harvesting and transporting sandalwood (Governor Decree of ENT No 7 and No. 8/1993 and Governor Letter No. 113/SKEP/HK/1995).

d. Regional government determines the price of sandalwood sales and allocates them to the processing companies through auction system (Governor Decree of ENT No 7/1993, Governor Letter No. 260/SKEP/HK/1995, and Governor Letter No. 5/SKEP/HK/1996).

e. All people have the obligation to maintain and conserve sandalwood. Illegal harvesting or wood stocking as well as miss-conduct to harm and damage the plants will be sanctioned. For monitoring purpose in conserving sandalwood resources, the Governor of ENT has established Sandalwood Coordination Board comprising of Bupati (Head of the District), Camat (Head of Sub-district), Kepala Desa (Head of Village), military element and police (Angkatan Bersenjata Republik Indonesia/ABRI, the army title during this era) and other community leaders. Membership of this board is decided by governor decree (i.e: Governor Decree of ENT No 53/1992).

f. Government has improved the benefit sharing system by providing a greater proportion to community up to 40% for sandalwood grown on private lands (PERDA No. 2/1996). However, this PERDA had not effectively implemented due to the lack of follow up regulations on its implementation.

g. Concern with the continued declining of sandalwood resources, the regional government of ENT enacted moratorium on sandalwood harvesting and encouraged community to carry out sandalwood cultivations (Governor Instruction No. 12/1997). Nevertheless, the regional government has conducted massive sandalwood exploitation known as "Operasi Bersahabat" prior to moratorium enactment (see Rohadi et al, 2004).

h. In line with the regional autonomy within the national government system, Provincial Government of ENT has finally revoked the PERDA No. 16/1986 and further handed over sandalwood management to district governments (PERDA NTT No. 2/1999).

3. Policies on sandalwood management after the regional autonomy era

Along with the development of national government system from centralistic into decentralization (regional autonomy) which was initiated by the late of 1990es, administrative procedures within forestry sector have also changed. Sandalwood management was one among the commodities affected by these changes, beside strong pressures from local community requesting their rights over sandalwood resources. In 1999, the Regional Government of ENT has issued PERDA No. 2/1999 containing decision to revoke the PERDA of ENTT No. 16/1986. The main substance of this PERDA is to hand over sandalwood resource management from provincial government to district governments. During the transition era, when the district governments have not yet issued their regional policies or regulations, sandalwood resources are to be managed based on Implementation Guideline introduced by the Governor of ENT. The progress so far has shown that each district implement various different policies over sandalwood resources in their areas.

In the case of Alor and East Flores districts, the district governments have so far not issue any new policy regarding to sandalwood resources. In Alor, this *status quo* is articulated that sandalwood will be treated similarly as with other timber species. Local community are free to own and sell sandalwood from their gardens or backyards using formal document for transporting log entitled as *Surat Keterangan Asal Usul (SKAU)* or Letter of Timber Origin that can be issued by Head of Village. However, if sandalwood would have been traded across the districts, a timber transport document of SKSHH (*Surat Keterangan Sahnya Hasil Hutan*) or Letter of Forest Products Legality should be applied to District Forestry Office

(Buce Huan[3], *personal contact*). The rules are similar in the East Flores, as it was informed by Paulus Demor (staff of the District Forestry Office of East Flores) through interview carried out on March 21th 2010.

East Sumba District has different rules as compared to the above two districts. The district has issued two policy products in 2000 regarding to sandalwood resource management, The Bupati Decree No. 33/2000 was issued on July 6th 2000 and PERDA of East Sumba District No. 19/2000 was issued on November 15th 2000. The decree has recognized the land owner's rights over sandalwood grown in local community private lands (Article No. 3), but on the contrary it is also mentioned (Article No. 2) that the district government still occupy all sandalwood, either those grown inside or outside state forests. In addition, the Article No. 4 of the decree mentioned that the district government currently banned sandalwood harvesting, as well as on collecting, digging sandalwood roots, transporting, distributing, trading and delivering of sandalwood inside or outside of East Sumba areas. The PERDA No. 19/2000, stated that the district government has full authority of all sandalwood stands, either inside or outside of the state forests (Section 2). There is a discrepancy in the terminologies on "authority" and "ownership", because under the Article 4 sandalwood grown on private lands is owned by the land owners. Meanwhile the term "authority" within this PERDA raises serious implication, because regardless of the ownership status, the utilization of sandalwood within the district area, including ways of exploitation and trade, remains regulated by district government and the sandalwood owners do not have freedom of choice to harvest and sell their sandalwood. The utilization of sandalwood grown on community's lands (including the determination of annual allowable cut, harvesting, root digging and wood selling) shall follow guidelines assigned by the Bupati, as mentioned under the Article No.8.

Similar situation with the case in East Sumba District also occurs in the South Central Timor District. The district government has issued several regulations, which are the PERDA No. 25/2001 dated on November 5th, 2001, Bupati Decree No. 8/2002 dated on March 5th, 2002, Bupati Regulation No. 12/2005 dated on August 2th, Bupati Instruction No. 4/2009 and PERDA No. 25/2001. In PERDA No. 25/2001, the district government reaffirmed local people rights on sandalwood that grown on their private lands and they are free to sell the wood by themselves (Articles 2 and 7). However, the Section 6 article 2 and Section 13 article 2 stated that sandalwood harvesting requires recommendation from the Bupati.

Harvesting mechanism by individuals is regulated by Bupati Regulation No.12/2005 which clearly mentioned that each individual shall propose harvesting plan to the Bupati, completed with the letter of legal ownership over the sandalwood to be harvested, which is issued by head of the village (*Kepala Desa*). Bupati will then instruct the District Forestry Office to carry out investigation and provide recommendation of this proposal (Section 2). Harvesting of sandalwood will be done under surveillance of District Forestry officers (Section 2) and harvesting activities can be carried out once the applicants have planted at least 5 sandalwood seedlings for each of the tree planned to be cut (Section 3). Sandalwood trade should also be equipped with SKAU and SKSHH documents, respectively issued by the Head of village and District Forestry Office. In line with the regulation stated in Section

9 of PERDA No. 25/2001, the sandalwood owners are obliged to pay IHH (*Iuran Hasil Hutan*) or Forest Product Fee as much as 10% from the minimal selling price determined by the Bupati. Every year, Bupati will set up the minimum selling price for sandalwood. One of the examples of price determination for various sandalwood qualities was launched through the Bupati Decree No. 8/2002.

Based on the analysis over the regulation substances in sandalwood management as described earlier, there was a significant difference across the districts in responding towards sandalwood management system after the regional autonomy. Local governments in Alor and East Flores districts do not see any urgency to issue a new PERDA to regulate sandalwood due to several factors. Interview with the District Forestry Office in Alor revealed that sandalwood resources in the district have not yet well inventoried and the existing sandalwood population is considered still at young age and economically is not profitable for exploitation. This is also happened in East Flores district. The information derived from the District Forestry Office indicated that the recorded naturally grown sandalwood is only around 438 trees which are distributed in five villages within two sub-districts (see Table 6). Beside of those naturally grown sandalwood, there are about 115 ha of sandalwood plantations that has been established since 1977 and distributed in 11 locations. Unfortunately, data on tree population remains lacking.

In the South Central Timor and East Sumba Districts, the local governments have followed up the withdrawal of the PERDA No. 16/1986 by issuing new PERDA. Looking at the substantial contents of the new PERDA, it is very clear that sandalwood management in these areas is still regulated with similar rules as under the PERDA NTT No. 16/1986. The only distinctive modification lies on the land ownership aspect for sandalwood planted or grown up in the private lands, but ways of the utilization with regards to harvesting and trading remain under strict government regulation. One interesting case is the fact that almost all interviewed communities in these four sub-districts did not clearly aware with the changes of policies in sandalwood management. The majority of local community in all of the districts being surveyed remains perceives that sandalwood resource belongs to the government and its management is fully controlled by the government.

While reconstruction processes of regulations at district levels are in progress, various efforts have been initiated at the province level to retain and improve sandalwood population in the ENT region. Currently, the ENT province has launched Strategic Action Plan for Sandalwood Development for the period of 2009-2013, including its implementation guidelines. Initiated by Forest Research Institute of Kupang, the Sandalwood Master Plan is being developed up to period of 2025. The Strategic Action Plan for Sandalwood Development has three main missions, i.e. to conserve and protect of the remaining natural sandalwood resources; establish sandalwood plantations through partnership with local people; and encourage the district governments to adjust their regulations and policy implementation on sandalwood management. According to this plan, the target of sustainable management of sandalwood is directed towards:

- Protection and conservation of the remaining sandalwood stands to protect sandalwood germ plasma or genetic resources that also objected to secure high quality sandalwood seed sources.

- Establishing and developing of sandalwood plantations of 4.750.000 seedlings for the next five years (750.000 seedlings in 2009, and during 2010 – 2013 as much as 1 million seedlings per year).
- Improving policies on management and utilization of sandalwood towards more people oriented through PERDA of both province and district levels.
- For germ plasma protection of sandalwood, sandalwood plantation management is adjusted to the state forest zoning system, i.e.:
- In the core area zone, sandalwood management is directed to protect and preserve sandalwood germ plasma;
- In the ecosystem buffer zone, sandalwood management is directed to support and buffer the core areas through various activities such as education, trainings and ecotourism;
- Within the limited utilization zone, sandalwood is used with precause restrictions.
- Within the production and cultivation zones, sandalwood management is directed towards high production and economic values, taking into account the sustainable forest management practices.

On institutional perspective, the Province Government has formed a Steering Committee, Supervising Team, Secretariat and Working Groups which focus on the efforts on sandalwood development. These working groups consist of:

- Working Group on Regulation and Policy Implementation Review, with the main tasks among others are: to facilitate the drafting of new PERDA on sandalwood at district level; to carry out socialization of regulations on sandalwood; to help the Supervising Team and Secretariat at the province and district levels in coordinating all measures on policies, planning, implementation and reporting on sandalwood development activities; and to monitor the implementation of sandalwood policies at the district level.
- Working Group on Conservation and Protection, with the main tasks among others: to protect and conserve the existing sandalwood stands; to monitor and evaluate of all activities related to sandalwood protection and conservation; to strengthen community participation in the protection and conservation of the existing sandalwood resources; to support the Supervising Team/Secretariat at both province and district levels in coordinating sandalwood development activities.
- Working Group on the plantation development and partnership, with the main tasks among others are: to determine the plus trees and stockpiling of sandalwood seeds, establish sandalwood nurseries and distribute sandalwood seedlings to community; and to supervise and assist local communities in planting and tending activities of sandalwood plantations.

4. Economical incentives and perceptions of people on sandalwood cultivation

Economical attractiveness is among the important factors that influence perceptions and behavior of people in cultivating certain species of plants. For sandalwood, local people perceive the plant provide few economical benefits, and this perception mainly apply during the centralized era, prior political reform of regional autonomy. The only benefit is in the form of labor wages to cut the trees, or in logging activities.

As an example is the enactment of provincial regulation so called Governor ENT Decree No. 113/ SKEP/HK/1995. The regulation standardized cost of exploitation at the level of Rp 1,300 for every kilogram of hardwood. The cost covers several activities that include tree cutting, transporting the wood to log yard (*Tempat Penumpukan Kayu/TPK*) at the village that cost of 800 rupiahs per kilogram, and transporting from the log yard into the storage room, in addition of costs in administering and controlling that may reach up to Rp 500 per kg.

Local people may receive up to 800 rupiahs for every kg of sandalwood that had been cut, that in fact is a compensation for the wage that people put on the logging activity. However, for sandalwood trees that grow on privately owned land, the owner of land could claim to attain compensation up to 15% of price offered by the local government. The price in 1995, was decided by the Governor to be at the range of Rp 9000 up to Rp 15,000 per kg. Nevertheless, the landowners may not be received the compensation as often they have no legal proved for owning the land, which in the form of land certificate.

Beside lack of economical incentives, local people often face difficulty for having sandalwood grows inside village area or even on their lands. The rules apply sanctions and punishments for villagers if the plants got damage or even die. That makes local people against with sandalwood plants. Village history told, prior to the tree inventory conducted by the government, often people put away the plant that grows on their land. The villagers tend to avoid obligation to maintain the plant beside to avoid risks for getting punishment for every plant that die, regardless the reasons of cattle grazing or due to pests and diseases.

Low economical incentives for long time duration has shaped people behavior toward non-cooperative in sustaining sandalwood. That behavior may be observed from ignorance of people to sustain the plant, as reflected in opening land to prepare for site plantation by using fire, or to let cattle grazing entering the area of sandalwood plantation, or else to not selecting sandalwood as a plant that need to be conserved. Other non-cooperative behavior is free rider, whereby villagers involve in illegal cutting and smuggling the wood outside the area. That activity although attract lots of economical incentives but it gives high risks as well.

Actually, cultivation sandalwood may be economically attractive as it is demanded by market and it has high price. At the international market, it may reach up to AUS$ 40,000 per ton of wood (Regina, 2009), or in rupiahs it worth Rp 280,000 per kg (assuming rate exchange for 1 AUS$ is equal to Rp 7,000). Assuming price in the local market could reach Rp 150,000 per kg (Palulun Boroh[3], *personal*

3. Palulun Boroh is among members of the team who conduct research on sandalwood in the district of South Central Timor.

contact), and for a single sandal tree at 50 years old could produce 50 kg hardwood, therefore an intensive sandalwood plantation with density up to 250 plants per hectare may yield up to Rp 1.875 billions, or it may contribute to annual income up to Rp 37.5 million. The Ministry of Forestry recently releases report on global shortage of sandalwood oil that may reach up to 80 tons per year (http://114.4.5.222/index.php?q=id/ node/5086, 2009). Assuming for each ton of wood may produce 5% of rendement of oil, thus the annual shortage of wood may be accounted at 1,600 tons.

Local people at the ENT region left with a deep traumatic story in their institutional history. Many people perceive that management of sandalwood in the past were mainly benefitting needs of the elites and not for the local people in general. That mainly apply for the islands where heavy exploitation were conducted before, such as Sumba and Timor. In fact, these unhappy memories create anecdotes for local people. These include among others, that sandalwood plants is identical with a problematic plant which in the local language is known as "*hau lasi*", the plant that belongs to authority or "*hau plenat*", and even sometime it is called as a devil plant or "*hau nitu*" (*Kepala Balai Pengelolaan DAS Benain Noelmina*, 2010). It is understandable therefore that planting and conserving sandalwood is not favourable for local people in the past.

Nevertheless, this study has reported results of the interview from four districts that underlining majority of people perceive a promising perspective toward sandalwood plantation. Local people will participate actively on conservation and cultivation of sandalwood under the condition of legal system on recognition and rights of local people be improved. For people who lives in the islands of Alor and East Flores, such traumatic experiences have never been across into their memories, due to sandalwood at their natural habitat has dissapeared even during the era of colonization. People in these two islands perceive the trees as their family assets, equally to other trees growing in these islands, such as teak (*Tectona grandis*) and Mahogany (*Swietenia macrophylla*).

The interview underlines the importance of clear recognition from the government on the rights of ownerships of local people, and this in particular refers to the sandalwood that grows on lands under the private ownership. Local people proposes to have ownerships on sandalwood trees that are growing on private lands, both for trees that grow naturally as well as though plantation activity. The rights of ownership should encompass rights to make decision on utilization, that include for cutting and selling the trees. On the other hand, for the sandalwood trees that are growing on communal lands, such as on the adat lands, should be regulated under current practices of adat rules or communal rules in the area.

As proposed by local people, recognition from the government should be formulated in the written agreement and it should be guarranteed by the government. This will be bring into an implication for a revision of local law, so called *Peraturan Daerah* or PERDA to suffice needs of local people. In order to guarrantee all the needs of local people to be accomodated in the formal legal system, people in the district of South Central Timor in particular demands transparency in drafting or formulating the proposed PERDA through public consultation.

Rights of ownership is among issues that create uncertainty and hinder people to participate in sustaining sandalwood in its natural habitat. Representatives from the islands of Alor and East Flores told that although they welcome initiatives to develop sandalwood plantation in the ENT province,

but they predict potential conflicts between local people and the government may emerge once the tree become mature and ready for harvest. People still in fear that in the future the government will take over ownership of the tree.

The government need to refine its expectation on participation of people into a more rational way. People perceive that sandalwood is an ordinary plant, equally with other plants being cultivated. The plants has become unpopular in several places, such as in the village of Kuruwaki of the Pahunga Lodu sub district. It even becomes last choice to be cultivated after mahogany and *kesambi* (*Schleichera oleosa*). Similarly also in the East Flores, cashew nut or jambu mete (*Anacardium occidentale* L.) becomes the first choice and priority to be cultivated. The trees support family life by providing economical contribution as main income for local people in the area. In term of harvesting period, sandalwood needs longer time to harvest as compared to other trees. Moreover, local trade for mahogany is not regulated by the government.

What we could learn from the interview that availability of economical incentive is an important factor to be considered by local people before they start cultivating certain species of trees. The incentive provide an essential contribution for family living. The issue has been pointed out by representatives from the villages of Wolwal Barat (Pak Rahman) at the sub district of South West Alor and by Pak Ishak from the village of Palaka Hembi, of the sub district Pandawai of Sumba district. They undertake intensive cultivation and establish fences around the plantation to prevent from cattle disruptions.

People expect planning from the government to bring back the golden era of sandalwood at the province of ENT would deliver a real benefit in the future, in addition to synergizing the plantation into local farming system. One of possible solution to implement mass development of sandalwood plantation is by supporting the development of other commercial species such as mahogany and cashew nuts. Support of local people on the development of sandalwood plantation is primarily plantation on private lands. People expect the government for not only supporting in distributing the seedlings, but also by providing technical supports in sandalwood cultivation that could increase its survival rate. Despite their support for the plantation at forest lands, people expect more equal benefit sharing shall be establsihed. There is a need for the government to facilitate the development of community based forest management, such as through the scheme of social forestry. Such scheme would enable local people to access legal rights in the management and utilization of forest and its products, including any types of products that came out from sandalwood.

5. Problems related to the management of sandalwood in the region of ENT province

Past experiences on sandalwood management system and the decreasing population of sandalwood show the necessity for new policiess and approaches to overcome various problems in sustaining sandalwood resources in the region. The analysis on government policies has identified several issues that need to be taken into account. Some of the problems could be classified as common problems that happened in all of the region of ENT province, and others could be specifically applied for certain areas or districts.

The most crucial problem concerns with tenurial rights. The current regulation is not fully recognized the rights of ownership on sandalwood on private lands. The reason for that because government control the trade of sandalwood that creates high transaction costs and burdens local people. As compared to other tree species of teak, sengon (*Paraserianthes falcataria*) and mahogany, sandalwood is only one of the options. Current regulations for non-sandalwood trees require to the market, which are the SKAU (*Surat Keterangan Asal-Usul Kayu*) and SKSHH (*Surat Keterangan Sahnya Hasil Hutan*). The SKAU applies to certain wood species (mainly the wood species that commonly cultivated in local private lands). The SKSHH is issued by the District Forestry Office and applies to other wood species that may have been cultivated in private lands, but still largely exist in the state forest, and hence it still needs verification for the origin of the wood. While both transport documents are already creating significant transaction costs on timber marketing, for the sandalwood, the transaction cost is doubled as people need a permit from the Bupati (Head of the district) prior to harvest their sandal trees. The regulation lowers the incentives from sandalwood cultivation and makes sandalwood as the least chosen timber species to be cultivated by local people.

Land ownership in the region of ENT is a delicate matter. Most of lands in this region under the designation as state forest areas, although in practice people have been cultivating the land for long time, either individually or communally. Formal land certificate is often not available, although among villagers they respect the land ownership and recognize the land borders. The absent of legal document often put villagers into troubles when they want to sell their sandalwood. Unclear tenure rights on land and limited control at the field level may create sandalwood to be treated as "*open access resources*", in particular by the free riders. Respondents at the South Central Timor district expressed the difficulty in preventing sandalwood trees from illegal harvest, as the thieves are often being backed up by local government staffs.

The second problem that comes from unclear ownership rights on land and sandalwood plantation have created another impact, which is the low economical benefit being received by the villagers. In the past, the only benefit received by villagers came from wages for cutting sandal trees and transporting the wood into logyards. Now, the villagers are confronted with high transaction costs in selling the wood, due to requirements for getting permit from the district leader who imposes requirements that burden people most. Management of sandalwood is far more complex as compared to other trees, however it provides low economical return with long harvesting period and high risk of mortality. Understanably, sandalwood has become the last option to be incorporated into the farming system.

In term of regulation, most of villagers understand very little and even nothing about sandalwood cultivation. Many villagers at East Sumba island have no access on updated information related to regulation and they think the PERDA has never been changed. Infact, the new regulation has assigned full ownership for private land owner, although it does not include procedure for marketing the wood. Many could not forget from the old regulation thast brings into traumatic condition. For those who never been experiencing with the old regulation, such in the islands of East Flores and Alor, perceive uncertainty to make investment on the plantation. Communication, in particular socializing the new regulation is essential to break out problem that hinder people from investing in the sandalwood cultivation.

On the technical aspects, villagers have limited knowledge and skill on how to cultivate sandalwood. Seedling mortality of sandalwood plantations has been very high, due to low maintenance during the adaptation phase from the nursery into the field. Given that sandalwood is native for ENT region, naturally the plant should have been adapted to local condition. The problem comes from farming activities, including land preparation for agricultural activities and cattle grazing that reduced the ability of sandalwood to survive. When intensif cultivation to be introduced, many of management aspects in sandalwood cultivation have not been fully understood. These aspects among others are on the nursery management (including in using host plants) and in the maintaining survival of the plants from drought, pests and diseases.

The last problem that needs to be adressed concerns with institutional capacity at the local level. The effort to sustain the resource needs to be backed up by strong local institutions in order to enable collective action gives effective results. These local institutions include government agencies and civil society organizations who have direct relationships in working together with community, and this include forestry extensionists.

In the past, traditional institutions so called the adat played effectively in regulating local uses on natural resources, including the sandalwood resource. Modernity play roles in changing behaviour of people particularly for those young generation who often abandon the traditional rules and provoke illegal cutting of sandalwood trees, which have been happened more often than in the past. Local institutions needs to be revitalised by adopting new regulations and incorporate them in written forms.

Institutional capacity at local level, at both district forestry office and other forestry related local organizations should also be strengthened. The past approach that too much oriented toward physical indicators but overlook for social aspects need to be revisited. The success of reforestation and forest protection should not be taken as separate achievement from social perspectives of improved welfare, and enhanced civil society organization, which in the future should become among the priority that need to be considered. In this context, policies are available that aiming to strengthen participation of people in the management of forest. The schemes of *Hutan Kemasyarakatan* or HKm of social forestry, the *Hutan Tanaman Hasil Reboisasi* (HTHR) of Plantation Forest from Reforestation, and the *Hutan Tanaman Rakyat* (HTR) of Forest Plantation by People are among the options that could be utilized to sustain plantation of sandalwood in the region.

6. Options for Policy Interventions to sustain sandalwood plantation in ENT region

An integrated efforts from all parties are demanded to sustain plantation of sandalwood in the region of ENT, and they include stakeholders at local level as key players in maintaining and cultivating the plant. Hence, participation of local people is a must for a sucessful program of sandalwood plantation. The policy analysis and economical incentive analysis propose some factors both internally and externally that need to be taken into consideration before certain policy intervention being introduced. The identification were taken during discussions of multistakeholders which were organized in various fora. By using the SWOT approach, both internal and external factors will be discussed as the following:

a. **Elements of strength:**

- Sandalwood has strong historical relations with people who lives in the region of ENT. The region is known as a natural habitat for the plant that has been used for centuries. Sandalwood plays improtant roles both economically and politically on the development of the region. Moreover, the plant is among few species that could survive under the condition of harsh environment, with low rainfall and poor soil fertility.
- Strong commitment from the government at the province of ENT supported by government at the district level. The committment has been manifested in the amount of resources allocated to strengthen plantation of sandalwood in the region and to encourage people participation in the program.
- In general people acknowledge on the need to bring back the golden era of sandalwood in the region. People welcome various programs from the government intended for that purpose.
- Availability of germ plasma and its distribution all over the region. Sandalwood regenerate naturally, there abundants of seedling surrounding the mother plants particularly on remote areas where small disturbances exist.
- Existing traditional rules in sustaining the effort of sandalwood plantation.

b. **Elements of weakness:**

- Traumatic from government regulations and policies in the past, particularly in the East Sumba island and the district of South Central Timor. This historical sadness up to now still embedded in the memories of some villagers who perceive sandalwood as ownership of the state. In general, there is tendency that information concerning the regulation were not transferred to the field level.
- Unclear rights over the ownership of sandalwood and over the land. The existing regulation yet has not fully accomodate people's rights on the plant even for those growing on private lands. Control from the government in relation to wood trade of sandalwood has been perceived as risk for local people to invest in the plantation and cultivation of sandalwood.
- Limited knowledge and skills to cultivate sandalwood in an intensive manner. Rate of mortality in various plantations are still high.

c. **Elements of opportunity:**

- High demand from the world and domestic markets both for the products of woods as well as oil. Sandalwood has high price at the free trade situation.
- Support from the govenment at all levels of national, provincial and district to rehabilitate forest and lands through forest tree plantation program. The government allocates tremendous resources to support implementation of the program.
- Policies that provide opportunities for people to participate in the management of forest. These include the schemes of *Hutan Kemasyarakatan* (HKm), *Hutan Rakyat* (HR), *Hutan Tanaman Rakyat* (HTR), *Hutan Tanaman Hasil Reboisasi* (HTHR), *Hutan Desa* (HD) and One Man One Tree (*OMOT*) program.

- Traditional leaders being respected by community, these include the adat leaders, religious leaders and others who play important roles as the agents of change and strengthen local instuttions.

d. Elements of threat:

- Non-cooperative behaviour to sustain sandalwood, such as wood theft and application of fire to prepare land for agriculture, that will damage naturally regenerated sandalwood seedlings in field. Weak control both from the government as well as villagers are primary reasons for the activities to happen, beside perceptions on sandalwood being considered as open access resource.
- Proposal to open up free trade for sandalwood may bring into heavy exploitation if the scheme is not accompany by proper control, primarily for sandalwood growing in state forestlands.
- Low rainfall and long drought may impact on high mortality that hinder successful intensive plantation of sandalwood.
- Monoculture plantation sensitive to pests and diseases.

These internal and external factors are summarized in the Table 7.

Table 7. Internal and external factors to be considered in selecting options to develop sandalwood in the region of ENT.

Internal Factors	External Factors
Elements of Strength (S)	**Elements of Opportunity (O)**
S. 1. Strong historical relationships between sandalwood and ENT region. S. 2. Strong commitment of the government in rehabilitating and developing sandalwood in the ENT region. S. 3. Positive perceptions of local people toward sandalwood cultivation. S. 4. Availability of germ plasm stock. S. 5. Traditional rules and practices to support efforts for sustaining sandalwood in the region.	O. 1. High demand from the market toward sandalwood. O. 2. Strong support from the government to rehabilitate and develop sandalwood plantations. O. 3. Availability of policy schemes and government programes in managing forest through participation of people. O. 4. Availability of community leaders acting as the agents of change.
Elements of Weakness (W)	**Elements of Threath**
W. 1. Historical traumatic toward government regulations in the past. W. 2. Unclear rights of ownership on lands and sandalwood plants. W. 3. Low economical incentives to cultivate sandalwood. W. 4. Limited skills and knowledge on sandalwood cultivation.	T. 1. Non-cooperative behaviour in supporting the efforts to sustain sandalwood plantations. T. 2. Risk for overcutting if free trade is allowed. T. 3. Risk for failure in sandalwood cultivation due to low rainfall and long drought. T. 4. Monoculture cultivation is risky to pests and diseases.

e. Strategic options to conserve and develop sandalwood plantations

The analysis on strengths, weaknesses, opportunities and treaths so called SWOT conducted on sandalwood shows several options of strategies that could be selected to conserve and develop the species. Strengthened by consultation and discussion with stakeholders involved, seven options were considered as having high priority. These options may be sinergized and they may complement each others. These options of strategies are the following:

P. 1. Developing regulations on the management and utilization of sandalwood that accomodate needs of local communities. The regulations should be formulated in participatory manner by involving representatives from various parties or members of stakeholders. This kind of strategy integrate several factors as identified in the S2, S3, S5, W1, W2, O2, O4 and T1.

P. 2. Integrating the program of forest and land rehabilitation with the development of sandalwood plantations by involving communities to participate in the processes. The integration shall provide attractive schemes of benefit sharing primarily for local communities, and it shall be facilitated and supervised by the authority in charge. The strategy incorporate following factors of S1, S2, S3, S5, W3, W4, O1, O2, O3 and O4.

P. 3. Supporting and facilitating the initiative of community based forest management in order to maintain existing natural regeneration of sandalwood and to develop cultivated sandalwood that fits with local condition. The strategy may be incorporated into the schemes of social forestry programs that include HKm, HR, HTR, HTHR and HD. This strategy incorporates the factors of S2, S3, S5, W2, P3 and T4.

P. 4. Strengthening institutions of forestry extension to facilitate better information on government policy and to empower institutions and organizations at the local level in particular. The forestry institutions to be improved by means of increasing knowledge of the extension officers and their technical skills toward people centered approach. The strategy incorporates factors of S2, S5, W2, W4, O3, O4 and T1.

P. 5. Developing data base system for sandalwood plantations by means of better coordination intersectoral relationship at the government agencies in addition of better participation of local people. The strategy incorporates factors of S1, S2, S4, O4, T2.

P. 6. Developing techniques of conservation for natural regeneration and cultivated sandalwood by means of research activities. The strategy incorporates factors of S4, W3, W4, O1, O3, T3 and T4.

P. 7. Implementing agroforestry system into the intensive cultivation of sandalwood. The strategy incorporates factors of W4, T3 and T4.

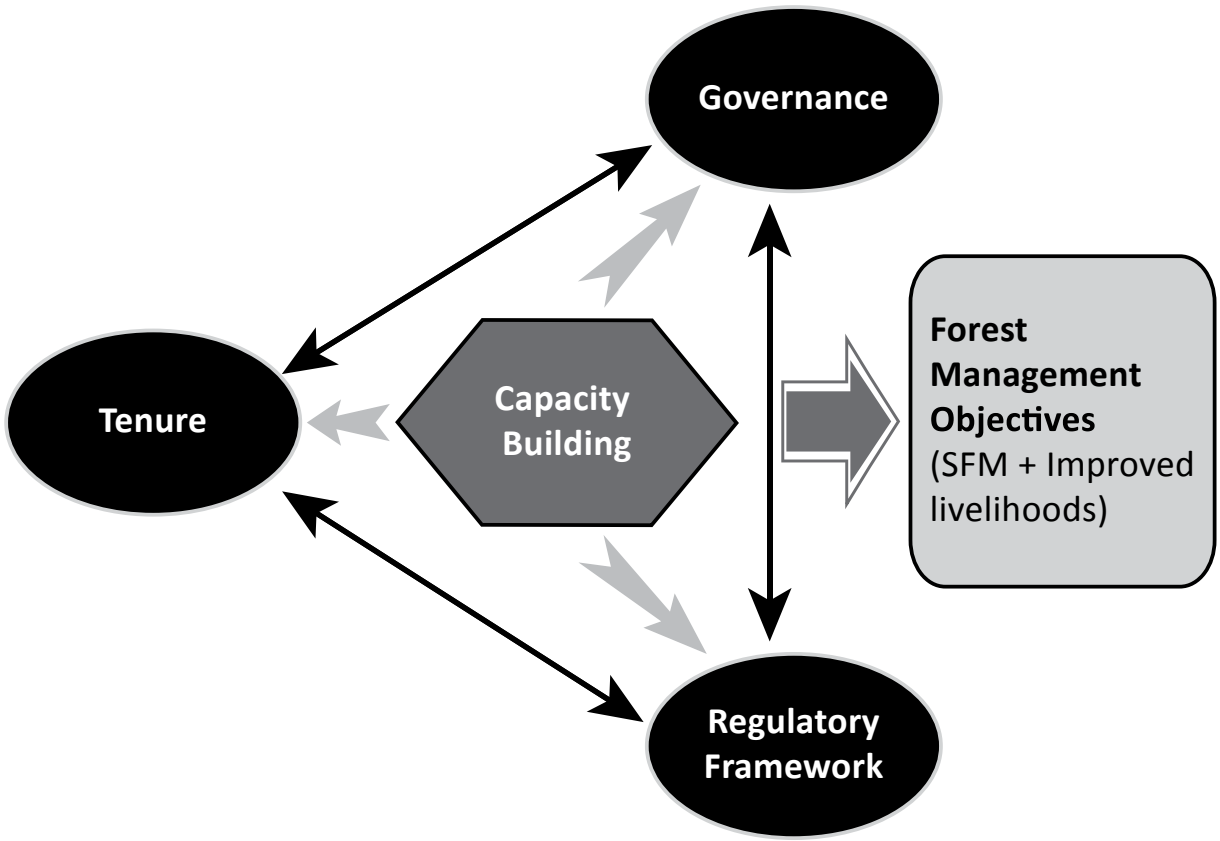
f. Implementation of selected strategies

In selecting the strategies that to be implemented, several aspects were being considered. Some technical aspects were identified as important but they were concluded as beyond this study. For example, the first option strategy (P. 1) identifies several activities that to be conducted systematically and by involving related stakeholders.

Consultation processes with related stakeholders shall be conducted in every step to enable the identification of components that need to be accomodated in the new regulations and or policies. The process, for example may be done through organizing scenario planning workshop by inviting stakeholders to formulate new regulation on developing sandalwood plantations. The workshop needs to be followed up by the establishment of working group who will formulate legal draft to be discussed further by the executive or legislative parties. The working group shall monitor the draft and participate actively in the deliberation processes and its confirmation. Such mechanism will guarrantee new regulation to contain and incorporate essential components proposed by local communities.

Gilmor and Fisher (2010) propose a conceptual framework that would attain sustainability of resource at the implementation, and this is presented in the Figure 3. The framework may guide the implementation of selected strategies. Using the framework, the selected strategies should enhance four determining factors: namely the factors of tenure rights, regulatory system, governance and capacity building.

Figure 3. Conceptual framework for sustainable management of natural resources (Gilmour and Fisher, 2010).



Tenure rights has been defined in several ways (McCulloch *et all*, 1998), but in general the rights clarify regulation and guarrantee individuals or collective groups with certain resources. The rights comprise *bundle of rights* upon certain resources, they include rights to use and rights to manage, in additon of rights to exclude and rights to transfer of the rights to other parties. These variety of rights shall be clear and they shall be guarranteed its security, both in the context of existing legal system as well as in informal ways that need to be recognised by community.

Regulatory system clarifies and elaborates the utilization of and goals to be attained by actors who considered to be eligible to manage the resources (Gilmour and Fisher, 2010). The system covers of constitution and legislation, rules and regulations and other policies manifested in operational guidelines as reflected in the governance of the resources. In order the system could be implemented effectively, Gilmour et al (2005) proposes several principles that to be considered, and these are elaborated as the following:

- The regulations should act as both enabling and enforcing condition, and not hindering for stakeholders to posses certain rights and use its rights. The regulations also should prevent from those parties of non-rights holders not to take part in the utilization of respected resource;
- The regulations should be prevented from over regulation, primarily at the first step of implementation, and not hindering the public from its implementation. Therefore, it should start regulating simple arrangement and further with complex manner.
- The regulations should guarrantee tenurial rights for long time period and in continuous manner.
- The regulations should prevent and limit the emergence of high transaction costs.
- The regulations should prevent conflict between regulations to happen. Accordingly, recognition on certain rights shall not be overruled by other regulation.

Governance system in the context of this conceptual framework means decision processes both at the policy making and its implementation. Various regulations affect the system, as well as both formal and informal practices and power balance among parties. Good governance ideally may be achieved as stakeholders have common understanding on certain goal to be attained. How the system is implemented has become an essential factor in attaining sustainable management of natural resources.

The three components of tenure rights, regulation system and governance should work in harmony to enable capacity building, both for society in general as well as for government. The capacity building for society may include the components of increasing skills and knowledge in managing natural resource. While for the government, capacity building shall include shift in paradigm from its central role toward facilitation in the development processes.

Chapter IV
CONCLUSION AND RECOMMENDATION

Sandalwood has long become an icon for the province of East Nusa Tenggara. The plant has been managed by local government and it able to contribute significantly in economic development of the region. Recent development shows how population of sandalwood has decreased over time and it even fear to extinct.

The study shows existing regulations on sandalwood provides almost no benefits for local people and its hardly accomodate local needs. The government tends to use its authority to concur all sandalwood plantations in the province. Such regulations left local people with traumatic memories and provide dis-incentive for motivating people to conserve sandalwood.

During the early stage of decentralization, improvement has been made on several regulations. That include among others by decentralising authority to manage sandalwood at the district level. At the implementation, local governments differ in its strategy to encourage motivation of local people. In some of the districts unclear rights exist and hence its stimulate the status quo situation. But, other districts have accomodate rights of the local people on the sandalwood trees, but it remains applying strict control on the cultivation system. Such dual regulation compounded by inadequate of level of understanding constraint local participation.

Local community at the province of ENT in general has a positive perception on sandalwood cultivation. The people has long been bounded with historical relationships with the species, and that serves as important capital to sustain the plant. Participation of local people will easily be encouraged if efforts to conserve sandalwood provide them with economic incentives. High demand from the market upon variety products of sandalwood and high market prices both domestically and globally in fact may be used as supporting factors. Nevertheless, such situation shall be supported by regulations that eliminate high transaction costs.

In order to strengthen participation of local people in sustaining sandalwood in the region, this study proposes several strategies to be executed by the government both at the district and provincial levels. In short time, existing regulations need to be revised toward rules that accomodating needs of local people. These people should have independency in cultivating the sandalwood, including in marketting the products to make it economically attractive.

The challenges in sustaining sandalwood primarily is in encouraging and building trust at local community and among stakeholders involved. It is not merely on technical matters, such as building procedures for plantation and controlling the plantations. The revised regulations therefore should motivate sense of belonging and strengthen it accordingly. Such approach will become an effective way to disseminate and socialize new regulations on managing the sandalwood.

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ANNEXES

ANNEXES 1

Example of questionnaires used in the study to guide interviews with key informants during rapid appraisal completed by the Team 1.

ITTO Project No. PD 459/07 (F) Rev.1

Improving The Enabling Conditions For Sustainable Management of Sandalwood Forest Resources In East Nusa Tenggara (ENT) Indonesia

INTERVIEW WITH KEY INFORMANTS

1. **Respondent Identity:**
   - 1. 1. Name :
   - 1. 2. Age :
   - 1. 3. Occupation :
   - 1. 4. Role in the occupation :
   - 1. 5. Address :
   - 1. 6. Respondent code :
   - 1. 7. Date of interview :
   - 1. 8. Enumerator :

2. **Respondent involvement in problem arena:**

   2. 1. What is your relation with sandalwood resource sustainability in the ENT province?

   2. 2. Give your scores (between 1 and 5) to the importance of sandalwood resource sustainability in the ENT province according to your opinion!
      a. Score = 1: I think the issue of sandalwood resource sustainability is not important.
      b. Score = 5: I think the issue of sandalwood resource sustainability is very important.
      c. Your answer:
      d. Reasons of your answer:

   2. 3. To your opinion, who are the parties/stakeholders that have high interests with sandalwood resource sustainability? What are their interests? Give your scores (between 1 and 5) to the importance of sandalwood resource sustainability for them!

   2. 4. What do you think with their influences on sandalwood resource sustainability? Give your scores (between 1 and 5) and explain your reason of your score!

   2. 5. Is there any conflict of interests among the stakeholders? What are the main issues of these conflicts? Give your score to represent the level of conflict among stakeholders (between 1 and 5; 1=conflict is negligible, 5=conflict is very significant).

3. **Respondent's knowledge and perceptions on policies applied to sandalwood resources**

   3. 1. Do you know policies that applied on sandalwood resources? Could you state those policies!

   3. 2. From which sources did you get the information related with those policies?

   3. 3. What do you think with the objectives of those policies? Please explain for each policy that you had understood.

   3. 4. Do you think those policies will reach the objectives? What are the reasons?

   3. 5. Do you think sandalwood should be regulated by government? Why?

   3. 6. Which aspects in the current regulation on sandalwood that should be eliminated or modified? Why?

   3. 7. What are the impacts of those regulations on sandalwood based on your opinions? Please explain for each regulation that you had knowledge.

   3. 8. How do you think the sandalwood resource should be managed or regulated? Please explain on the aspects of cultivation/production and marketing.

   3. 9. Did you feel be involved or consulted in the formulation of policies that applied to sandalwood resources?

   3. 10. Do you want to be involved in the policy formulation on sandalwood resources?

4. **People motivation on sandalwood maintenance or plantations (questions dedicated for local people or community groups)**

   4. 1. Did you do any activities related with sandalwood maintenance or plantation?

      e. I did but no more
      f. I am doing it
      g. I never been done

   4. 2. What are your main reasons for doing or not doing activities related with sandalwood maintenance or plantations?

   4. 3. From the economical point of view, what do you think farming activities on sandalwood as compared to other farming activities? Could you provide rank of priorities of your farming activities!

   4. 4. From the economical point of view, what do you think the economic benefit of sandalwood plantation as compared with other timber species, such as teak, mahogany and sengon? Could you provide the rank of importance of the timber species in your farming system!

   4. 5. Based on your experiences, how much is the contribution of sandalwood in the household income structure?

   4. 6. What are the main obstacles to your participation on sandalwood maintenance or cultivation efforts?

5. **Contribution of sandalwood in the regional economy**

(The questions are dedicated for government institutions/staffs and could be verified by secondary data from the related agencies)

5. 1. What is the sandalwood production in the ENT province and the selected districts?

5. 2. How much is the share of sandalwood sale to the regional income?

5. 3. How much government allocated budget to support the activities on sandalwood maintenance and development? When possible please provide detail data on activities such as inventory, planting, maintenance, community facilitation and sandalwood harvesting.

5. 4. What is the allocation system of revenue from sandalwood sales?

Table 1. Stakeholders of sandalwood resources and their background

No.	Stakeholders	Kind of interests	Score (the importance of interests)	Score (the influence of stakeholders)	Reasons for the scores
A	Government: 1. 2.				
B	Private companies: 1. 2.				
C	NGO: 1. 2.				
D	Community leaders: 1. 2.				
E	Other (please state the professions): 1. 2.				

Table 2. Conflict of interest among stakeholders related with sandalwood resources

Stakeholders	1	2	3
1	Score and the issues of conflicts	Score and the issues of conflicts	Score and the issues of conflicts
2	Score and the issues of conflicts	Score and the issues of conflicts	Score and the issues of conflicts
3	Score and the issues of conflicts	Score and the issues of conflicts	Score and the issues of conflicts

ANNEXES 2

Some pictures of research activities.

Figure 1.
Sandalwood Seed Nursery by local people at TTS

Figure 2.
Communities collect sandalwood seeds in the district east flores

Figure 3.
Team 1 with one group of people Alor

Figure 4.
Meeting with farmers Village East Solor Lewogeka District, East Flores Regency

Figure 5.
Plants sandalwood (age 7-8 years) belonging to Johannes, Village Minggit So, East Sumba

Figure 6.
Team 2 was interviewing the owner of sandalwood trees in TTS

Figure 7.
Service survey team and forestry plantations TTS conducting data collection sandalwood tree

Figure 8.
Community to be involved in inventory at TTS

Figure 9.
Tim ITTO melaporkan hasil studi kepada Bapak Gubernur provinsi NTT

Figure 10.
Consultation outcome study in Bogor, 9 April 2010

Figure 11.
Consultation results of studies at the provincial level in Kupang, 22 April 2010

Figure 12.
International consultant Dr. Don Gilmour deliver research results in TTS at the consultation meeting in Kupang

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Improving the Enabling Conditions for Sustainable Management of Sandalwood Forest Resources in East Nusa Tenggara Province Indonesia

TRAVELING REPORT FROM ALOR DISTRICT

23-27 February 2010

Prepared by:

1. Dede Rohadi (Team Leader of ITTO Consultative Team)
2. Rudi Lismono (The Head of Division, Forest and Land Rehabilitation, Provincial Forestry Office, East Nusa Tenggara)
3. Yoseph Plaituha (Staff, Provincial Forestry office, East Nusa Tenggara)

The objective:

1. Explaining data collecting methodology to Kupang Consultative Team.
2. Collecting secondary data and information which relates to Sandalwood management in Alor District of East Nusa Tenggara province.
3. Field visit to Alor district.
4. Interviews with resource person in Alor district.

Travel schedule:

No.	Day/Date	Activities	Venue	Source person
1	Tuesday, 23 February 2010	• Traveling Jakarta-Kupang • Coaching on data collecting method.	• Jakarta • Provincial Forestry office Kupang	• Kupang consultative Team (15 Team members) • Project secretariat-Kupang
2	Wednesday, 24 February 2010	• Traveling Kupang-Kalabahi/Alor • Visit to Alor district forestry office. • Visit to Sandalwood planting location at Omtel conservation area, Teluk Mutiara sub district	• Alor district forestry office • Omtel	• Buce Huan (The Head of Alor district forestry office) • John Kewatung (The Head of Division of forest planning, Alor district forestry office)
3	Thursday, 25 February 2010	• Visit to West Wolwal village, Southwest Alor • Interview with Mr. Jacob Moca	• West Wolwal village • Nusa Kenari Indah Hotel, Kalabahi	• Mr. Rahman • Mr. Jacob Moca (the Founder of farmer group called Ohedoy, Omtel village)
4	Friday, 26 February 2010	• Visit to Maokoro village, East Alor sub district	• Maokoro village	• Mr. Sholeh and elders who have planted Sandalwood.
5	Saturday, 27 February 2010	Traveling: Alor-Kupang-Jakarta		

Note:

1. **Explaining data collecting method**
2. **Visit to Sandalwood location in Omtel conservation area, Teluk Mutiara sub district.**
   a. Visit to Omtel conservation area accompanied by Mr. Buce Huan (The Head of Alor district forestry office) and Mr. John Kewatung (the Head of division, forest planning – Alor district forestry office).

b. Omtel conservation area covers some villages. Villages within Omtel conservation area have been enclaves or excluded from the state forest status. The enclave covers settlements and agrarian lands. Enclave is approved through the verification by the district forestry office.

c. In this conservation area, a Sandalwood seed garden has been established. The total area in Adang Buom village of Teluk Mutiara sub district – Alor district (see figure 1 and 2) is 5,4 hectares. The seed garden was established in 1986 by the Forest Plantation Seedling Centre (BPTH) Bali and Nusa Tenggara in cooperation with Alor district forestry office. The source of seedling is South Timor Tengah (TTS) district.

d. Sandalwood planting (40 hectares) funded by regreening project has been also established in 1987. Sandalwood has been planted together with candlenut.

e. In 2006, another location on the top of Omtel conservation area has been initiated to be planted by the Minister of Forestry: Mr. MS Kaban. The plantation grows well. The dead trees are replaced by mahogany. In addition, young Sandalwood of 1 or two years old are also found in the location. Strong wind becomes a threat for tree survival. However, there is an argument that local people kill trees for agricultural lands. Field survey indicated the lack of maintenance in the area. Grass covers the area. Maintenance is only done within the strips. Trees under shading survive better compared those on the open area. The insects often found are snail-like insects. Another disease is mould, which cause black stain.

f. During planting period in 2006, 6 month-old seedlings were planted. Observation showed the growth difference among the stands as the result of various seedling sources. According to the information from a Forestry Research Centre staff (Mr. Rudi), slow growth rate was caused by inbreeding seedling source (only from one tree). This results in poor seedling quality at certain stages.

g. In the recent years, Alor district forestry office also distributed Sandalwood seedlings to the communities. Total seedlings distributed to the communities to be planted on their private lands were 23,000 seedlings. Seedlings were also partly distributed to Omtel area.

h. Regarding to the management planning of Sandalwood funded by regreening project, Mr. Buce mentioned that there is no clear future planning. The only action is continuing protect Omtel area. It is due to a relatively small number of Sandalwood trees and young Sandalwood trees. Another reason is unavailability of data on Sandalwood potential due to the absence of Sandalwood inventory in Alor. After the Regional Regulation regarding the abolishment of Regional Regulation No. 16/1986 was issued in East Nusa Tenggara, regulation on Sandalwood utilization owned by the communities has not been issued. The regulation used is the regulation regarding timber utilization produced from People Forest (Hutan Rakyat). Communities are only requested to inform the Village Head when they want to cut down the trees. Based on the information from the Village Head, district forestry office will verify the stands which will be cut and the documents required to carry timber (Letter informing the timber identity). For the marketing procedure, Alor district adopts the procedure used by the East Nusa Tenggara province.

i. According to Mr. Rudi, timber produced from regreening project can be utilized. It is regulated by the Ministry of Forestry regulation No. 13 regarding the utilization of timber produced from regreening project. The regulation is important for the management of timber produced from regreening project (HTHR) such as: Sandalwood and Teak which are abundant. Therefore, the utilization of HTHR produce can be done without necessarily waiting for the regulation of KPHP (Production Forest Management Unit) to be issued.

j. To accelerate ITTO project implementation in Alor, Mr. Buce suggested that a Field Coordinator for the ITTO project should be assigned in each selected district. The Field Coordinator maybe based on the Alor district forestry office. This suggestion maybe discussed during the Project Steering Committee meeting.

3. Visit to West Wolwal village, South West Alor sub district

a. An interview with Mr. Rahman was conducted at Mr. Rahman's house in West Wolwal village, Southwest Alor sub district on Thursday, 25 February 2010. Mr. Rahman is the farmer group leader in the village. Mr. Rudi has two wives and they stay together in the same house. Mr. Rahman have 5 children from the first wife. The eldest daughter was married, the second one goes to the university in Jakarta, the third one is studying at a Pesantren in Flores, the fourth one is studying at a pesantren in Bogor (Pondok Pesantren Al-Ahwain). The youngest one is studying at a Junior High School. From the second wife, Mr. Rahman has a daughter. She has finished the Junior High School. Mr. Rahman had been the Village Head for 6 months. He replaced the Village Head who proposed himself as a member of Regional People Representative. However, the man became the Village Head again after he failed to be a member of Regional People Representative.

b. Since 1996, Mr. Rahman has managed his five-hectare land. He mentioned 12 tree species planted in his land i.e. cashew (*Anacardium occidentale*), candlenut (*Aleurites moluccana*), teak (*Tectona grandis*), mahogany (*Swietenia mahogany*),white teak (*Gmelina arborea*), tamarind (*Tamarindus indica*), walnut (*Canarium sp.*), breadfruit (*Artocarpus communis*), jathropa (*Jathropa curcas*) and Sandalwood (*Santalum album*). In addition, Mr. Rahman manages a two-hectare land to plant arable crops. The main crops are maize and rice. The land has been certified through Prona program.

c. Mr. Rahman has 200 Sandalwood trees which have been planted in 2005 with funding from Alor district forestry office project. The trees grow well and have reached 7 m height. Mr. Rahman is a beginner who plants Sandalwood in the village. Sandalwood is planted as a saving for his children and grandchildren. He was inspired by the teak farmers in Java who are able to go to Mecca by selling teakwood.

d. Mr. Rahman's knowledge on Sandalwood started when he joined Nusa Tenggara project sponsored by the German Government.Before the project started, Mr. Rahman had no knowledge about Sandalwood. Through this project, each farmer group was given 100 Sandalwood seedlings. Besides, the farmer group member might buy seedlings of IDR 1000

each. Mr. Rahman bought 20 seedlings, but only 3 seedlings were alive. Since 2005, Mr. Rahman was informed about Sandalwood cultivation by the forestry extension workers. He said that the forestry extension workers motivated him to plant Sandalwood. He also said that he praised the Lord because of so much rain (rainy season starts in November and ends in March), so he can plant optimally for the future. Mr. Rahman planted Sandalwood based on the suggestion from the forestry extension workers. Although he is not sure about the economic prospect of Sandalwood, he is sure that Sandalwood will give benefit in the future. His view becomes a good asset to support Sandalwood planting in Alor. According to him, Alor is suitable for Sandalwood. In February, Sandalwood starts to fruit. Besides Sandalwood, teak (in particular native seedlings), mahogany, and white teak are also suitable to be planted in Alor. He said that capability of Sandalwood to adapt to the environment is various and Sandalwood requires a long period of rainy season.

e. Wolwal village originally consisted of 4 small villages. They were: West Wolwal, Central Wolwal, South Wolwal, and Main Wolwal. Every village separated each other and became autonomous. Sandalwood only progresses in West Wolwal. Previously, candlenut dominated Wolwal. They have grown old. According to Mr.Buce, candlenut production in Alor reached 6,000 tons per year. There are around 10 candlenut farmers in Alor. The price of candlenut is IDR 8,000 per kilo. Another potential commodity is cashew with total production of 2,000 tons per year. The price is IDR 6,000 per kilo. In addition, coffee provides income for communities although it is not significant. It currently supplies local coffee manufacturers. Coconut is not utilized optimally due to a very cheap price. In the past, communities relied on coconut oil. However, they started to rely on industrial-produced coconut oil because of its reasonable price. Sandalwood, in particular is found in West Wolwal. Sandalwood is also found in South Wolwal, but the locations are very remote (on the mountains).

f. There are 96 households consisting of 470 individuals. The total households joining Mr.Rahman group are 25 households. From the 25 households, 10 farmers have actively planted trees. According to Mr.Rahman, local livelihood is mostly dependent on land. Many are also involved in pearl farming as labourers (a Japanese company) with salary of IDR 40,000 per day. Land management is almost done collectively.

g. Marketing agricultural products is easy. Buyers come to the village directly. They usually buy candlenut, tamarind, and walnut. There are only 5-6 sellers in the village. Maize and rice are rarely sold, but for own consumption. During harvesting time, over supply of production is kept in barns owned by the family. The buyers of the commodities are not significant because there are many suppliers closer to city. Local maize is preferred than the exotic one by communities because of its durability. Exotic maize is usually sold soon after harvesting.

h. One of the problems found in the village is land ownership. Most of lands in the village are owned by the village head. The village head is a descendent of a rich family in the past who owned almost all of the lands in the village. The lands are managed by their relatives who live in the village at present. There are 6 tribes in the villages. To anticipate land-related problems in the future, The Head of district forestry office suggested lands to be divided into parcels of lands and given to the family members for the management.

i. One of Sandalwood location which is managed by Mr.Rahman lies behind Lola primary school. In that area, teak of 12 year old planted with regreening funding can be found. The spacing is 1.5 X 1.5 m. Other tree species are walnut (started to be planted), mahogany, teak, breadfruit, and jathropa. Mahogany grows faster compared to Sandalwood. Mr.Rahman plants the area with woody plants to improve hydrology system and to expect water spring to emerge.

4. Interview note with Mr.Jacob Moca

a. An interview was conducted on 25 February 2010. Mr. Jacob Moca is the leader of farmer group called Ohedoy in Omtel village, Alor. There are 30 households joining the group. Mr.Jacob Moca was selected as a People Representative member from Golkar party in 1971. From 1973 to 1984, he joined PDI party. He retired as a primary school teacher. He has 4 children. The eldest kid works as a farmer. The second one holds a bachelor degree in english and teaches in a junior high school. The third one finished economic high school. The youngest one graduated from the computer science, but he is working as a farmer. He ever met the Minister of Forestry (Mr.Kaban) and East Nusa Tenggara Governor.

b. Mr.Jacob formed Ohedoy farmer group, the only farmer group in Omtel. The farmer group is self-funded. Total of 30 households from all parts of the village joined the group. The farmer group has established a CV called Ohedoy. Mr.Jacob expected to work with Alor district forestry office to manage forest plantation in Omtel forest. Several requests to the Governor were the construction of 100 units of rainwater ponds in Omtel forest and the water pumps. Mr.Jacob informed that international experts ever mentioned that the construction of water dam in Omtel is able to fulfill water needs in Alor island.

c. Forest area in Omtel was overlapped with villages in the past. In 1959, in the same time of the development of Alor district forestry office, the area is designated as state forestland. The farmer group initiated communities' resettlement out from the state forestland.

d. Omtel forest area was previously bare. Grassland was burnt to hunt deer and wild pigs. In the state forestland, teak planted by communities can be found.

e. During multi-purpose regreening project in 1983-1984, candlenut, coconut, jackfruit, and paraserianthes (MPTSs) were planted. It was a district forestry office project. In 1985/1986, Sandalwood started to be planted. Sandalwood was previously absent in the conservation area. Communities were not familiar with Sandalwood.

f. People's income from agriculture cannot support their livelihoods. They continue to cultivate the land, however and they use to live without sufficient income. Mr. Jacob does not agree with "rice for poor people" program (raskin) with the reason that the program educates people to be lazy. Mr. Jacob has chickens, plants maize (March-April) and cassava. He also plants mangrove to rehabilitate seashore.

g. There are communities in Omtel who live outside the conservation area (but within the watershed area). Some cultivated lands are partly within the conservation area, while some cultivated lands are entirely within the conservation area. Mr.Jacob planted candlenut for around 20 hectares within the state forestland. He also planted cloves.

h. Sandalwood seedlings are supplied from the district forestry office. Planting was done by the farmer group.

i. Mr.Jacob expected that the government officers are willing to understand the communities. The language used should be simple. The involvement of the elders is expected to give a positive outcome.

j. Candlenut planted within the conservation area is owned by communities. Communities have to deserve the harvest, but they have to pay the tax. In practice, forest officers invent the produce and decide the amount of tax to be paid. Timber cutting has not been decided yet. Mr. Jacob expected that Sandalwood provides income for communities. If Sandalwood cannot provide income for communities, the trees' survival cannot be expected.

5. Visit to Maokoro village, East Alor sub district

a. A visit to Maokoro village of East Alor sub district took place on Friday, 26 February 2010. There are 200 households of total 400 to 500 individuals. The village location is adjacent to the coast. Some villagers are fishermen. Land size owned by each household never been invented. However, it is estimated that each household has a relatively large size of land.

b. In the village, an interview with Mr. Soleh and several friends were conducted. They were accompanied by the village head of Maokoro (Mr.?). He accompanied Alor Team from his home in Kalabahi. Mr. Soleh is an elder in his village. He is often involved in activities done by Alor district forestry office. Mr.Soleh ever received 6,000 teak seedlings in 2008 and 2009 from Alor district forestry office. The seedlings have been planted on the Barren Hill outside the state forestland. The saplings are tended this year. Mr. Soleh promised that after the barren hill has been covered by teak and Sandalwood, the hill will be named "Buce Hill" (Sandalwood flower), which is also the name of Alor district forestry office.

c. In the area, a local species (eucalyptus with white bark) can be found. There is also red wood (first class category) with a slow growth rate. There are also the second class wood category such as Nitas and wild Teak (the wood colour is yellow). Sandalwood is suggested to be planted together with candlenut, so communities have commitment to keep Sandalwood. Candlenut has provided income for communities. Along the coastline, guava and mahogany are planted.

d. Sandalwood has been cultivated in Barren Hill. Mr. Soleh has planted around 10 thousand trees on his 10-hectare private land. He wanted to cut down the trees, but he did not dare to do it since he was ever caught because of cutting trees. He ever sold Sandalwood partly planted within the state forestland. Another issue is forest boundary. Unclear forest boundary may result in conflicts between forest officers and communities. According to Mr. John, there was inaccuracy in forest demarcation. However, there was a compromise. Sandalwood selling price was IDR 10,000 per kilo. He ever sold around 280 kilo. The income was spent for paying school fees for his kids and for buying coffee.

e. Mr. Soleh plants Sandalwood for his own use. Sandalwood does not belong to the government since it was planted by the communities' ancestor. He said that one of his ancestor was dead, tortured by the Japan army because of smuggling Sandalwood seedlings inside her hair. Sandalwood was successfully planted in Barren Hill.

f. The government bought Sandalwood from the communities in the past (IDR 10,000 per kilo) to encourage communities to plant Sandalwood. Sandalwood's pile is not old enough and the actual price is below IDR 10,000. However, the government bought the timber and suggested communities to plant more Sandalwood trees.

g. Sandalwood has provided other benefits besides income. Sandalwood can be burnt and the smoke can be used to prevent communities from diseases. Sandalwood should be planted with crops to claim ownership. Sandalwood has grown old. There are two Sandalwood species: broad-leave and small-leave Sandalwood. Small-leave Sandalwood is strong because it contains more wood porch. Broad-leave Sandalwood contains lesser wood porch. Mr. Soleh owns the trees. No activities have been done. Mr. Soleh has a large size of land. In addition, he has also teak plantation.

h. Mr. Soleh expected that Sandalwood will give benefit to his children in the future. He is not willing to harvest Sandalwood, since he has harvested Sandalwood planted by his parents. "I hope that the Sandalwood I planted will give benefit to my children in the future". The tree species which have been planted are nitas, local teak, white teak (Gmelina) and mahogany. His neighbours have not had any interest yet in planting timber. However, this year, the interest can be expected. Sandalwood owned by Mr. Soleh has produced seeds. Sandalwood seed price is IDR 25,000 per kilo. The seeds are durable when they are well packed. Sprouting expectancy is around 60%.

i. According to Mr. Buce, Sandalwood in the area (and also in Alor) is not ready for harvesting due to small percentage of wood porch. Timber administration for Sandalwood selling is similar to other tree species as long as Sandalwood is planted on the private lands. When Sandalwood is planted on state forestland, the management is done by district forestry office.

j. Mr. Soleh is not traumatized with his experience to be jailed when he was found to cut down Sandalwood. The problem was solved cooperatively. Mr. Soleh was only interrogated and the Sandalwood was taken (it was paid as IDR 10,000 per kilo). The Sandalwood was bought by the district forestry office (Mr.Buce) as IDR 2 millions with the permission from the district Head. After the accident, Sandalwood planting was introduced to the community by the district forestry office. According to Mr. Soleh, communities agree with the regulations. In the past, communities cut down Sandalwood illegally as they thought that Sandalwood is owned by the government. Cutting down Sandalwood is considered illegal despite whether it grows on the private lands or not. Cutting down Sandalwood was often done at nights to avoid being caught by the forest guards. At that time, forest guards were considered as the main enemy by the communities. In 1977, people from Makassar started to buy Sandalwood as IDR 750 per kilo. In 1986/1987 the selling price was IDR 7000 per kilo. Mr.Soleh sold 3 tons (IDR 5,000 per kilo).

k. The district forestry office expected that communities cultivate Sandalwood and sell it with a reasonable price i.e. The diameter is large enough and contains a high level of wood porch. In Alor, the exploitation of Sandalwood is not intense. Therefore, the socialization of Sandalwood is not done intensively (except Mr. Soleh who is familiar with Sandalwood selling).

l. In the past, the allocation for Sandalwood harvest was 25% for the communities as the owner and 75% was for the state. However, the proportion has changed now where 75% is for the communities and 25% is for the state. Mr. Soleh thought that the proportion is fair enough. Expecting 100% to be allocated for communities is almost impossible.

m. Mr. Soleh does not cut down the trees anymore. Instead, he let the children to take benefit from the trees in the future. It includes the utilization of teak in the future. He has refused teak buyers 5 or 6 times. He hands over the management of the trees to his children.

n. The price of 1 ton of Sandalwood is approximately equivalent to 5-6 m3 of redwood. There is also a fragrant local wood. The local name is Hamajang wood or Lalia (an Alor name). Mr. Soleh has around 3000 seedlings of Hamajang wood.

o. Regulation regarding Sandalwood which is planted on private lands will be issued. Like other timber species, SKAU (Letters informing timber identity) is applied to Sandalwood. The local government receives tax which is decided by the district Head. To make sure that both the quality and the legality of timber fulfill the requirement, every lumberjack should report the cutting plan. Then, the forestry staff will check the location and evaluate the trees. Issues which may emerge relates to the cost for on-site survey and evaluation. Mr. Buce plans to prepare regulations on Sandalwood to make everything clear.

p. Mr. Buce plans to invent Sandalwood potential both on state forestland and private lands for exploitation objective.

6. Other notes

a. Sandalwood planting activities in Alor district have been done since 2 years ago (funded by the district government funding). In the previous years, planting activities were carried out with provincial government and deconcentration funding. Those activities were carried out based on the targeted size. For example: in 2006, 150 hectares had been already planted.

b. In 2010, provincial forestry office plans to distribute 450,000 Sandalwood seedlings to support Sandalwood planting program. The program is funded by the provincial government funding and distributed to the districts.

c. There are also Sandalwood seedlings activities (25,000 seedlings) funded by ACIAR -Forestry research centre in Yokyakarta.

d. Planting activities since the PELITA I has been recorded. However, the factual condition is not seriously monitored. As a result, no evidence on the success of planting. Mr. Rudi

suggested that planting activities should be monitored gradually. It starts from village to village. Then, it is followed from sub district to sub district and finally from district to district. A letter from the district Head is therefore required. However, the suggestion has not been realized yet.

e. The district government through the district forestry office has carried out Sandalwood planting activities on state forestland. One of the area is Omtel. In Omtel, seed garden has been established by Bali and Nusa Tenggara seedling centre, In addition, Sandalwood has been planted in the conservation area. Communities are allowed to collect Sandalwood seeds from the Sandalwood stands as the incentive for the communities' commitment in protecting Sandalwood.

f. Communities' interest to plant Sandalwood in Alor has increased. Many people have planted Sandalwood on their private lands. However, no data is available. The planting interest includes planting mahogany, teak, white teak or gmelina, and candlenut. Teak and Sandalwood are favoured by communities.

g. No formal data is available on Sandalwood trade in Alor due to relatively young trees. In addition, there is an unwritten regulation that Sandalwood is prohibited for cutting. There is no wood industry in Alor which can manufacture Sandalwood.

h. Mr. Rudi suggested that Sandalwood inventory can be done together with a regular census.

i. Mr. Buce suggested that the consultative outcome can be used as the guidelines to make regulations on Sandalwood, both at provincial level and district level.

j. Nitas wood (*Streculia foetida*) is also suitable to be planted in Alor. It is a fast growing local tree species and utilized as sawntimber.

Lessons learned and suggestions for the future

Interviews along the journey to Omtel village (seed garden and Sandalwood planting location)

Figure 1. Seed garden in Omtel village

Figure 2. Mould which attacks Sandalwood trees

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Improving the Enabling Conditions for Sustainable Management of Sandalwood Forest Resources in East Nusa Tenggara Province Indonesia

REPORT
FROM TIMOR TENGAH SELATAN DISTRICT

Prepared by:

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Introduction

Sandalwood or Cendana (*Santalum album*), is the forest commodity relied upon in the Province of East Nusa Tenggara (NTT) in general and specifically in the District of Timor Tengah Selatan or South Central Timor (TTS). It was cited in the history notes of Ormelling (1955) about the reliability of sandalwood as the prime commodity since the beginning of the first century. Sandalwood grows wild, covering the land area of Timor Island (Jan H van Linschoten, 1596 quoted by Ormelling, 1955).

Notes that sandalwood grows wild covering the land area stressed the fact that this commodity is actually publicly owned which utilization ought to be used for the greatest benefit of the people's welfare. However, from the very beginning of its history, sandalwood trade has been co-opted with those in power as can be seen from the various formal as well as informal policies and regulations. This has been ongoing for centuries until the end of the New Order in year 1997. Lately, when the population of sandalwood is signaled to be drastically reduced, it is the policy aspect that was presumed to be the cause. It is this hypothesis that is tested in this investigation.

Method

Time and Location

Investigation was done in the District of TTS during the months of February and May, 2010 in some sample villages spread in several Sub-Districts.

Method of Observation

The investigation is qualitative by using technical analysis on policies, which is a study technique to understand means and actions to overcome certain obstructions through decision, strategy, planning and its field implementation (Djogo *et al*, 2003). The method of policy analysis adopted the Runhaar et al (2005) method which divides investigative activities into three stages which are:

1) ***Content analysis***. In this stage, all historical policy notes from time to time on sandalwood is analyzed. Some notes on history are also used as input to the analysis;
2) ***Stakeholder analysis***. In this stage, primary data are collected as a result of interview and direct discussion in a Focused Group Discussion (FGD) with stakeholders from the community or agricultural group, NGO group, sandalwood traders group and government groups;
3) ***Discourse analysis***. In this stage, findings from the first and second stages are combined as the basis for conclusive decision.

Questions for Investigation

As guidance in doing analysis, this investigation applies five questions or investigative preposition, which are:

1) Are existing policies on the sandalwood management adequate to accommodate attention to the need of the local communities?
2) How does existing policies have impact on the lives of the local communities?
3) How is the perception of local communities on existing policies?
4) What is the available economic incentive for local communities involved in the effort to plant or manage sandalwood?

5) What policy and economic incentives interventions which need to be developed to optimize the local community participation in the effort to preserve sandalwood?

Elaborations about investigative questions in the form of guidelines during investigative interviews are as follows:

Interview Guidelines

1. Respondent Identity:

1. 1. Name :
1. 2. Age :
1. 3. Profession :
1. 4. Position in profession :
1. 5. Address :
1. 6. Code of Respondent :
1. 7. Date of Interview :
1. 8. Enumerator :

2. Involvement of respondent in the arena of disturbance:

2. 1. What is your relationship with the preservation of sandalwood in the NTT province?
2. 2. Give a score between 1 and 5 on the importance of the preservation of sandalwood in the NTT province according to you!
    a. Score = 1: According to me, the preservation of sandalwood is not an important issue.
    b. Score = 5: According to me sandalwood is very important to be preserved.
    c. Your answer:
    d. Reason for your answer:
2. 3. According to you, who are the stakeholders in the preservation of sandalwood? What are their interests? Give a score from 1 to 5 for the level of interests of the stakeholders on the preservation of the sandalwood resource according to you!
2. 4. According to you, how is the level of influence of the said stakeholders on the effort of preserving the sandalwood plant resource? Give a ranking with scores from 1 to 5 and provide your reason for the scores!

Answer to questions 2.1 and 2.4 is compiled in Table 1.

Table 1. Sandalwood stakeholders and their background

No.	Stakeholder	Form of interest	TP score	PP score	PP score reason
A	Government: 1. 2.				
B	Private/ Business/ Industry: 1. 2.				
C	NGO: 1. 2.				
D	Community Elder: 1. 2.				
E	Others (cite profession): 1. 2.				

2. 5. Is there conflict of interests between stakeholders? What is the most common issue faced in the conflict of interest? Describe the magnitude of the conflict with scores 1 to 5; 1 = very slight, 5 = very intense as can be observed in Table 2.

Table 2. Conflict of interest amongst stakeholders related to sandalwood plant resource

Stakeholders	1	2	3
1	Conflict score and reason for conflict issue	Conflict score and reason for conflict issue	Conflict score and reason for conflict issue
2	Conflict score and reason for conflict issue	Conflict score and reason for conflict issue	Conflict score and reason for conflict issue
3	Conflict score and reason for conflict issue	Conflict score and reason for conflict issue	Conflict score and reason for conflict issue

3. Knowledge and perception of respondent on policies (program and regulation) about sandalwood

3. 1. Are you aware of the policiies (programs and regulations) about sandalwood? Please cite those policies!

3. 2. From where did you get the information of the said policies?

3. 3. According to you, what is the purpose and reason for the existence of those policies? Please elaborate the policies you know.

3. 4. Are you in agreement that those policies will reach its purpose? Please provide a score of 1 to 5, for each policy which you are aware of. What is the reason for your answer?

3. 5. According to you, what aspects of sandalwood plants ought to be regulated by the government? Why?

3. 6. According to you, what aspects of sandalwood plants ought NOT to be regulated by the government or eliminated from the existing regulations? Why?

3. 7. According to you, what are the impacts already felt because of the existence of those regulations? Please elaborate for each policy.

3. 8. How ought the governance of sandalwood be best managed according to you? Please elaborate on aspects of culture and production as well as on aspects of marketing and trade.

3. 9. Do you feel involved or being involved in the formulation and decision making of policies about sandalwood?

3. 10. Do you wish to be involved in the process of formulating policies about sandalwood?

4. Community motivation in the effort to tend or plant sandalwood (specific questions for community groups)

4. 1. Are you tending or planting sandalwood plants?

a. Have done so but not anymore now

b. Still doing it now

c. Never done it

4. 2. Mention the reasons that make you do or not do activity of tending/planting sandalwood?

4. 3. From the aspect of economic benefit, according to you how is the position of sandalwood planting business compared to other businesses? Please make priority scale and explain the types of business being done.

4. 4. From the aspect of economic benefit, according to you how is the position of sandalwood planting business compared to other wood planting business such as teak, mahogany, sengon or other species? Please make priority scale for the various plant species.

4. 5. Based on your experience, how many percent do you predict the income contribution from sandalwood business to the family income structure? (This question will be delved in more detail in the social economic study specifically in the District of TTS. In other districts it is enough to ask the question in general terms only).

4. 6. In your opinion, what are the issues which are detrimental to the community participation in the effort to develop the planting of sandalwood?

5. Sandalwood contribution to the regional economy

(specific questions to government group and verified by statistical data held by each institutions)

5. 1. How is the sandalwood production from each selected District in NTT?

5. 2. How large is the contribution of sandalwood plants on the regional income?

5. 3. How large is the government budget needed to implement the management activities of sandalwood? Please elaborate for each category of activities such as inventory, planting, caring, tending, harvesting, etc.

5. 4. How is the income allocation from the sale of wood of sandalwood?

Result and Evaluation

A. Analysis on Policy Reconstruction

Table 1. Table on Chronology of Policies and Regulations on Sandalwood prior to Independence

No	Policies	Substance/Content	Purpose and Aim	Result	Explanation
1	Regulations from land owners who are in power in Anno Domini	• Regulates barter of sandalwood with ceramics artifacts and other goods • Local people can only exchange sandalwood with other goods such as silver, gold, elephant tusks and ceramics by necessitating them to pay tax to the King.	Regulating trade	Trade monopoly by the nobles	• Sandalwood started to be traded approximately in year 1500 BC. • But in conformity with trade conditions at that time, the trade of sandalwood began to be more intensive around the start of the first century AD. • According to Van Leur (1954) *in* Widyatmika (2007), Indian sailors have reached NTT islands around the first century AD, followed by Chinese sailors and traders from the western part of Indonesia which started the hunt for sandalwood to the Sumba Island. • Ormeling noted *from* Van Leur (1934) that Indian traders reached Timor at the beginning of year Anno Domini. • Ormeling (1955) reported that Chinese and Hindu merchants sought sandalwood as an important aroma in various important religious rituals
2	The rules of the King at year AD	• Arriving trade ships are obliged to provide a gift of beetle nut to the King as a levy for docking and others cost. • The wood of sandalwood was bought at a very cheap price from the locals	Confirmation of monopoly by the noble community	Trade monopoly by the nobles	• Ormeling (1955) noted that Chinese and Arab traders bought sandalwood originating from Timor in year 1000 AD while European traders did it in year 1400 AD. • Ormelling (1955) Noted *from* Groeneveldt (1880) that the Chinese traders noted in their diaries that the island of Timor is an island covered by trees of sandalwood and there was no other produce from the island beside sandalwood. • All profit from sandalwood trade is enjoyed by the King and noble community and all their family members (Widyatmika, 2007).

Table 1. Table on Chronology of Policies and Regulations on Sandalwood prior to Independence					
No	**Policies**	**Substance/Content**	**Purpose and Aim**	**Result**	**Explanation**
3	The rules of the King in the colonial period	• During the reign of the King all sandalwood growing in the forest and private land is owned by the government or local dignitary in power, the populace only get wage for cutting and transport. • As an example of profit sharing is mentioned 5/10 for the King, 2/10 for fetor (subor-dinate of King), 1/10 for temuk-ung (official of the King) and 2/10 for tree feller. • If sandalwood planted in the private land dies because of lack of care, the person is fined by succumbing their cows, pigs, or other livestock. • Also if populace open up a forest area for farming and damage was done to sandal-wood plants , the farmer will be fined.	Regulation in a traditional way confirms ownership and trade system which is centered on the elites.	Trade monopoly by the noble community	• In year 1566, Portuguese traders based in its colony at Lawajong, East Flores, sent sandalwood originating from Timor to Makau (Ormeling, 1955) • Regulation by the King is outside the agreement with the Portuguese
4	General agreement between the King and the Portuguese	• Sandalwood produce growing in the land of the King, 2/3 is for the Portuguese and 1/3 for the King or local dignitary in power	Trade monopoly by Portuguese and the King	Profit is held by the Portuguese and the King	Community regards this as the so called traditional wisdom so much expected to be re-established
5	Regulation by VOC	• Sandalwood trade through local traders at Sumba island entails an agreement that for each piece of wood acquired from the Sultan of Bima residing at the Sumba island or from the local people, a price of 12 *ringgit* for every 16 pieces of wood must be paid (Widyatmika, 2007).	Trade monopoly by VOC and King	Profit in the hands of VOC and King	• A Dutch, Jan H van Linschoten (1596), noted that sandalwood grows wild, covering the island of Timor. • In year 1613, before occupying Batavia, the Dutch has reached Timor to acquire sandalwood. 40 years later, the Dutch took control of Fort Concordia at Kupang by defeating the Portuguese and took over the sandalwood trade. • The Dutch forced the King at Timor to sell sandalwood with a lower price compared to that offered by Portuguese or Chinese traders.

Table 1. Table on Chronology of Policies and Regulations on Sandalwood prior to Independence					
No	**Policies**	**Substance/Content**	**Purpose and Aim**	**Result**	**Explanation**
					• The common people regarded this as the traditional wisdom they long for while Raemburch (1614, cited by Omelling, 1955) noted that sandalwood trade is controlled by the King, fettor, temukung and landlords and the colonial government. The common people can work only as tree feller and transporting felled wood.
6	Regulations during the Netherland East Indies (NEI)	• If somebody destroyed fully grown sandal-wood tree, the person is fined 10 silver guilders; • Illegal sandal-wood tree feller is fined 10 silver guilders and 3 years in prison; • If somebody intentionally burn brushes which causes sandalwood leaves to fall, the person is fined 1 silver guilder and three years in prison; • If somebody is found out to kill sandalwood seedlings in the home garden or in their yard or at their shifting cultivation area, the fine is 5 silver guilders and 6 years in prison; • Sandalwood pilferers is fined 10 silver guilders and 3 years in prison; • If somebody cut a sandalwood tree branch intentionally while they are gardening, the fine is 1 silver guilders and 3 years in prison.	Trade monopoly is held my NEI administrator and the King	Profit is held by the NEI administrator and the King	• Ormeling (1955) noted that traditional rules made up in agreement between the King and the Dutch has successfully suppressed sandalwood destruction felt from the beginning of the 17th century when the use of fire in shifting cultivation culture has become more widespread as well as the increase in number of livestock and the increase of population. • Ormeling also noted that at the time the common people began to realize that they did not get any benefit from the sandalwood trade, they did not care anymore about the destruction occurring on the sandalwood population. • The community regarded this as the traditional wisdom as they meant it to be and long for it to be returned.
7	The effort to re-establish sandal-wood by the Dutch	• In year 1910 – 1915 Chinese traders worked together with the Dutch government which started to worry about the sandalwood population that is drastically decreasing and made effort to	Preventing the decline of sandalwood	Nursery businesses fail because of poorly managed but successful attempt Forestry Service	• Ormling noted that the success of the FS is hindered by the presence of pests on sandalwood plants in gardens sandalwood.

Table 1. Table on Chronology of Policies and Regulations on Sandalwood prior to Independence					
No	**Policies**	**Substance/Content**	**Purpose and Aim**	**Result**	**Explanation**
7	The effort to re-establish sandal-wood by the Dutch	re-establish it by making nurseries in several places. • Forestry Service of the Dutch rule participated by conserving sandalwood by establishing sandalwood plantations and at the same time endeavoring to do four things at the same time: 1. Control cutting 2. Protection from fire and livestock and implementing law and order by involving the police institution 3.Enumeration on left over sandalwood stands 4.Scientific research on artificial cultivation • Enumeration of sandalwood stands is done by a regulation that permit cutting of sandalwood trees having a weight measurement of 37,5 ton or equivalent to 600 *pikul* and to do registration on all sandalwood trees			
8	Condition during the Japanese occupation	• There was almost no attention from the Japanese government on sandalwood		Sandalwood population decreased	
9	Period after inde-pendence	• Management of sandalwood is delegated to the local government		Sandalwood population decreased	

A. Stakeholder Analysis

Date 25-2-2010

Nekemunifeto Village,

Population: 212 KK

Community Opinion:

1. Disappointed about local policy (*prusnyaerda*) on sandalwood in the times past because sandalwood grow naturally on private lands but must be conferred to the local government.
2. The governance and ownership of sandalwood growing naturally or planted on private lands ought to be in the hands of the local population and not under the jurisdiction of the government.
3. Regulations on sandalwood ought to done by the village traditional institution, the local government has only to give guidance on technical and trade aspects only, to control and monitor its marketing distribution properly.
4. The traditional institution will arrange the traditional swearing on sandalwood, with existing traditional sanctions and fines in addition to positive law.
5. The population are still enthusiastic and are ready to plant if the sandalwood seedlings are provided.
6. Training for the community is needed on nursery establishment and seedlings planting due to the fact that plantings which has been done before has a very low rate of success.
7. Importance rating: sandalwood, teak, and mahogany.

Date 26-2-2010:

Binaus Village:

1. Leave seedling production to the people in order there is responsibility to create networking to bring in seedlings from outside.
2. Planting patterns: let people plant first until result is gained, say within two years and government pays them; or help people in providing them with poly bags only, distributed to every head of family.
3. Dilemma faced by the people is difficulty in getting livestock and sandalwood. Even sandalwood that grows in house yards are still being controlled by the government.
4. It is enough for local government to regulate monitoring, control, safeguarding, facilitating, market and administration of sandalwood.
5. Traditional law imposes fine and sanction for persons from the village as well as for migrants who damage sandalwood.
6. There must be socialization to all members of the community on local government rules and traditional law.
7. Community disappointment in the time pass is sandalwood that is forcefully confiscated are not clear on its further processing. Villain is being caught by another villain.
8. Technical training for communities is needed.

Kuale'u Village

Date 27-02-2010

Population 379 Head of Family or KK

1. Hendrik Oematan tends more than 200 sandalwood trees at North Molo.
2. There is a guideline from head of village that every KK plant one sandalwood tree in the front yard of the house. If it is successful, it will be continued to the back yard.
3. There has never been a meeting of traditional institution. Even then communities are asked to just plant first, later on if it is successful, then it will be discussed in the traditional institution.
4. There are 24 village members who owns sandalwood of 10 years and older.

Tetaf Village, Kuatnana Sub-District

Date 27-2-2010

Population: 112 KK, area 10 km^2.

1. People are already aware of the local government rules about sandalwood.
2. In the time passed there are many stealing of sandalwood trees, even those that grows within the home yards. Community is still traumatic about the old regulations from the local authorities of jailing sandalwood owners whose trees are stolen, even when it grows in the home yard. Ironically the villains are still free to roam.
3. Regulations on livestock is included in the traditional agreement but sandalwood is not regulated by traditional law because it is regarded that it has already been regulated by the local government.
4. Attention and technical guidelines from officials are needed. Needed also is partnership with NGOs as long as the NGO has a complete knowledge of the issue.
5. Sandalwood and mahogany are equally important.

Bapak Selan (Community Elder):

1. Very disappointed with "friendly operation" of year 1997.
2. Community has been waiting for the government's promise, population was ready to plant sandalwood.
3. Regulations from the local government are needed to organize the high enthusiasm of the community to plant.
4. Pilfering occurs still quite often and is difficult to overcome by the people.
5. Regulation on sandalwood need to be done properly and clearly in order for the population not to cut sandalwood trees indiscriminately.
6. There ought to be a traditional oath for all villages about sandalwood.
7. Suggested planting pattern: plant first, evaluate after three years for cost and incentives.
8. There is the need to really study and evaluate the impact of fire on sandalwood because it can trigger sandalwood trees pilfering even though the trees are still small.

SUB-DISTRICT MOLLO TENGAH,

Date 25-02-2010

Village: Nekemunifeto; Village Head: Yan Sanam

Area: 26 km^2.

Population: 212 KK

Village Head:

1. Sandalwood has a high economic value that could help the local economy but in reality it does not give benefit to the community because the regulation about sandalwood which does not side with the community.
2. Communities very much expect the availability of sandalwood in the village of Nekemunifeto village, District of TTS through planting and hope for an aid in seedlings.
3. There is an instruction from the District Head on planting sandalwood and has been followed up by planting 500 seedlings most of which, alas, are dead.
4. Technical guidance and training are needed from the forestry institution on how to produce seedlings and planting.

Simon Tasekeb, Traditional and Religious Elder:

1. There was once a regulation about sandalwood faithfully followed by the community, among others if the bark of sandalwood is wounded due to a sharp object, a penalty will be imposed.
2. With the availability of government regulations, it became a fact that sandalwood perished the more because the government have control on sandalwood but do not safeguard except by imposing sanctions from government to tree owners for every tree lost or dead.
3. In reality we wish to sue the government but do not have the courage to do it.

Antonius Sanam:

1. Formerly there was an agreement with community leaders for safeguarding sandalwood. When permits were given to investor and businessmen, communities were unaware and was not involved (similar to what is happening now for *mangan* commodity). It means that community leaders are not partners of the government anymore. This has resulted in the loss of desire from communities to protect sandalwood in their villages.
2. Community leaders still play a role in their villages up to now and government must make community leaders as their partners as a form of respect.
3. Besides government regulations (positive law) the issue must also be regulated through traditional and village rules.
4. Community still wants to develop sandalwood and the need for seedlings must be provided by the forestry institution.

Fredrik Bessie, Educational Elder:

1. In year 1960, monitoring from forestry was excellent, as an example, sandalwood trees were wrapped by banana sheaf so that during weeding of garden the sandalwood is protected. Later, control became lax while the need for sandalwood became more intense causing the pilfering of sandalwood became the main target.
2. At the present time, children in the village do not know sandalwood trees and therefore sandalwood must start to be planted in school yards.
3. Technical help is needed in planting and tending sandalwood trees.
4. Seedling need to be provided.
5. Sandalwood preservation need government regulation that heed local custom.

Yan Sanam:

1. Community plants but others took benefit of the sandalwood tree.
2. Plant first, make regulations later after sandalwood disappear.

Benyamin Topenu:

1. Sandalwood regulation ought to be based on customary law and later confirmed by government regulation.
2. Formulate guidance and training for making sandalwood plantation.
3. Harvesting of sandalwood up to now is done on trees grown naturally and not as the result of plantation. This means that plantation is not successful.

Simon:

1. Harvesting ought to begin with traditional ceremony, showing respect to the traditional law of the various villages in order for communities to feel the responsibility in caring.
2. Perennial crops in favor are: sandalwood, teak and mahogany.

Binaus Village, Sub-District Central Mollo,

Total population: 256 KK

Village Head: Nahor Tasekeb

Village Head:

1. There need to be a compensation for members of community who plant and succeeded to keep the plants alive two to three years. This need to be handled through a village regulation that is preceded by an agreement.
2. Seedlings need to be sought from outside the village since enough seedlings are available.
3. Effort to plant by community members exists but it was not successful. A technical guideline is necessary.

4. Stealing happens quite often by people from outside the village who are guarded by government apparatus.
5. The best sandalwood regulation is one that is done through traditional rules.
6. Planting program in each land (not in the garden) has been intensified. It needs safeguard-ing.
7. Compilation of local government regulation ought to involve community s. Up to now this type of involvement does not exist and head of village is limited in its safeguarding authority in the village level only.
8. District level rulings ought to regulate safeguarding, distribution and pricing.

Welem Nau:

1. Community members still have the intent to plant but are mostly unsuccessful in caring the trees until maturity. The plants die easily.
2. According to community believe, sandalwood is related to nature and therefore before any activity start it need to be initiated with traditional ceremony.

Lukas Otu:

1. Level of theft of sandalwood plant is very high especially at night. Member of communities has had no opportunity to prevent sandalwood theft.
2. The program to plant sandalwood plants in the garden yard is good but there are worries about violent crimes that is life threatening such as was experienced by Pak Abind Lasa by sandalwood thieves.

Bapak Missa:

There need to be a village regulation formulated together among village members while a regulation at the District level by the District Head is also necessary as long as it does not take away the right of individuals to own sandalwood.

Tetaf village, Sub-District Kuatnana.

Area: 12 km^2.

Total population: 1318 KK

Village Head: Marthen Kause

Simon Kause:

1. Sandalwood has decreased because of high theft. The thieves are individuals with strong influence from outside the village helped by some local members of the village.
2. Community is still willing to plant sandalwood.
3. There has been no village regulation about sandalwood while there are regulations for other plants. Thus a village regulation is needed.

Yulius, Chairman of Regional Development Board:

1. Community members are willing to plant sandalwood but only in their yard to safeguard it.
2. Government regulations are only for administration, distribution and pricing. Ownership is regulated by village regulation.

Yermias Kause:

1. Law enforcement for sandalwood thieves has never been thorough. There is a rumor that handling of performer and items of evidence are unclear.
2. In year 1997, in the implementation of friendly operation, there was an order to cut down sandalwood trees. All community members fell sandalwood trees and have quite a lot of money. As the result, number of sandalwood trees decreased to near extinction because small trees were also cut down.

Normalina Kause, a mother in an outlying village A:

1. What is left about sandalwood are only stories and memories.
2. Members of community are willing to plant but high mortality occurred when seedlings are transferred from the poly-bag to planting sites.
3. There is a need for development guideline.

Zet Nesimnasi:

1. Development and control need to be done with government regulations. Ownership ought to be regulated through village ruling involving traditional elders.

Musa Faot:

1. There need to be development guidelines from government institutions and NGOs.
2. Sandalwood has an economic value but communities did not receive any benefit from it.

Kualeu Village, Sub-District Central Molo

Area: 15 km^2.

Total population: 379 KK

Village Head: Dance Kase

Date: 26-2-2010

Village Head:

1. Bapak Hendrik Oematan has around 200 five year olds young sandalwood plants growing in an area of about one ha. He has also some seeds ready to be planted.
2. There are 24 sandalwood trees growing in the yards of community members having reached

the age of about 3 years.

3. Movement to voluntarily plant one sandalwood for every KK by members of communities was done in year 2010.
4. There are seedlings grown by members of community which has reached the average height of 15 – 20 cm, some have even reached 50 cm.

Bapak Nenosaban, Traditional Elder

1. Sandalwood theft is done by local community members as well as from outside.
2. There need to be a village regulation that are mutually agreed.
3. In year 1997, in the friendly operation, large scale felling occurred with price of sandalwood of Rp. 1500,-/kg. Young plants were also cut down.
4. Presently, community members are ready to plant with seedlings bought by their own money.
5. Exemplary garden of 1 ha with a total number of between 400 – 600 trees is made, independently financed by community members (Imanuel Banoet).

Pusu Village, Sub-District of Amanuban Barat

Date: 27-02-2010

Bapak Selan, Community Elder

1. Community members were ready to plant sandalwood in their yards with seedlings provided by the forestry institution as promised. However, the promised seedling never arrived up to today making members of community disappointed.
2. Sandalwood is continually threatened to extinction because of the behavior of local as well outside populace.
3. Sandalwood is controlled by the government but safeguarding is very minimal.
1. There is an irony that if sandalwood plant is lost or stolen, community members must bear the sanction but at the time of harvesting, members of community get nothing.
4. Rule of law must be imposed on those illegal feller but information heard by the common people is handling of the issue is lax and unfinished.
5. The governance of sandalwood in private lands as well as in forest area ought still to be regulated by the government, especially that which relate to distribution, development of plantations, and control. Furthermore, it should be strengthened with village regulations and traditional agreement.
6. The reason for regulating sandalwood through local regulation is for preventing members of community to fell sandalwood trees indiscriminately, also in order to get high sale value, and to attain sustainability.
7. At the present time, community members are urged beforehand to plant sandalwood as a compulsory plant although there ought to be technical guidance from forestry institution. Regulations are made after the common people did the planting.

8. Government must provide incentive for those who plant with their own effort.

In depth interview with Bapak Fobia,
Chairman of the Forum for Traditional Community Empowerment.

Date 27-02-2010

1. Until year 1925, sandalwood is protected by traditional right.
2. The Dutch took over in 1928.
3. Formerly kitchen utensils such as spoon and *tirus* of Timorese were made of sandalwood.
4. Sandalwood started to become a trade commodity at the time it was bartered with metal tools brought by the Chinese traders because they were attracted by the aroma of the sandalwood. This became an ordinance of the King of Liurai, Belu to minor kings in the meeting at Wehali.
5. People from Java and Bali landed at Oekusi and bartered ceramics with sandalwood.
6. As a result, the use of utensils made of sandalwood is replaced with ceramics and metal. Barter occurred more often.
7. Sandalwood was called *"haumeni"* originating from the word *"hau fanteni"* meaning wood with aroma.
8. 70 million years ago the island of Timor appears from the sea floor of the South Banda sea (Prof. Dr. Ir. Yan Sopaheluwakan). Sandalwood originated from Fiji, Aden island and Africa.
9. The Lim ancestry line (the first to do barter on sandalwood with the Timorese, together with John), has now reached the 35th descendant.
10. In 1925, the Dutch took over all power from the Portuguese including the sandalwood trade in 1928 based on decision made in 1927. The voluminous archives on the island of Timor is preserved in the Netherlands (30 m long and 10 m high).
11. Until year 1948 sandalwood export from Timor reached a volume of 84 tons regulated by the Resident of Timor sent to China through the Makassar harbor.
12. Through Sriwijaya and Malaka, Gujarat traders from India brought Muti Salak and bartered with sandalwood. Muti Salak is no more produced since 1650 in India which was taken over by the British (muti salak = twisting twine).
13. In year 670, sandalwood in Bali originating from Timor was sent to China. King Kubalai Khan made an agreement to procure it.
14. Timor in Latin means fearful. Timor Island means Fearful Island.
15. Pah Tuaf controls all sandalwood and protected by traditional law (Banu Haumeni). The penalty is death by shooting.
16. Three main Kings (Liurai Wehali, Sonbai and Likuu Sain) sat together and decreed regulations to safeguard the environment. The location of the meeting is at North East Timor (TTU) in a place called Nunukeban Faunanlasi meaning "we remember our agreement". They took blood oath by wounding their bodies, mixed the blood with blood from cattle and drank the blood concoction.

Notes on the present condition:

1. Local Regulation 16/86 destroy sandalwood preservation.
2. Existing Local Regulations should be socialized to the people.
3. Some revitalization of agreement is done by Traditional Community Forum.
4. Regulations in the making must be notified to the community to invite inputs before it is being enacted.
5. Moratorium on sandalwood felling.
6. Pest and diseases of sandalwood plants need to be overcome
7. Short term economy, among others with corn crops, ought to be guaranteed to the community.
8. Train the common people in sandalwood seedling production skill.

Practitioner, (Forestry Government official)

Date: 5 March 2010

1. Do not develop sandalwood in a large scale in the area. It will meet failure.
2. According to experience, only 20% of sandalwood plantations facilitated by government institutions are successful in Timor. Still less in Sumba. Alor gave good result. Incompatible in Flores.
3. It is better to develop sandalwood in privately owned land or in house yard. Unit of measurement should not be area but number of trees.
4. If planting is done outside house yard, sylviculture techniques should be applied.
5. There ought to be a center of sandalwood seedlings production which is operated in a collaborative manner with members of community. This seedling center will become the source of seedlings as well as seedlings banks and center for training and research.
6. Inclusion of communities in intensive sylviculture is meant to guarantee sustainability of post project program.
7. Project approach ought not to be used because more often budget time schedule is not in accordance with time schedule for planting and the ecology of the sandalwood plant itself.
8. Responsible institutions about the management of sandalwood are frequently unconnected and separated by sector interest. Responsible institution for planting differs from that which does evaluation.
9. Therefore, it ought to be done by multi sides and independent institutions.
10. Budgeting policy ought to be flexible.
11. There ought to be technical guidelines.
12. Planting distance should be a bit wide to give space for growing annual crops in between them in the intercropping (*tumpangsari)* system, necessary for planting food crops.
13. Regulation that enact sandalwood as a Non-Wood-Forest-Produce (HHBK) need to be reviewed because in reality what is cut down is wood.

14. In perception aspect, sandalwood is regarded to be very important to be re-developed and re-vitalized in NTT (East Nusa Tenggara) because it is a rare species, has high economic value and the symbol of NTT region.
15. Regional rulings need to regulate the safeguarding of plantations.
16. Private sector is mostly interested in the trade of seedlings but is less interested in tending plants and pricing.

NGO (EXPERIENCED IN TTS FOR MORE THAN 10 YEARS)

Answer to ITTO Questionnaire

1. Identity of Respondent:

1.1. Name : Allo Tao
1.2. Age : 42 year
1.3. Profession : NGO
1.4. Position in work : Project Officer
1.5. Address : Jl. Ade IrmaII. No. 30.A, Kota Baru Kupang
1.6. Code of Respondent :
1.7. Date of Interview : 12 March 2010
1.8. Ennumerator : L. Michael Riwu Kaho

2. Involvement of Respondent in arena of problem:

2.1. Sandalwood plant is one of the forest species that must be encouraged to be developed by the community to derive economic benefit through the empowerment of communities in the vicinity of forest.

2.2.

a. Score to the answer: 4
b. Reason for answer: sandalwood is one of rare species of plants that has a high economic value. It needs to be preserved for the sake of sustaining the diversity of our flora.

2.3. Table of stakeholders on sandalwood resource and its background

2.4. Table of related stakeholders on sandalwood resource and its background

No.	Stakeholders	Form of Link Up	TP Score	PP Score	Reason for PP score
A.	**Pemerintah**	Responsibility of government to preserve wealth of flora of the country.	5	3	Able to guarantee through regulations which enable efforts of preservation of sandalwood in an area.
B.	**Private Sector/ Business/ Industry**	Can become a business entity most possibly able to guarantee profit sustainability for the business itself.	5	1	Most often, business think only of short term profit so that they think only of how to get sandalwood without caring its sustainability in nature and if sandalwood becomes extinct, they can shift to other type of business.
C.	**Community**	Can give added value to the economies of the community itself.	4	5	Anytime community can interact with sandalwood plants in their living environment, they are the closest and most responsible to care and safeguard the sandalwood plants from destructive activities.

2.5. Table on conflict of interest between stakeholders with sandalwood plant resources

Stakeholders	1	2	3
1. Pemerintah		***1*** Oftentimes business do not oblige to existing policies	***3*** Oftentimes communities do not oblige to existing policies
2. Private Sector/ Business/ Industry	***1*** Policies made by the government are often regarded to be not to the advantage or not to side with business and private sector		***2*** Oftentimes community disregards product quality sold to the private sector or often they also sell false product.
3. Community	***3*** Policies made are often not to the advantage of community	***2*** Businessmen always manipulate the price at the level of community	

3. Knowledge and perception of respondent on policies (program and rules) on sandalwood.

3.1. Only heard about the existence of a local regulation about sandalwood but **is not aware precisely about what the substance of the said regulation**.

4. Community members who have planted sandalwood

4.1 Have experienced planting sandalwood.

4.2 The plant has economic and cultural value

4.3 Not too profitable, but in the long run could provide great benefit.

4.4 Animal husbandry, horticultural plants farming, other enterprises, and sandalwood planting.

4.5 Sandalwood plants less than 5 %

4.6 Unclear ownership of sandalwood plants. Community feels that the sandalwood trees they plant are not owned by them causing their level of participation in helping them grow is very low.

Answer to ITTO Questionnaire

1. Identity of Respondent:

1.1.	Name	: Yeni Fredik Nomeni
1.2.	Age	: 41 th
1.3.	Profession	: NGO
1.4.	Job position	:
1.5.	Address	: Jl. Ade Irma II. No. 30.A, Kota Baru Kupang
1.6.	Respondent's Code	:
1.7.	Date of Interview	: 15 March 2010
1.8.	Ennumerator	: L. Michael Riwu Kaho

5. Involvement of Respondent in arena of problem:

5.1. Sandalwood plant is one species of forest plant which has an economic value and historical value as well that need to preserved

5.2.

a. Score to the answer: 5

b. Reason for answer: sandalwood plant is one of the plant species that is scarce which has an relatively high economic value, cultural value and one of the important species in the biodiversity of plants.

5.3. Table of stakeholders on sandalwood resource and its background

5.4. Table of Link Up with Stakeholders

No.	Stakeholders	Form of Link Up	TP Score	PP Score	Reason for PP score
A.	**Government**	Responsibility of government to govern and regulate the preservation of sandalwood plant.	5	3	Able to guarantee with regulation that enable the effort to preserve sandalwood in a region.
B.	**Private Sector/ Business/ Industry**	To create a business that could become a source of income.	5	1	Businessmen are prone to think about short term profit so that they only think about how to get profit from sandalwood without thinking about the sustainable existence of the wood species.
C.	**Community**	Could give value added to the community economy.	5	5	At any one time communities could interact with sandalwood in their living environment, they are the main actor to take care and safeguard the sandalwood plant.

5.5. Table on conflict of interest among stakeholders on sandalwood plants

Stakeholder's	1	2	3
1. Government		***1*** Sometimes business put importance on the economic benefit only	***3*** Most often common people disregard existing policies
2. Private sector/ Business/Industry	***1*** Policies made by the government oftentimes are regarded to be disadvantageous for business.		***2*** Value of product sold are low
3. Community	***3*** Policies made are oftentimes not to the advantage of communities	***2*** Businessmen always manipulate price at the community level	

1. Knowledge and perception of respondent about policies (program and rules) on sandalwood.

Communities are not aware precisely about existing policies. If there were to be plan for policy formulation on sandalwood, communities ought to participate.

2. Ever plant sandalwood

4.1 Ever plant sandalwood...

4.2 This plant has economic and cultural value

4.3 Not too profitable, but in the long run could give great benefit.

4.4 Animal husbandry, planting of horticultural plants, other enterprise, ..., sandalwood

4.5 Less than 5 %

4.6 Transparency of sandalwood ownership. Community felt that sandalwood they have planted are not owned by them which affect low participation in its maintenance.

<u>Abi and Neke villages, Oenino Sub-District, South East Timor (TTS).</u>

(Processed in January – March 2010)

Area of Abi Village is 1921,1 Ha and Neke Village, 2774,8 Ha. Both villages have the potential to be developed for agriculture and livestock because almost all of the area of both villages are savannah open field. There are two river catchment area (DAS) Benenain and Noeliu passing through these two villages making it potentially viable for planting dry land food crops as well wet paddy field. However, the availability of clean water for people is very limited especially in the dry period. People rely on the supply of clean water from wells dug as deep as 15 – 16 m. The population of the two villages does subsistent horticulture for their daily family need only. Neke and Abi villages has 30 ha of paddy field with 10 ha planted. There is still plenty of land that needs to be utilized. Planting of paddy in the rice fields is done along the river, done twice in the year. Other potential is the planting of dry land rice field of 7 Ha.

Most area in the TTS District, including Sub-District Oenino is dominated by savannah field fit for shepherding livestock. Major livestock in this region are 5754 heads of pigs, followed by 4723 head of Bali cattle, 225 goats and 13 horses. Other livestock owned by the Oenino community is indigenous species of chicken, counting to 10.319 tails (TTS in figure, 2008).

The area is also dominated by trees of coconut, kemiri (candle nut), kapok, mahogany, tamarind, teak and eucalypt. The Sub-District of Oenino (including the villages of Abi and Neke), as an integral part of District of TTS which is known as the source of sandalwood, has now however practically no more sandalwood trees left.

Result of observation on the condition of sandalwood:

1. Formerly there are many sandalwood but is now destroyed or being destroyed because of regulations that are not pro-community.
2. Thefts are rampant and endangers the life of tree owners, therefore members of community are no more interested to plant.
3. The interest to plant still exist with the condition that seedling are provided, technical guidance given and planting done in home yard.
4. New regulations are not exactly known except that there is an instruction from the District Head obliging people to plant sandalwood.
5. Agree to the existence of a local government regulations but there ought to be a traditional oath and village rule that guarantee the ownership of plants by the people.
6. Government must also guarantee the price and marketing of sandalwood products.
7. If local rules are already enacted, effort of socializing the rule must be done.
8. The effort to plant sandalwood must be accompanied by attempt to create and develop business in food crop agriculture and livestock which is the main income of farmer's family.
9. Planting other trees can be done and is not regulated in various ways as for sandalwood.
10. Communities oftentimes are not involved in decision making. Therefore there ought to be a village rule on tree planting and traditional oath.

Kuan Noel Village, Sub-District Fatumnasi.

Date: 5 March 2010

1. As a Timorese, sandalwood is a plant that symbolizes the character of a Timorese.
2. Preservation of sandalwood is very important but there must be a guarantee of safeguarding and the right of ownership as well as marketing.
3. Communities' interest to plant sandalwood by their own initiative was aroused after the District Head Regulation is enacted.
4. Community will do seedlings production with the aid from the village ADD fund.
5. However, experience shows that seedling mortality is high, therefore technical aid is also needed from forestry institution. Technical aid has up to now been practically non-existent.
6. In the time passed, regulation on sandalwood is detrimental to the population at large resulting in the unwillingness of most to care for sandalwood.
7. Thefts occurs very often especially in the forest area. While sandalwood is still available at home yards although it is also often stolen.
8. Local government regulation about sandalwood ought also to regulate safety, marketing and security of ownership of sandalwood trees.

9. It is also important to pay attention to the income of community because benefit from sandalwood can only be acquired after a long time.
10. As the upper reaches of rivers in the catchment area (DAS) of Benenain-Nolemina, an appreciation needs to be considered from the government for the community because they are forest protectors as well as planters of sandalwood.

Recapitulation Analysis on Level of Importance of Sandalwood and Score of Important Influence of Stakeholders

No.	Stakeholders	Form of Link Up	TP Score	PP Score	Reason for PP Score
A.	Government	Responsibility of government to govern and regulate the preservation of the wealth of flora of the country.	5	3	Able to guarantee through regulations that enable the creation of efforts to preserve sandalwood in an area.
B.	Private Sector/ Business/ Industry	Able to become a business entity that is can guarantee the sustainability of profit.	5	1	Quite often businessmen thinks only of short term profit so that they think only about getting profit from sandalwood without caring the availability of sandalwood in nature in a sustain-able manner and if sandalwood is destroyed they can change their business into other commodity.
C.	Community	Could give added value to the economies of the community itself.	5	5	At anytime community member interact with sandalwood plants in the surrounding of their dwelling, they are the closest to the plants and are responsible to take care and safeguard the sandalwood plants from harmful activities. But they are very little involved in the management of sandalwood
D	Community Elder/ Religious Elder (CE/RE)	Could help in the management of sandalwood	5	2	Community still respects traditional and religious values. CE and RE could easily have a positive influence to the community
E	University, NGO, Collaborative Institutions	Could help in planning and control	5	2	Have not been involved in a planned way in the management of sandalwood

Conclusion:

Goodgovernance in the management of sandalwood is still unbalanced. Parties that benefit have not contributed in a maximal manner.

Recapitulation of Conflict Analysis

Stakeholder's	1	2	3
1. Government		***3*** Oftentimes businessmen do not heed policies promulgated by the government	***3*** Oftentimes community do not heed existing policies; work ethics
2.Private Sector / Business/Industry	***3*** Policies made by the government are often regarded as not to the advantage or do not side with business.		***4*** Lack of raw material supply and low sandalwood quality.
3. Community	***5*** 1. Policies made are often not protective to the community. Community elders are as yet to be involved in the public policy of sandalwood. 2. Minimal technical guidelines from the government.	***5*** 1. Businessmen tend to manipulate price at the community level so that economic benefit for communities are not felt but enjoyed only by businessmen. 2. Businessmen do not initiate the process of sandalwood breeding.	

Conclusion:

1. There is enormous conflict between stakeholders.
2. Governance is needed to integrate stakeholders' activities as a conflict resolution.

B. Discourse Analysis / Conclusion

In this part, discourse analysis is done by integrating two previous analysis results with five questions developed at the beginning of investigation.

Question 1:
Are existing rules and regulations in sandalwood management adequate in giving attention to the need of local communities?

Answer: It is not adequate, lack of synchronization, lack of socialization, do not adequately give opportunity to the role of communities, minimal effort in empowerment.

Question 2:
What is the impact of existing policies to the lives of the local communities?

Answer: There is no significant positive impact on the level of welfare, there is a loss of *sense of belonging* to sandalwood, there is a minimum effort for planting, it enrich community ignorance and the tendency to transgress law.

Question 3:
How is the local community perception on existing policies?

Answer: Most are not aware of the existence of changes and are still living in a traumatic situation.

Question 4:
Is there an economic incentive available for local communities involved in the effort to plant or take care of sandalwood tree?

Answer: Not specifically except for the NTT Governor Decision Letter No. 260/SKEP/HK/1995 about stratification of sandalwood sale price in accordance with diameter and wood quality, and the Decision of Head of TTS District through SK No. 8/2002 in adapting sandalwood price related to the increase of price of goods, regarded as an improvement to the NTT Governor's Decision Letter No. 260/SKEP/HK/1995.

Question 5:

What policy intervention and economic incentive must be created to optimize local community participation in the effort to preserve sandalwood plants?

Answer:

1. Intervention must be based on technical aspect: conservation, protection and rehabilitation;
2. Sandalwood policy synchronization from the central to the regional governments, as the implementation of goodgovernance, involving the process of:
   - Revision about sandalwood at the central level, followed by policy and budgeting revision;
   - Review and revision of regional regulations at the provincial as well as district level which is done in a participative manner with stakeholders to guarantee sandalwood ownership in the hands of communities, marketing guarantee and active participation of the private sector group.
   - The implication of sandalwood issue into the Provincial and District long and medium development plan (RPJP/RPJMD) to guarantee a confirmed budget allocation;
   - Intertwining the multistakeholder networking, domestic as well as abroad, for the purpose of financing, data base creation, technical support, community empowerment and building up ability amongst stakeholders in education and training, extension, technical guidance and other matters.
3. Control of sandalwood revitalization covering aspects of monitoring and evaluation on sandalwood population;
4. Incentive for effort in the conservation of mother trees;
5. Build up sandalwood development patterns which is integrated with the short term need of communities and at the same time opening up cooperation amongst sector and sub-sector like agro-forestry and others.

Recommendations

1. Eliminate trauma by doing socialization on regulations and involve communities in decision making process;
2. Review regional regulations to tidy up sandalwood stakeholder relationship.
3. Formulation of regional regulations (*Perda* or *Perkada)* must be comprehensive and participative in nature.
4. There need to be a regulation at the village level (*Perdes*) which accommodates local wisdom as a derivative from *Perda* or *Perkada*;
5. To push the interest of communities for planting sandalwood by creating a management atmosphere including market, safety, fulfillment of community rights and plantation skills commensurate with community need.
6. Involvement of a multi-stakeholder institution is needed in the management of sandalwood.

ITTO PD 459/07 Rev.1 (F)

Improving the Enabling Conditions for Sustainable Management of Sandalwood Forest Resources in East Nusa Tenggara Province Indonesia

FINAL REPORT ON SITE OVERVIEW FROM EAST SUMBA DISTRICT

Waingapu, 18 – 24 March 2010

Prepared by:
Titiek Setyawati

Field Team:
Tyty Chandra
Nikolas Dose
Erick Muskita
Pieter Dethan

I. INTRODUCTION

A. Minutes of Agenda

Team from Jakarta (Titiek Setyawati and Tyty Chandra) arrived from Bali at the Umbu Mehang Kunda airport in Waingapu on 18-03-2010 at noontime and was met by Pak John (Head of District Forestry Office in East Sumba), Nikolas Dose (Niko), Erick Muskita and Pieter Dethan from District Forestry Office. Team members were accompanied to meet Bapak Bupati of East Sumba, Gibeon Bilijora, who was on his way to Kupang. He was happy to welcome and see the sandalwood team from East Sumba and discussed in a very short time on his view regarding the sandalwood issue in his area.

Figure 1. Meeting with Head of the District (Bupati), Gibeon Bilikora at the Umbu Mehang Kunda airport, Waingapu.

Pak Bupati was informed about some of the problems faced by local communities in planting sandalwood in East Sumba, such as long dry season and fires. He confirmed the lack of local regulation at the district level concerning sandalwood. He is also aware on the threat of disappearance of sandalwood from East Sumba if there is no proactive action by government to respond on this issue. As the head of the district he supported the ITTO project to improve the sustainable management of sandalwood in East Nusa Tenggara Province. In particular, he will support any measure to develop local regulation to encourage local communities as well as local government to improve sandalwood potential in this area.

In the afternoon, Pak John discussed with the team on plans for the next two days to visit some sample areas where questionnaire will be distributed for collection of data on the perception of local communities and stakeholders on sandalwood.

B. Visit schedule

Date	Location	Main activities
18-03-2010	Umbu Mehang Kunda airport, Waingapu, East Sumba Sandalwoods Hotel	Arrival from Bali/Jakarta. Meeting with Bupati of East Sumba (Bpk. Gibeon Bilijora) at Umbu Mehang Kunda airport, Waingapu. Internal meeting with Pak Niko, Pak John, Pak Erick and Pieter to set up survey plan (TS and TC) Meeting with resource person (TS)
19-03-2010	Visit Panguha Lodu Sub-District (115 km from Waingapu). Visit villages of Kaliuda, Pamburu, and Kuruwaki Visit Palaka Hembi Village at Pandawai Sub-district	Titiek, Niko, Erick and Pieter carried out survey and interview with local communi-ties, including head of villages.
	Visit Nggaha Oriangu village at Ngadulanggi Sub-Distrrict	Tyty and resource person (Adi Pandarangga) carried out survey and interview with local communities
20-03-2010	Visit Lewa (60 km from Waingapu)	
	Flight to Kupang	In the afternoon, met Michael Riwukaho and Gerson Njurumana, discussed preliminary findings Meeting with Soenarno (Head of BPK Kupang) on sandalwood master plan
21-03-2010	Flight to Jakarta	

Note: TS (Titiek Setyawati), TC (Tyty Chandra)

B. List of visited sites

Sub-district	Villages	Area (GPS Coordinate)	National Team	Short description of site
Pahunga Lodu	Kaliuda		TS, EM, PD, ND	Centre for "*tenun ikat*". The best *tenun ikat* in Sumbawa. This area was once famous due to "*kutu lak*", a tick that lives attached to kesambi trees that oozes a liquid that is made into lacquer.
	Pamburu		TS, EM, PD, ND	Centre for *dalinga* trees, species that has similar characteristic to sandalwood. The head of village has one sandalwood tree with diameter of more than 40 cm.
	Kuruwaki		TS, EM, PD, ND	Villages where people still believe that sandalwood can protect them from evil. Forestry has an area planted by sandalwood since 2005. They grow very well, some of them has dbh approaching 8-9 cm.

Sub-district	Villages	Area (GPS Coordinate)	National Team	Short description of site
Pandawai	Palaka Hembi		TS, EM, PD, ND	Small village of mainly farmer communities. One community leader has sandalwood planted since 1990. The area is a centre for *kesambi* species (*Schleichera oleosa*). Oil from this tree is traded. Water is not as difficult as in other areas.
Nggaha Oriangu	Ngadulanggi		TC and Adi	The village is located about 55 km from Waingapu. During rainy season the village can only be approached by foot or riding a horse. Total population 646 (175 household). Most of them are farmers and cattle rancher. Subsistence agriculture commo-dities consist of cassava and corn. Although it is quite close to the city, the socio-economic condition seems very poor, unlike in the other four visited villages.

Note: TS (Titiek Setyawati), TC (Tyty Chandra), ND (Nico Dose), EM (Erick Muskita), PD (Pieter Dethan)

C. Physical and ecological features

1. Site, Location and Description:

a. ***Site and Location***

Field visit to the sample location in East Sumba by the national consultant was carried out during 18 – 24 March 2010. The selected sample sites are located within the District of East Sumba. This selection was made based on the distribution and potential of the remaining sandalwood as well as report recorded from resource person in this area. The condition for sampling site location within ES district is listed in the table below:

Table 1. Condition of sandalwood in some selected sites based on survey during visit to East Sumba (interview and team survey March 2010).

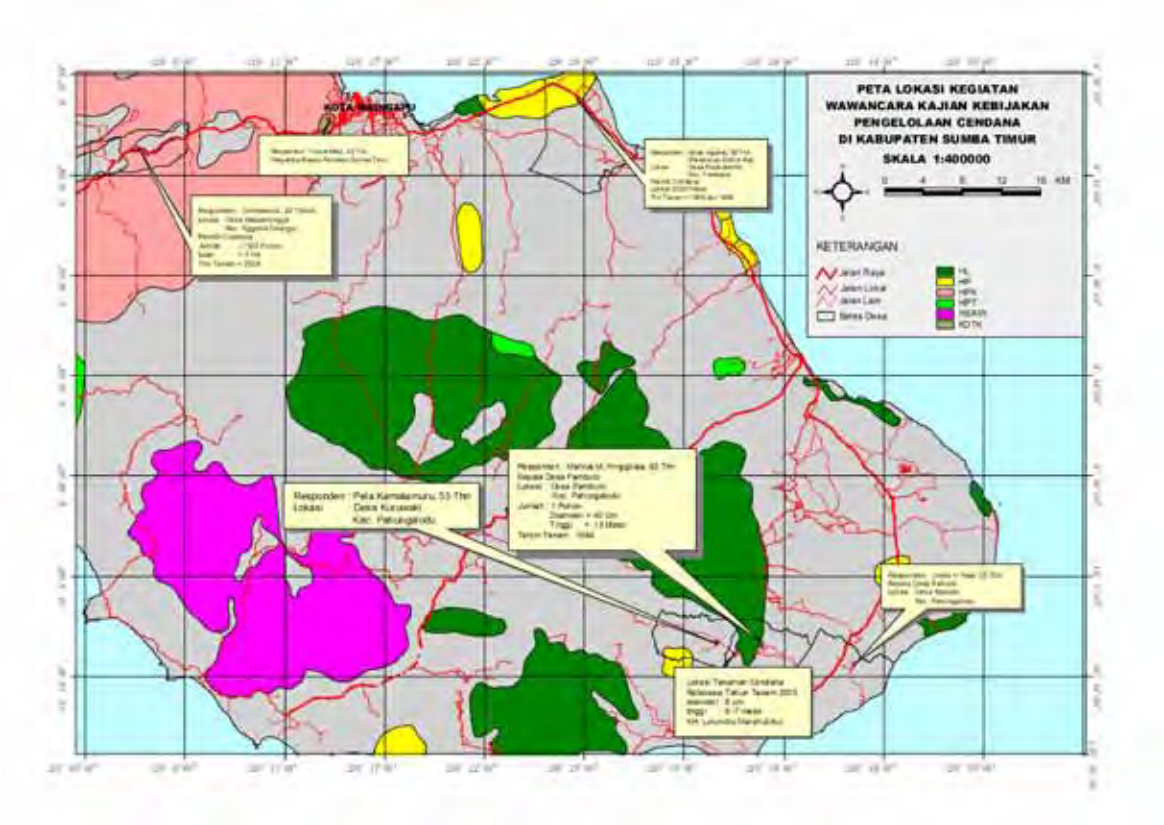
No.	Sub District	Village	Condition/Potency
1	Pahunga Lodu	Kaliuda	The potential of sandalwood plantation in this area is relatively good, although it is maintained in a small scale. Most of them occur in community garden. One sandal-wood garden is owned by ex-Forestry staff, Pak Ishak, where he planted them since 1989. Presumably sandalwood that grows in this area is different with that which is commonly found in other areas, it has a relatively bigger leave size. Pak Ishak also collect and sell sandalwood seed. The seed is sold for 150,000 rupiah/kg.  Figure 2. Pak Ishak counting the sandalwood seeds v  Figure 3. Sandalwood plants (10 years old) grown in Pak Ishak garden.
2	Pahunga Lodu	Pamburu	The head of village, Pak Markus M. Hinggiranja has one tree with size of >40 cm diameter in his garden. However, he informed us that out of 25 seedlings he has planted in 1984, only one has survived.  Figure 4. Sandalwood with dbh > 40 cm, Pamburu Village, Pahunga Lodu.

No.	Sub District	Village	Condition/Potency
3	Pahunga Lodu	Kuruwaki	One relatively large area has sandalwood that was planted by Forestry in 2005. Sandalwood is in good condition with some trees having average diameter of morve than 10 cm, and average height of 8 meters. Almost none of local people being interviewed have sandalwood in their garden. Few people have planted sandalwood in this village.  Figure 5. Sandalwood trees planted by Forestry in 2005, Kuruwaki.
4	Pandawai	Palaka Hembi	Very few sandalwood was found in this area. According to a respondent, local community do not have interest in growing sandalwood since it needs several years until they can be commercially traded. One sandalwood tree was once sold about 45,000 rupiah/kg, while one tree has an average weight of 27 kg. In this area, *kesambi* (*Schleichera oleosa*) is also popular as local people also extract this trees for the oil. The other reason why people are reluctant to grow sandalwood because it in conflict with their need to graze cattle. Only one household (ex-Forestry staff) grows sandalwood. Sandalwood grows very well in this area.  Figure 6. Sandalwood plants in pak Ishak garden in Kuruwaki.
5	Nggaha Orianggu	Maka Minggit	During field survey in one of the household that has been cooperating with LIPI (Albertus Hensen Wau) and Forestry to establish sandalwood plantation in his garden, we had evidence of about 400 sandalwood stands. Pak Junus, the owner, explained that sandalwood will grow well in association with Lamtoro, a legume species.  Figure 7. Sandalwood plants (7-8 years old) belongs to Johannes, Maka Minggit Village
6	Nggaha Orianggu	Ngadulangi	None of the land visited has sandalwood plants. Local community informed that these trees can be found only in the protection forest.

b. *Site location*

Pahunga Lodu, Pandawai and Nggahal Orianggu, situated in the District of East Sumba.

Figure 8. The situation map of sub-district and sample of villages.



Based on regulations No. 69 / 1958 about the formation of second level (district) autonomous administrative regions in first level autonomous administrative region (Provinces) of Bali, West Nusa Tenggara and East Nusa Tenggara, the region were divided into 12 second level autonomous District administrative regions (East NusaTenggara monographs, 1975 pg. 297). These 12 new autonomous District level administrations are: West Sumba, East Sumba, Manggarai, Ngada, Ende, Sikka, East Flores, Alor, Kupang, South Central Timor, North Central Timor and Belu.

Based on the Governor Decree of East Nusa Tenggara Province of July 20th, 1963 No. 66/1/32 about reformation of sub districts, East Nusa Tenggara Province that has 12 Districts was divided into 19 sub districts, 4555 traditional villages with genealogic unit which changed into modern style villages later. In 2003, East Nusa Tenggara Province consisted of 16 Regencies (District) and one City Municipality. The Regencies were West Sumba, East Sumba, Kupang, TTS, TTU, Belu, Alor, Lembata, Flotim, Sikka, Ende,Ngada, Manggarai, Rote Ndao, West Manggarai and the municipality was Kota Kupang. The 16 regencies and 1 municipality were divided into 197 sub districts and 2585 administrative villages. (extract from the book "History of Nusa Tenggara Timur Region" Regional Culture's Research Project, printed in 1977/1978).

c. *Land coverage and extent of Agricultural systems*

Sumba Timur with the size of 7,000.50 Ha. Given the fact that Sumba Timur has the lowest rainfall among the other parts of district in Timor island (the highest volume of rainfall was in Ngada (1 989 mm), Kupang (1751), Manggarai (1 636 mm) and the lowest in Sumba Timur Regency (63 mm).

Figure 9. Map of East Sumba land coverage.

d. *Sandalwood condition in the sample sites and local community*

The recent survey conducted by Forestry District Office of East Sumba, 2001 in four sub-districts, Haharu, Pandawai, Pahunga Lodu and Wulla Waijelu shows that sandalwood remains well distributed in the surveyed sample. Total number of sandalwood plants in the four sub-district is 31,723 individual comprising of 3,253 trees (diameter >10 cm), 22,605 sapling and 5,865 seedlings. Most of the sandalwood surveyed have diameter sizes ranging from 5 – 10 cm (1,275 individuals). However, there seems to be a miscalculation in the number of pole/tree level. This is mainly due to the definition of poles and trees, which theoretically, poles refer to plants with diameter of more than 10 cm. While in this study, poles and tree refers to those with diameter ranges from 5 to 10 cm. The results also mentioned that 98% of the sandalwood trees is categorized under young age (less than 35 years old) and mature trees which amounts to 56 trees or only 2% of the total number.

Most of the damage on sandalwood either in protected areas or in community garden was due to human activities. This has been confirmed during site visit in this district, especially in Pahonga Lodu and Pandawai. Almost all sandalwood trees have scars due to knife cutting on the stem that is intentionally done to check whether trees can be cut down. The report also indicated the decreasing incidence of the sandalwood plants (all stages except seedlings), while during our study this cannot be confirmed because vegetation sampling was not undertaken.

The sub district of Pamburu, in particular, requires special attention because of information from respondent on the lack of local community awareness and faith in sandalwood.

2. Policy and land tenure issues, the basis for land ownerships.

In general, all of sandalwood trees in East Sumba District belongs to the local government. This is clearly stated under article 2 of SK Bupati No. 33 year 2000 and article 2 of PERDA No. 19 year 2000. Under this policy, sandalwood grows in private land will be under the landowner authority (article 4 Perda No. 19 year 2000. In the meanwhile, the word "owned" has been written down as "property" and thus cutting sandalwood trees is forbidden (Article 4 SK Bupati No.33 year 2000). While under Article 8 of the same Perda No. 19 year 2000 there is a clear statement regarding who will assign and give approval for sandalwood harvesting. Sandalwood harvesting has been done under local government whereas those people who intend to sell sandalwood for meeting their daily life, under this regulation, will need to provide data on annual allowable cut (*jatah produksi tebang)*, harvesting operation, transporting and selling sandalwood trees.

NTT has been experiencing a rapid increase in population growth, especially people living close to the forest and agriculture land. This rapid increase in the number of population depending on agricultural sectors is not in balance with the availability of land suitable for agriculture. As a consequenc, more people are opening the remaining forested land and often encroaching forested areas. Furthermore, farmers need water for their agriculture land while the continuity of water sources has been currently disturbed by the rapid changes of land uses causing reduction of water quantity. Therefore, conserving this water sources becomes one of the major priority in order to mobilize the agriculture business.

D. Socio-economy:

a. ***Major socio-economic activities and scale:***

The main sources of livelihood in this area depend on shifting agriculture and cattle farming which are carried out during long dry season but it last only for a short period of time. Local community seeks other alternatives to support their daily needs. Feasible alternatives are planting annual crops as well as perennial plants which grow during long dry season such as coconut, candle nuts, tamarind and other species of trees (Widiyatmika, 1995).

Based on visits done during survey, most local communities in the visited villages depend of annual cash crops such as vegetables and the perennial coconut. Some villages such as Palaka Hembi and Pandawai become the centre for *kesambi* (*Schleichera oleosa*) tree. Oil from this tree is traded. There was a continuous report of agriculture damage of annual crops by cattle.

Compared to other district in NTT, agriculture commodities such as crops and plantation are not a dominant aspect in the local economy. Number of feral buffalo and horse amounts to around 22% of total population of livestock in NTT (SMERU, 2002). Although it is relatively small compared to other districts, agriculture sector plays an important role for the East Sumba economy. In year 2006, the contribution from agriculture sector approaches around 38.54%. The main commodity supported the regional income among others are: rice (30,140 or thirty thousand and one hundred forty tons), corn (22,703 or twenty two thousand seven hundred and three tons), cassava (735 tons), sweet potatoes (3.691 three tons and six hundred and ninety one kg), peanuts (1.338 or one ton and three hundred thirty eight kg), sorghum (245 tons) and green beans (351 ton). Domestic pig and cows are the most dominant livestock for farmers in this area. Goats, feral buffalo and horse are also a common sight in the farmer's garden. Horse, particularly, have strong correlation with local traditional system. Types of livestock shows how they are related to the soil and environmental condition of this area. This district has the largest areas of savanna in NTT, amounting to 30% out of the total dry land. Forestry and fishery subsector in East Sumba District has relatively large potential but there is lack of utilization of the natural resources such as timber and fish. Regional income could have been higher if the rich natural resources available in this area are better utilized (Buku Statistik Sumba Timur, 2006).

b. ***The myth of sandalwood in East Sumba District.***

Sumba Island has been known as Sandalwood Island. This name can be found in Pigafeeta map (Portuguese sailor during 1519 – 1521). In year 1522 the name of Chendan has been listed in the map which refers to the word *cendana* (cendana=sandalwood). Policy issued in 1986 (Perda No. 16 year 1986) ignored East Timor community's right for social, economy and culture so that it creates long time apathies among local community, especially in respond to sandalwood conservation. The hardest challenge is to take community's interest back to their original attitude to develop sandalwood in their private land. Ever since the psychological trauma has been embedded in the minds of communities, they still believed that sandalwood is a *Hau Lassi* (wood that bring problems), *Hau Plenat* (wood only owned by government) and finally they called it as *Hau Nitu* (evil wood).

3. Infrastructure:

a. ***Roads into and around the visited villages***

Road network in East Sumba District is considered to be well designed by the local government. The available map of road network (Spatial Planning) published by Regional Government of East Sumba District shows the networks of roads with various level of uses (local, district, province and national)

along with the main rivers and its tributaries. The illustration of road networks showing the major transportation access from city of Waingapu to Sub-District of Pahunga Lodu is seen in Figure 5.

Figure 5. Road from Waingapu to Pahunga Lodu (approximately 115 km).

The quality of roads (national roads) from Waingapu to Pahunga Lodu is relatively good and is made of asphalt. Pahunga Lodu can be reached within 3 hours travel from Waingapu by normal vehicle/car. From Pahunga Lodu to Pandawai as well as connecting road to some of the villages visited are also of good quality aspalt construction. Local roads within the sub-district of Pahunga Lodu, Pandawai, and Ngadulangi that connect villages are unpaved gravel roads. Although normal vehicles or cars can be used in the local road, vehicles with four wheel drive is preferred. Transportation access in general is quite good, however, public transportation need improvement as it is not easy to find them from districts to the villages.

b. ***Water supply and sewerage: water sources and intakes, sewerage outlets and treatment methods/capacity, and electricity***

Most area experienced long dry season and therefore each household normally has a place made from cement/concrete to keep water tapped during the rainy season. Size of the water storage is on the average about 1.5 x 1.0 meter with depth of at least 1.5 meters. Thus the capacity to store water is approximately 2.25 (two and a quarter) cubic meter. This probably will last only for 1 - 2 days. During dry season people often covered their water storage container with plastics to prevent water from dirty particles carried by the wind.

E. Stakeholders Comments

The following is all stakeholders interviewed during survey:

No	Name	Title	Village/contact	Comments/Fact Finding/Field Survey
1	Gibeon Billijora	Head of East Sumba District (Bupati) (age, 52 years old)		• Local government has problem with planting sandalwood as recurrent fires become the main never-ending barrier to improve and enhance sandalwood plantation. • People in most East Sumba don't have problems with sandalwood-trauma • ES District has no PERDA developed as yet to regulate sandalwood Provincial program on sandalwood do not yet cover district level due to insuffici-ent budget and human resources
2	John Londoawang	Head of Forestry District Office (age, 60 years old)		• In 2011, District Forestry Office initiated to establish 1000 seedlings financed through DAU (*Dana Anggaran Umum*) or General Budget • *Badan Lingkungan Hidup* (Regional Environmental Agency) has previously committed to be involved but later only cover some non sandalwood projects • The Governor has embarked "Anggur Merah", literally "Red Wine" or Budget Toward Community's Welfare (*Anggaran untuk Rakyat Menuju Sejahtera*) to explore the feasibility of combining agriculture, farming, cattle and other community development activities. However, the implementa-tion of this program has not reached the districts, mainly due to insufficient budget • He personally expected to have a PERDA to enforce and regulate sandalwood planting for the benefit of local community – as an update and improvement of the previous PERDA • District Forestry Office relies on the existence of HTR project (Community Plantation) to start planting sandalwood in the community gardens • East Timor does not have problems with sandalwood trauma such as that in other districts. • Sandalwood is highly valuable and commercially appreciated by stake-holders, including local communities. • There is a black market for sandalwood where in one it has been found that sandalwood can reach the price up to approximately 30,000,000 rupiah. People called this kind of sandalwood as superior species. • Almost all land is privately owned (community ownership)

No	Name	Title	Village/contact	Comments/Fact Finding/Field Survey
				• Sandalwood has vastly diminished during 1950 and it has been declared as gone from East Sumba during 1960 and in 1970 it has become a sort of a legend since this species is difficult to find in this area, except in nature reserve where survey was rather difficult. • Sandalwood, as a fancy wood, has been extracted for its oil and handicraft. Nowadays, after sandalwood becomes scarce and hard to find, people start looking for other alternatives.
3	Markus Hinggiranja	Head of Village (age, 63 years old)	Pamburu Village	• He had once planted sandalwood in his garden and only one out of 25 seed-lings he planted survived. Now the diameter of the trees is about 40 cm. He has problem in growing the trees. Time for flowering and fruiting is about two to three years. • He got stories about sandalwood from his ancestor and knowing that it has a high value then he decided to grow this species as a saving for his generation. • As Head of the Village, he has amazing traditional knowledge, particularly on effort to conserve the trees. According to him, people from his village has never cut trees from protection forest. • Since sandalwood population has diminished very rapidly, people are now looking for other alternative wood such as "dalinga" tree (*Excocarpus latifolius*) that has almost similar characteristics to sandalwood. • Beside sandalwood, they also plant mahogany where the seed was freely provided by the government. • He would appreciate if government can provide them with superior sandalwood seed so that they can grow them in their garden. • Regarding to recent sandalwood regula-tion issued by the Province, people in the village have never heard about it. They only know that up until now, the district regulation does not allow them to cut the trees. • He expected that there will be a regula-tion for sandalwood that would benefit them such as allowing them to grow in their garden, obtain free seedling, and able to sell them without any strict regulation of profit sharing with other party. They wanted to sell directly to the market or trader. The local communities in this village still believe in "aini tu"…sandalwood as an evil.

No	Name	Title	Village/contact	Comments/Fact Finding/Field Survey
4	Erick Luhaumbela	Local community farmer, 33 years old	Kuruwaki Village	Lack of knowledge on sandalwood is the cause for people to no longer plant sandalwood in his village. However, in some areas knowledge on sandalwood has been passed through from generation to generation informally through songs, poem, and story from sandalwood gatherer. The village people are likely to find works that can immediately fulfill their daily need such as growing cassava and other annual crops. Sandalwood is listed as the last for them to develop beside other forest tree species such as mahogany.
5	Martinus Padjaruaka	KRPH – Forest Resort officer (42 years old)	Pahonga Lodu	Martinus plants and grows sandalwood because it is the government program to plant this species. Sandalwood has been planted in national forest land to be used as a show window where in the future, people can proudly say that they were able to safely maintain this species in a sustainable manner.
6	Ishak Ignacio	Head of Village (59 years old)	Palaka Hembi, Pandawai	• During his assignment as head of village, community has been offered to plant sandalwood but they reluctant to do it due to long harvesting time • During 1990, there was a rehabilitation program where he started to plant sandalwood in his garden. He plans to use sandalwood as a saving for his next generation although he only has 2500 m^2 of land. • The only threat of sandalwood seed and seedling is from the trampling of cattle. He has sold sandalwood for Rp. 45,000 per kg in 2007. • Another problem is difficulty in collecting seeds. Although natural stand of vegetation is abundant in the protected forest but none of the community will disturb the sandalwood since people here still believe in myth. People prefer to grow kesambi.
7	Domesianus	Son of a farmer (29 years old)	Maka Minggit village, Nggaha Oriangu	• Most of seed and seedling was provided by the government (Ditrict Forestry Office) in collaboration with LIPI. Started rowing with planting 400 seeds. • The sandalwood plantation grows well in this site (privately owned by pak Johannes). • Sandalwood trees live in association with Lamtoro. In this area, most sandal-wood's leaves have black spots perhaps attacked by virus. • During interview, it was revealed that Johannes (Domi's parent) will sell the sandalwood stand to trader with the "ijon" system – buying the stand while they are still young, 20 trees for 10 million rupiah.

No	Name	Title	Village/contact	Comments/Fact Finding/Field Survey
				When one of the forestry staff claimed that forestry would discourage them from selling the timber without having approval from forestry service, Domesianus argued that there was no agreement to such an effect. He is of the opinion that no one can force him not to sell the trees growing in his own land. He also wishes that there is a regulation that enables them to manage their own land without any interference from other party, including local government. Community want their property right upon the sandalwood trees legalized.
8	Yunus Metto	Technician (42 years old)	BPK Kupang (Waingapu)	• Community want that sandalwood will be planted in their own land and also manage them without interferen-ce from any parties. • He doesn't have any idea on the "sharing-benefits" mechanism • He only knows that people should understand on the silviculture of sandalwood. They should be informed that harvesting should be for mature trees.
9	Nurdini Estikasari	Researcher (32 years old)	BPK Kupang (Waingapu)	• She has evidences of abundant sandal-wood trees in Tanah Daru (West Sumba) • Local communities are reluctant to plant this species due to time needed for harvesting. Long rotation with uncertain direct benefit • How could socialization be effective if community has never even heard or informed about the regulation.

G. Problems and Issues

The following table indicates sampling location (at Sub-District level) and types of problems/issues associates with sandalwood:

Location/Sub-District	Issues, causes/barriers
Pahunga Lodu	• The three visited villages (Kaliuda, Pamburu and Kuruwaki) have almost similar issues regarding to sandalwood conservation. Although, Kaliuda in this case showed different condition with the other two villages since almost none of the respondent interviewed indicated their interest towards planting sandalwood. Local community in this villages rely for their income from "tenun"; Kaliuda has been known as the place where people could find the best "tenun" in the Sumba region. • People in the other two villages concerned on the availability of sandalwood seeds and method on how to grow the tree as they know that sandalwood only flower and fruit every 2 or 3 years • The traditional knowledge on why they should conserve sandalwood is coming from their ancestor who still believes that this particular trees has mystical spirit. Local community in this the two villages believes in"aini tu", sandalwood is an evil trees. • Sandalwood extraction has no longer popular as the tree population has diminished very rapidly while people has also found the alternative wood such as "dalinga" tree (*Excocarpus latifolius*) that has almost similar characteristics to sandalwood. Beside sandalwood, they also plant mahoni where the seed was freely provided by the government. And there are no regulation imposed to mahoni. • Regarding to recent sandalwood regulation issued by the Province, people has never heard about it. They only know that up until now, the district regulation does not allow people to cut the trees. • He expected that there will be a regulation for sandalwood that would benefit them such as allowing them to grow in their garden, obtain free seedling, and able to sell them without any strict regulation of profit sharing with another party. They wanted to sell directly to the market or trader. He would appreciate if government can provide them with superior sandalwood seed so that they can grow them in their garden.
Pandawai	• People seem reluctant to grow sandalwood due to long harvesting time. • Threat to sandalwood has been identified by few sandalwood growers such as damage from cattle, either from seed that was eaten by animals to damage of seedling due to trample. • Another problem is difficulty in collecting seeds. Although natural stand of vegetation is abundant in the protected forest but none of the community will disturb the sandalwood since people here still believe in myth. • People has alternative income from selling kesambi for its oil.
Nggaha Orianggu	• Most of seed and seedling was provided by the government (Forestry Service) in collaboration with LIPI. Started growing by planting 400 seeds. • The sandalwood plantation grows well in the visited site • Sandalwood trees live in association with Lamtoro. In this area, most sandalwood's leaves have black spots as a sign of disease. • During interviews, it was revealed that land owners would like to sell their sandalwood directly to buyers and even trading can be done via a broker ("ijon" – buying the stand while they are still young), i.e., 20 trees for 10 million rupiah. • There was an indication of potential conflict aroused between local communities with District Forestry Office regarding to sandalwood trading. Although seeds are often distributed freely to community but when landowners would like to sell sandalwood, there is no clarity on its mechanism. Only people who are involved in local government program know about sandalwood regulation. • With the issuance of Perda No. 2 Tahun 1999 which annuls Perda No. 16 Tahun 1986, communities ought to be happy, in reality however, not many people know about the changes in policy. The question is whether the new Perda is meant only as a means of acknowledgement by the local government about its failure to manage and sustain sandalwood and at the same time as an effort to wipe out past mistakes.

The following is the result from focus group discussion held in Hotel Mirah, Bogor on April 9, 2010.

No.	Name	Comments
1	Soenarno (Head of Balai BPK Kupang)	There is a lot of misscommunication about PERDA as well as lacking of socialization among stakeholders. Interested in type of analysis – profit distributioin, who get the benefits? Pre-condition shall be reflected and Alor is not under six district being heavily exploited. And therefore, there is a difference in resistency compared to other districts. Communtiy is conditioned to be ignorant and less aware on the existence of policy and regulation. Trading across region should not be different, there is need to make similar system. Proposal in Regional Meeting (Raperda) mentioned that sandalwood planted by community shall be free from regulation. There should be a comparable system with government and need common perception towards sandalwood management. Incentive shall be accomodated in the master plan. Comment from Dede: there should be a "red thread" wihtin the structure of organization. There will be severeal de-regulation and proposal to hold workshop or training: a model for PERDA to establish important indicator that must exist within such PERDA. Each of regency has different interest, and all interest should be built upon community participation/involvement.
2.	Elizabeth (Tim TTS)	It is necessary to make analysis on opinions expressed by community about sandalwood PERDA. Ther is a statement from community that sandalwood is controlled by the government. Community do not see any protective measures in the field. If exploitation is being done, community is not notified, they are not allowed to fell trees. There should be an implementing regulation on the tenure right on sandalwood. Community yearn for a Perdes (Village Regulation) as a derivative of the regulation. The PERDA of districts of TTS, West Sumba, TTU, Belu, East Sumba are not pro-poor nor pro-community. As an example there is a clause that felling permit is needed from the Bupati as Head of the District. People need to show proof of the origin of tree, have permit to transport (SKAU) and permit from the village. Buyers can ask permit from Bupati by showing an SKAU. There is a need for a recommendation for sandalwood to be firmly implanted in NTT that program must be made for a perpetual implementaion and not only related to the period of tenure of the official in his/her current position. PERDA must be planned through using the PRA mode to recognize good ideas from the community in order for their aspirations to be heard. The role of the local traditional community is quite significant. As examples, the distribution of laquer tick to be infected to kesambi trees, the harvesting of laquer and its trade is regulated by the local traditional community. There is hope for incentive from the government, money ought not to be channelled in a form of a project.
3	Harry Setyono (Forest Research and Development Agency - FORDA)	Technical matters of PERDA, allowable cut determination. Product predicted for each tree. In the time past it is assumed about 100 kg per tree. Result of investigation shows only a maximum of 45 kg per tree. If this is regulated by PERDA it will become a sensitive issue. In PERDA, perhaps it is because of system of trade (trader buys from government) with the consequence that in PERDA there is no obliga-tion to plant sandalwood. The odd thing is that in the current regulation people must plant five times as many seedlings for every tree that is felled.

No.	Name	Comments
		There must be regulations within and outside forest area. Sandal-wood trees growing within private land will be treated equally as with other species. For forest area, regulation will be more disciplined because of the high responsibility for conservation. The question of options. There ought to be an optional valuation for planting other species than sandalwood trees. On alternative sources of income, there ought to be a value change in each level. This can be enhanced to become an incentive for community. PEMDA ought perhaps to provide an incentive, for example it is permitted to plant but seeds must be submitted to Pemda to be sold as local government income. This can also be regarded as the community contribution to the government. Be careful in pricing. Calculations in trade ought not to be too difficult. Soil condition has a very great influence in the growth of sandalwood. Spread of plus trees: formerly it was difficult to predict correlation between diameter, age and production. This is to make the right choice on when to collect superior seeds. Most private land is owned as a community land. There is a trauma on the question whether a planting culture is part of the local lifestyle of the communities there. Sandalwood culture is like the difficult nurturing of a baby. New innovations are very slowly being adopted by the community. Input for sandalwood culture is still lacking. It looks like communities are still reluctant to plant sandalwood. Sandalwood grows in a solitary and sporadic manner. Its manage-ment is intensive and expensive, except plantings done for research purposes. According to Dede, the silvicultural system is related to traditional wisdom.
4	Rudi	Program ought not to be made for the period of government tenure only, but mus be included in Long Term Plan (RPTP) of the NTT Province. Although already included in the program and Governor has signed its action plan and implementation guideline, aspects of funding is still unprpoportional. Funding allocation is inadequate. During Coordinative Meeting on Forestry Development (*Rakorbang-hut*) in NTT, there were still many questions from District and City governments about sandalwood program. There is still the need for socialization. Without support from district governemt, it is very difficult to imple-ment this program. Is it true that communities have traumatic attitude on policies? Not only because of attitudes of officials but also because of traders. Those who are not stressed do not have trauma. Possibly, some intermediaries also exists. In some locations at Alor, a case of an intermediary almost happens. There is no clear indication whether the effort in planting has any relationship with the One Man One Tree (OMOT) program or the planting of one million trees. The interest of communities to plant is high, the forestry office is overwhelmed with requests for seeds, not only for sandalwood but also for other species. There is the movement of RIB (*Rehabilitasi Intensive Bibit* or Inten-sive Seed Rehabilitation) program from RLPS for forestry areas reserved for Community Forests (Hkm) and Community Forest Plantations (HTR). The KBD (*Kebun Bibit Desa*) or Village Seed Orchard and also other types of programs could be inserted in the sandalwood planting scheme. *HTR kemitraan* or Partnership Community Forest – interesting because initiated by KpWN. Market security for teak already exists.

No.	Name	Comments
5	Noegroho	The available picture is presented from the side of community and at the same time of the policy maker. Often these directions are opposed to each other so that cross cutting issues should be sought to be synergized in the mechanism and bound in PERDA (right and obligations etc.) Results from the four study area need to be presented from aspects of benefits as well as biophysics. Make character description of the four survey locations. Direction of recommendation: suggestions need not be agroforestry.
6	Palulun	There are two possibilities: there is or there is no PERDA regulation. Principles of sustainability, equitability, community based and profes-sional. There is an under the table conspiracy. There are various sandalwood trees, bigger and smaller leaves, yellow, brown and black core wood. Auction procedure ought to be more fair. Tenurial right problem. Must be straightened out to smoothen cases of conflicts. There ought to be an ownership letter or card. Also a control card.
7	Michael	Consultant must be able to make a filter and screen the result acquired from keen observation and plan the next step to compose draft report. Why propose an agroforestry option? The people of Timor are polivalent farmers. Timor farmers are at the same time also cattle and livestock breeders and forester combined with having a culture related to planting such as the recognition of forbidden area, living quarters, and a spot for cultural activities. All forest categorised as forbidden remain untouched. All sandalwood seedling located in private land are secure. Sandalwood are threatened only in cultivated land. Planting activities done at designated area for cultivation. There ought to be two approaches, locations within and outside forest area. There ought to be other policies in the RPJP – this is included in the vision and mission of the new governor. During campaign, sandal-wood is made exclusive. The process of making the PERDA, the legal drafting – should not be done by executive because it will take a longer time do to than if it is made through initiators. Narno : local government has begin to draft the PERDA. They should not be left behind by others. Example: Invite all Districts – make an academic draft and the main body, to be processed further.
8	Dede	About report outline – perhaps it should first be socialized to all consultants. Target: to submit input from team. At least project expectation is fulfilled including the addition to make a draft / template for PERDA as an ad hoc activity. End of contract, June; there will be report on the result of evaluation. After that it could be continued with drafting the PERDA.
9	Chris	Local tenurial right area is a political basis for local leaders. Activities must me disconnected with political aspects.

No.	Name	Comments
10	Yani	In relation with community seed orchard – on the promise of provi-ding 400.000 seedlings per year to every province. Synergized with the TTS program.
11	BPK	Has not touched regulation, is it the wood or the non wood forest produce? Determination of supreme commodity; direction of formulating the essence of the draft; and consideration to discuss problem of regulation and supreme commodity. Forest area is regulated nationally. TTS must review regulation at the national level.
12	Pak Diaz	Results can be used for public consultations at Kupang. Study result, although have the same questions, was responded differently. This depend on the experiences of community in the time past. East Sumba, before regulating sandalwood which is almost extinct is now motivated to plant. At Alor, communities have not felt the benefit of sandalwood but now is also motivated to plant. TTS, has bitter experience related with sandalwood, policies were not pro-people. Also, actions of guards create traumatic feelings. The complicated mechanism of sandalwood governance causes communities to be reluctant to make sandalwood as a trade commodity. Regarding tree pilferings, people steal even in their own land. What we wish to pay attention to is why did trauma occurs, we must try to find the real wishes of communities in order that this program can be executed properly. Investigate which policy items are pro-people. The result of this study will support the Policy Review Working Team. The problem of tenurial rights must be cleared. This program is up to us, whether we will go as far as legal drafting to help the Working Team. The purpose is for Provincial and District PERDAs to be pro-people. The problem with communities that do not want to have any regula-tion about this matter must still to be overcome so that there is a clear mechanism in the harvesting of sandalwood. This entails mostly on profit sharing where rules should be made. Optimistic that result will be useful as input. There are complaints from districts that were not taken as sample, it was explained that priority are for districts where sandalwood are being threatened with extinction. What we are doing is already on tract, including master plan and action plan and not always to refer to Governor's regulation which must be commensurate with a Ministerial Decree. This is to be the legal umbrella for all. Tenure, right, trade and administrative governance must be incorpo-rated into PERDA, all of which are the expression of community perception. Environmental aspects must be a part of the consideration. Besides sandalwool, gaharu will also be developed in the Timor region.

E. Synthesis

From the regulatory framework:

Survey results showed that there is lack of understanding and knowledge of local community with regards to sandalwood policy/regulation (mainly socialization matters). Sandalwood gradually disappeared since 1950/60, only old generation of people know about sandalwood.

- The old Perda is still active but none of the local community interviewed knew about this regulation. The Bupati's request on drafting a local regulation regarding sandalwood has drawn question as he should have known that East Sumba has already SK Bupati No. 33 year 2000 and PERDA No. 19 year 2000. Still, local community does not have any clear information on how to harvest and sell sandalwood and other requirements as not to violate the regulation. This is more or less related to lack of socialization of the policy.

- Based on the review on the past and current policies regarding sandalwood, the following issues was noted:

  1. All sandalwood trees are under local government control (Article 2 Decree of Bupati No. 33/2000 and Article 2 Perda No. 19/2000).
  2. All sandalwood trees in the private land is owned by the landowners (Article 4 Perda No. 19/2000). On Article 3 Decree of Bupati No. 33/2000, terminology "owned" and "controlled" is biased i.e. privately owned but under control by the government.
  3. Sandalwood exploitation is banned under Article 4 Decree of Bupati No. 33/2000 (6 July 2000) but it is not under Perda No. 19/2000 (15 November 2000) – there is no clarification on when the new regulation is enacted and the previous one withdrawn.
  4. Sandalwood exploitation is determined by the Bupati, covering annual allowable cut (AAC) and production, harvesting, trade and marketing (Article 8 Perda No. 19/2000)
  5. Income from the sale of sandalwood as assigned by Bupati will be under the control of the local government and is deposited under the local government trust fund (Article 12, Perda No. 19/2000).
  6. There is no clear relationship between regulation and ownership/ owner's right.
  7. Ambiguity in local regulation (PERDA) proving no policy synergy between provincial and district governments.

- Local community has positive view on sandalwood, and they showed their interest to join any program related to sandalwood planting although still hoping to get free seeds so that they can grow them in their private land. Local community also expected that there should be no strict regulation for sandal-wood such as they have experienced previously. People treated sandalwood similar to other trees such as mahogany, sengon and kesambi. Unlike other districts, TTS and East Flores have no story on traumatic experience with sandalwood. In these two districts, efforts of people to establish nursery or collect seeds for plantation development is not as strong as in other districts.

- Unclear and uncertainty of landownership status is also suggested as one of the reason why people are so reluctant to grow sandalwood in a large scale. People also do not have any information on who should get what and the arrangement about the profit sharing. People welcome sandalwood development program, and expect that sandalwood will be treated equally as other trees such as mahogany and teak – no regulation on harvesting including trading, similar to kesambi oil.
- The long famous history of sandalwood belongs to the old generation with age of at least 45 years old while the young generation only hears the sandalwood history from books or songs. Some of the young generation could not even recognize this tree.
- The potential of sandalwood in the surveyed areas remains adequate in term of number of individual from seedling up to tree stage. The District Forestry Office has carried out cedana survey in 4 (four) sub-district (Haharu, Pandawai, Pahunga Lodu, and Wulla Waijelu) and the report shows that sandalwood trees remains abundant but growing mainly in private land. However, the method of estimating the potential remains to be discussed. There is still a need to clarify on diameter size that can be considered as tree which are able to survive until the age of maturity. There is a potential conflict considering the existing large gap regarding to silviculture technique, regeneration strategy, scope of trading and marketing as well as fair policy that benefit local community. So far, there is no incentive mechanism available for local people on sandalwood. Most of the plants are in sapling and poles stages with less seedlings.
- The fact that sandalwood trees (either growing in private land or state land) remains abundant is probably due to people's believes. Most people in the survey areas is "Marapu", a principle or believe that they rely on the environ-menttal surrounding. Customary institution at village level is recognized and acknowledged.
- Natural resources supporting their lifestyle should be protected and maintained for the benefit of the next generation.
- Potential conflict was noted still to exist in East Sumba, related to technology and knowledge gap, scope and unclear policy of trading and marketing, policies that has not yet appropriately been addressed for local community needs.

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ITTO PD 459/07 Rev.1 (F)

Improving the Enabling Conditions for Sustainable Management of Sandalwood Forest Resources in East Nusa Tenggara Province Indonesia

FINAL REPORT ON SITE OVERVIEW FROM FLOREST TIMUR DISTRICT

March 19th to 24th, 2010

Prepared by:

Retno Maryani

Field Team:

Alfonso Jehamat

Smart Manaon

Introduction :

Sandalwood (*Santalum album*) is an endemic species of Nusa Tenggara Timur (NTT) and it is the best commodity in the world. It has been reliable commodity in Nusa Tenggara Timur Province, so its contribution to local income is very high. However, the utilization of natural Sandalwood was not followed by a sustainable management. In addition, Sandalwood management is not supported by a proper policy. Therefore, it economically could not provide local communities with optimal benefits.

The population of Sandalwood recently decreased and it is in critical condition. Accordingly its contribution to local income is very low, moreover its population continuously declines. An ineffective policy in the past has led communities in Nusa Tenggara Timur, especially Timor and Sumba Islands, to traumatic experiences in replanting Sandalwood trees. Many parties have paid attention to this problem. Ministry of Forestry in collaboration with Local Government has conducted some efforts in recovering NTT as a sustainable producing Sandalwood region.

ITTO PD 459/07 Project focuses on strengthening policy framework, economic incentive and capacity building for local institutions in sustainable management of Sandalwood. This is an action program prioritized to strengthen policy and regulation for Sandalwood management in NTT. The activities are implemented in four disticts, namely Timor Tengah Selatan, Alor, Flores Timur and Sumba Timur. In these four districts, vegetation of Sandalwood still occure .

Flores Timur is one of natural habitat of Sandalwood. The trees have been found since Portugees regime at 15th century. The population continouosly decreases, so identification on its natural habitat and distribution should be carried out.

This report contains data or information collected by Team from the field in Flores Timur . Team consists of consultants form Jakarta accompanied by Provincial Forestry Agency's staff. Facilities for field activities provided by District Forestry Agency. Target areas are villages where Sandalwood trees occure. Interview with villagers and village office staff were conducted to collect information on role of Sandalwood for their livelihood and to explore their perception towards Sandalwood development program. Field survey was conducted to recognize the growth of Sandalwood at target areas. Interviews with staff from Local Government were also conducted to collect secondary data including the last inventory. Interview and secondary data are used to support objectives of field survey.

Objectives of field survey:

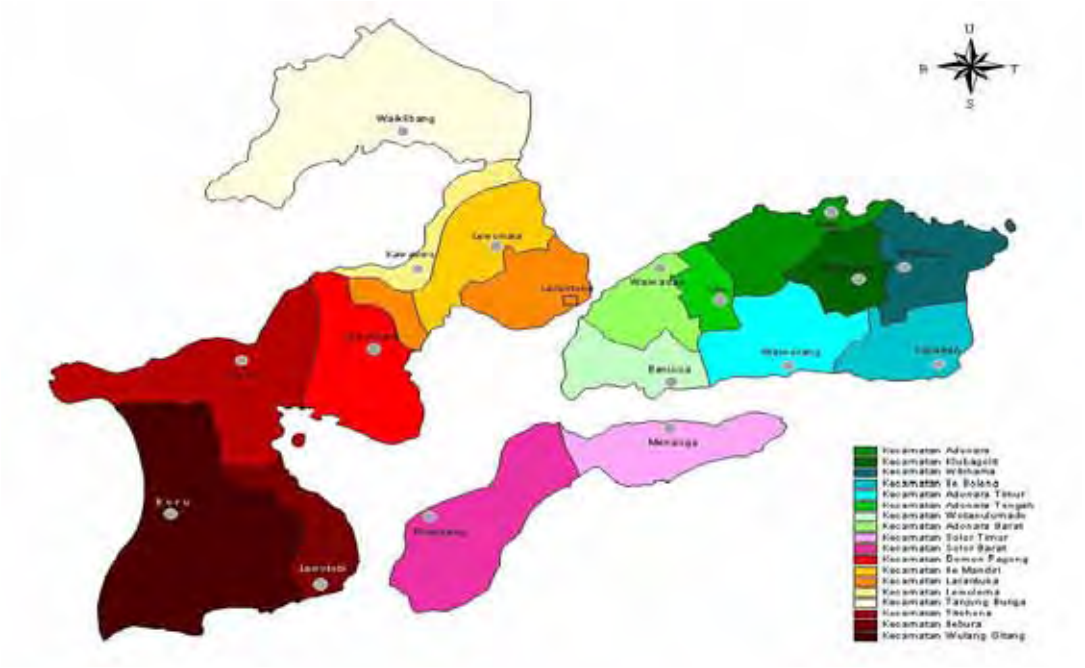
(1) To collect data for an analysis study on policy framework on Sandalwood management

(2) To carry out an analysis study on economic insentif framework for Sandalwood management in provincial and district level.

Time frame: March 19th to 24th, 2010

Report of Survey :

A. General Conditions of Florest Timur District



Flores Timur District was established on based on the Act No. 69 Year 1958 (Undang-Undang Nomor 69 tahun 1958) concerning Establishment of District Level II in Territory of Province Level I Bali, NTB and NTT. Its anniversary is on December 20th. At the beginning of establishment, Florest Timur covers 8 Sub-districts. It has developed in accordance with national political changes. Data and information of Flores Timur District are as follows:

Early establishment in 1958, district consisted of 8 Sub-districts as belows:

1. Sub-district Lomblen Timur with the capital city Hadakewa
2. Sub-district Lomblen Barat with the capital city Boto
3. Sub-district Solor with the capital city Pamakayo
4. Sub-district Adonara Timur with the capital city Waiwerang
5. Sub-district Adonara Barat with the capital city Waiwadan
6. Sub-district Wulangggitang with the capital city Boru
7. Sub-district Larantuka with the capital city Larantuka
8. Sub-district Tanjung Bunga with the capital city Waiklibang

The first up-grade or expansion of government organization in 1963 was based on Governor Decree No. Pem 66/1/32, July 20th 1963 concerning Sub-district in district level II territory (daswati II) throughout NTT. The following are Sub-districts after re-organization expansion:

1. Sub-district Wulanggitang
2. Sub-district Larantuka.
3. Sub-district Tanjung Bunga
4. Sub-district Solor Barat
5. Sub-district Solor Timur
6. Sub-district Adonara Timur
7. Sub-district Adonara Barat
8. Sub-district Lomblen Timur
9. Sub-district Lomblen Barat
10. Sub-district Lomblen Tengah

In 1999, Lembata separated from Flores Timur. Establishment of Lembata District was based the Act No. 52 Year 1999 (Undang-Undang Nomor 52 Tahun 1999) concerning Establishment Lembata District. It was officially innaugurated by Governor of NTT. Flores Timur then covered Solor Island, Adonara and Flores Timur Land comprised the following 7 Sub-districts:

1. Sub-district Wulanggitang
2. Sub-district Larantuka
3. Sub-district Tanjung Bunga
4. Sub-district Solor Barat
5. Sub-district Solor Timur
6. Sub-district Adonara Timur
7. Sub-district Adonara Barat

In 2001, District government expanded Sub-district by Local Government regulation No. 7 Year 2001 (Perda Flores Timur Nomor 7 Tahun 2001) stating Expansion of Supporting Sub-district Status to Definitive Sub-district. The number of Sub-district in Florest Timur District grew up to 13 Sub-districts . Those were:

1. Sub-district Wulanggitang
2. Sub-district Larantuka
3. Sub-district Tanjung Bunga
4. Sub-district Solor Barat
5. Sub-district Solor Timur
6. Sub-district Adonara Timur
7. Sub-district Adonara Barat
8. Sub-district Titehena

9. Sub-district Ile Mandiri
10. Sub-district Wotanulumado
11. Sub-district Ile Boleng
12. Sub-district Kelubagolit
13. Sub-district Witihama

Based on Local Government Regulation No. Year 2006 (Pada tahun 2006 Perda Kabupaten Flores Timur Nomor 2 Tahun 2006) , new 5 Sub-districts were established. They were:

1. Sub-district Ilebura
2. Sub-district Demon Pagong
3. Sub-district Lewolema
4. Sub-district Adonara Tengah
5. Sub-district Adonara

B. Survey Agenda to Solor Island

Day 1st, Maret 19th, 2010:

Larantuka, the capital of Florest Timur District, is the main destination in collecting data of Sandalwood. Economic development in this town is driven by multi sectors organized by sectoral district offices under coordination of Local District Government Office. As a historical town, Larantuka is a destination for pilgrimage tourists of Katholoic. Many religious tourists came there every year for taking a pray so called "Jumat Suci". Sebagai kota bersejarah, Larantuka setiap tahunnya ramai dikunjungi para peziarah agama Katolik yang melakukan prosesi Jumat Suci. Portugees firstly came this town and occupied some territory of Indonesia. East Timor had been as colonial territory up to 20th Century.

In Larantuka, Provincial Team held a meeting with Mr. Tonce Malutina, SH., Head of Forestry and Estate Crops Agency of Flores Timur. Head of Land Rehablitation Divison accompaned by head of Sub Division of Rehablitation attended this meeting. This meeting discussed about Sandalwood in Solor Island. It is found that Sandalwood trees grew in natural habitat. But its population have been vurnerable. Nevertheless Sandalwood Plantationa are abundant in Solor Island. The team decided to conduct field survey to Solor Island.

Team planned to go on to visit Sub-district of Solor Barat and Solor Timur. Methods of identification and meetting with communities were determined. Field survey would be guided by staff from District Forestry and Estate Crops Agency of Flores Timur.

Day 2nd, March 20th, 2010

In the office of District Forestry and Estate Crops Agency, team provided the staff with a brief on ITTO Project including the objectives of project to develop Sandalwood plantation in natural habitat and to recover NTT as a glorious producing-Sandalwood province.

Head of Sub-Division of Land Rehabilitation, District Forestry and Estate Crops Agency, Ir. Paulus Demoor explained about inventory activities in 2007 funded by APBD tk II (Local Government Budgetting for Revennue and Expenditure). The result showed that there were 438 natural vegetation of Sandalwood comprising seedlings, saplings, poles and trees. Their distributions are as follows:

Table 1. Village/Sub-districts Locations and the number of natural vegetations

Village/Kecamatan	Number
Lewogeka / Solor Timur	148
Menanga / Solor Timur	78
Ritaebang / Solor Barat	138
Lamaole / Solor Barat	49
Tanah Lein / Solor Barat	25
Total	**438**

Source: Report from District Forestry and Estate Crops Agency submitted to Head of Provincial Forestry Agency of NTT, January 2010

Data from District Forestry and Estae Crops Agency, Flores Timur revealed that there are planted Sandalwood trees resulting from breeding actvities conducted from 977 to 2008. This data depicted the areas of plantation covering 115 ha with distributed in 11 locations in Sub-district Solor Barat, Solor Timur dan Larantuka. The areas are 5 ha minimum and 20 ha maximum. In addition, District Forestry and Estae Crops Agency, Flores Timur Selain planned to develop Sandalwood plantation in 7 Sub-districts consisting of different villages with the toatal areas of 250 ha. The result of discussion were used as reference for field survey and identifying target village samples.

C. Lewogeka Village, Sub-district of Solor Timur

Trips from Larantuka to Solor Island by boat dan contituened by motor-chicle.

Lewogeka is one of villages in which its communies are mostly moslem. The number of population are 484 people (Monthly Report of February 2010) composing 126 household leader. Their livelihood are farmers and their prior commodity is jambu mete with productivity reaches 16-17 ton/year. Most population population have ever migrated to Sabah, Malaysia. The highes level of education is D2 (1 person), senior high school less than 5 % and 30% are elementary school ungraduates.

Exploring information on Sandalwood was by means of discussion in village office attended by 23 village members and chaired by Head of Village, Mr. Aba Nurdin. A good response from most community members to the gorvenment's activities can be indicated by their active participation in implementation of government's activities. Lewogeka is a building village by District Forestry and Estate Crops for involving in land and community forests rehabilitation.

Discussion with communities resulted an information on existence of plus trees of Sandalwood in this village. Maintenance of Sandalwood plantaion fundeb by local governmen and Provincial Government are also executed by communities. According to communities, low rainfall is a problem to the recent plantation of Sandalwood. Communities expressed their welcome to development 0f Sandalwood in NTT, but they asked an question on possession of matured Sandalwood trees. Based on the questionaire distributed to communities, it is found that most communities are anxious about the possesion of the trees that will sift to the govenments.

In term of the success of plantation, it is reported that "contract system" applied in implementation land rehabilitation program can not ensure the success of plantation development and does not encourage them to participate in plantation activities. This system wsa effective in 2000 based on local government's decision. Sistem kontrak ini mulai berlaku setelah tahun 2000 melalui ketetapan PERDA. Previous system adopted was self-management system. Tis system provided good performance, hence 'contaract system' was fail, plantation did not succesful.

Lewogeka is a target area for establishment Sandalwood plantation because of high enthusiasm performed by communities in planting trees, such as mahagoni and albacia. ITTO Project is expected to provide farmers with traiing and comparative study to succesful Sandalwood plantation areas, such as Gunung Kidul, Yogyakarta.

Sandalwood and mahagoni nursery occure in Lewogeka Village. This nursery managed by Village Leader. Seedling of Sandalwood are collected from plus trees. There is no special treatment during maintenance stage except protecting seedlings from draught and direct sunlight. This nursery is very important for meeting a high demand of seedlings for forest and land rehabilitation program and forset community development. In addition, there are traditionally Sandalwood trees in the yard of bishopric and they are continuosly necessary enriched. Head of Village told that seedling generated from nursery are not enaugh for fulfilling existing demand. The survival rate of Sandalwood in plantation areas only reaches maximum 30%. This may caused b vigority of seedling is low. Therefore, tarining on nursery management or comparative study are required to build capability of farmers on nursery management.

Day 3th, March 21st, 2010

D. Tanah Lein Village, Sub-district of Solor Barat

From Lewokage Village, **Tanah Lein Village** is located on behind of a mountain. Tanah Lein Village differs from other villages. It is more properous compared to others. Communities of this village are mostly christians. The population is approximately 1000 people comprising 200 household leader. Many families in this village have relatives as permanent residences in out town even overseas for religous activities.

In this village, team met with Head of UPTD (Local Level Implementing Unit), under District Forestry and Estate Crops of Flores Timur. UPTD collects Sandalwood seeds from natural forests. These seeds are germinated in nursery to generate seedlings for planting activities. Planting areas are rehablitation program areas, community forests, yard of school and bishopric.

In Sub-district of Solor Barat, there is a Sandalwood tree of 20 years old. It grows in the yard of villager's house. Its value is 3 millilons rupiahs. The owner will not sell it because of historical enchanment. Sandalwood trees in private area can be directly by the owner without permit from local government. But then for transporatation to other area, permit is required.

Discussion with representaives of community members revealed that they support Sandalwood plantation development plan in Solor Island. Villagers have no historical trauma on Sandalwood. They expect to gain benefits from Sandalwood development.

Day 4th: March 22nd, 2010

Team firstly visited Forestry and Esate Crops Agency Office in Larantuka to report the results of field survey to Sub-district Solor Barat and Solor Timur. Head of the Agency suggested that Team to visit Sub-district of Ille Mandiri where reforestation program being implemented. In this Sub-district, there is on going demostration activities project for water resources, so Sandalwood plantation development can be implemented in areas adjacent to the project. Team agreed with his suggestion and determined Muda Keputu Village for as one Sandalwood plantation araes.

E. Desa Muda Keputu

Muda Keputu Village is located in the area of Ile Mandiri Sub-district about 20 km away from Larantuka. This village is the main Jambu Mete producer, Jambu mete is main commodity for their livelihood.

There is nursery of Sandalwood manged by villagers. Breeders complaint that the price of Sandalwood seedling is very low. This price is determined by Decree of Bupati (head of regency). Its price is

Rp15.000,- . This price is very low compared to its intensive maintenance. This price should be raised up to Rp. 25.000 because Sandalwood nursery management is more difficult than it is for mahagoni and albacia.

The Meeting in this village was attended by 23 villagers. Most villagers supportes Sandalwodd development in NTT, however they are very anxious about marketing. Up to now, there is unadequate market information villagers. This conditions is favorable for brokers to gain benefits. In addition, villagers thought that they would not get benefits from Sandalwood if they were planted in state areas. In accordance with villagers' experiences in reforestation program, they argued that this program had expropriated their cultivation areas and they lost opportunity to go on cultivation activities on these areas. Therefore, they proposed Sandalwood development program to be concentrated on private areas and its price could follow market price.

Day 5th, March 23th, 2010

At the fifth day, team visited to Local Planning Board of Flores Timur (Bappeda). Head of Bappeda paid an attention to provincial government program to encourage Sandalwood plantation. Bappeda, however, has not yet proposed Sandalwood plantation as a priority program for Flores Timur District. The government still focuse on *Jambu Mete* for its contribution to communities' welfare. Head of Bappeda stated that communities are very interested in planting trees. He added this was indicated by *Kalpataru* awarded to one of villagers for his success in planting and conserving gaharu (eagle wood). The head argued that Sandalwood plantation program would be succesful if there are insentive regulations or policies for communities.

F. Conclusions

The followings are the resume of field survey to Flores Timur:

- There are still Sandalwood in natural forest
- District Forestry Agency has conducted inventory of existing Sandalwood vegetation, and implemented land rehabilitation program using Sandalwood as one of species.
- High enthusiasm of communities to development program of Sandalwood , especially in private areas.
- Communities proposed that government as a facilitator and communities as implementers.
- Their presence in meeting is an indicator for high community participation .
- Sandalwood deveopment program should adopt existing agricultural system (farming system). Jambu mete is the main commodity for driving economy. Sandalwood plantation should be integrated with other main commodities.

IMPROVING THE ENABLING CONDITIONS FOR SUSTAINABLE MANAGEMENT OF SANDALWOOD FOREST RESOURCES IN EAST NUSA TENGGARA PROVINCE, INDONESIA

PD 459/07 Rev.1 (F)

Case study on Sandalwood in Timor Tengah Selatan (TTS) District, East Nusa Tenggara Province

Don Gilmour

April 2010

Contents

Executive summary

The information reported in this case study from TTS District is designed to supplement material already collected by the ITTO Project.

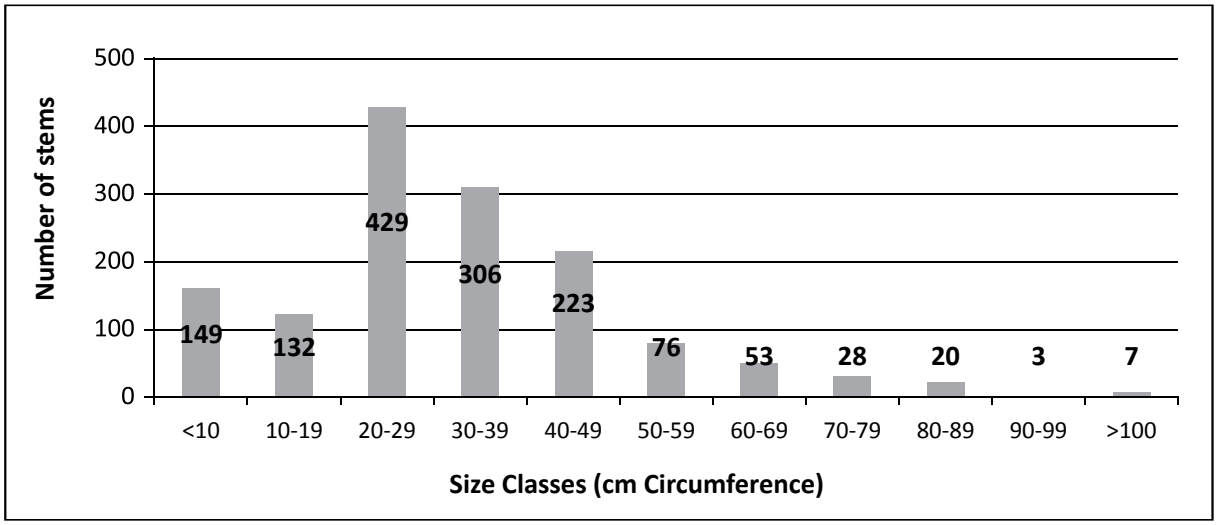
Existing regulatory framework

The relevant Provincial and TTS District Perdas contain numerous ambiguities and overlapping statements that lead to a lack of clarity about the situation regarding "ownership" and "control" of forest resources on private land. There is also ambiguity over the official position in regard to levying taxes on the harvest and transport of Sandalwood. These act as disincentives for farmers to become more involved in Sandalwood production.

Extent of Sandalwood resource in TTS District

A survey carried out in TTS district indicated that, in spite of the policy disincentives, Sandalwood occurs extensively on private farm land across the District. The resource is viable in the short-medium term, but needs additional establishment of Sandalwood if it is to be viable in the long term (see Figure). This also indicates that people are aware of the value of Sandalwood and are active in trying to develop it on their land. Very little Sandalwood remains on State Forest land.

Figure 4. Stand table of sandalwood in TTS district (sample of 1.426 trees)
Raw data provided by Christian Koenunu



Indicative value of existing Sandalwood resource in TTS District

If the existing Sandalwood trees in the 20-49 cm circumference size classes on private farm land grow through to harvestable size in the coming decade or so it is estimated that each tree will be worth about Rp 8 million to the farmer at the present price of about Rp 200,000 per kg for high quality wood. By extrapolation, this means that the estimated entire crop of 20,000 trees in the District would be worth about Rp 160 billion. These figures should be considered as indicative only, as there are many uncertainties such as the future local and international demand and therefore price.

Discussion

The purpose of the ITTO project is to improve the enabling conditions for sustainable management of Sandalwood, and the activities are focused primarily on the **regulatory framework**. However, while these are necessary to achieve Sustainable Forest Management, they are not sufficient in themselves. Equal attention needs to be directed at improving the other key domains that interact with the regulatory framework to ensure that forest management objectives are achieved. These include reforms to:

- **Tenure arrangements** (to ensure that community members have guaranteed rights of access to, and usage of, forest products on their own land), and
- **Governance arrangements** (to ensure that the way in which decisions are made and implemented is supportive of the new policy orientations).

Key recommendations

1. *Land category for priority attention*

As a first priority, support the on-going efforts of villagers to grow Sandalwood on their private land. This will build on existing interest and capacity, be relatively low cost, cover large areas and have a high chance of success. As a much lower priority, trial social/community forestry modalities on State Forest land. This will be high cost, cover small areas, and have an uncertain chance of success.

2. *Regulatory framework*

Communities should receive 100% of the economic benefit from the sale of Sandalwood harvested from their farm land. In this sense, Sandalwood should be treated as just another high value crop grown by farmers. This will provide the maximum incentive for farmers to become more engaged in Sandalwood protection and management.

3. *Governance*

Government officials should move from a focus on policing/licensing to facilitation of community development (see also under capacity building recommendation).

4. *Capacity building*

Carry out targeted capacity building activities aimed at:

- Improving the technical capacity of farmers to plant and manage Sandalwood more effectively;
- Reorienting the operational focus of government officials from policing/licensing to community facilitation and support.

5. *Awareness raising*

Carry out a focused program of awareness raising among all key stakeholders (communities, government officials in relevant agencies and the private sector) of the rights and responsibilities of communities and others. This could include the transmission of market information so that communities are aware of the current price of Sandalwood.

1. Background

The long history and importance of Sandalwood as both an economic resource and a culturally significant species in East Nusa Tenggara (ENT) Province is well known and well documented (see for example McWilliam 2005 and Rohadi et al. 2004).

This case study in TTS is part of a wider series of studies contracted by the ITTO Project (PD 459/07 (F) Rev.1) "*Improving The Enabling Conditions For Sustainable Management of Sandalwood Forest Resources In East Nusa Tenggara (ENT) Indonesia*". The objective of the studies is to carry out an analysis of policy and economic incentives for sustaining the sandalwood resources in the ENT Province. National consultants have gathered data in the Districts of Alor, East Sumba, East Flores and Timor Tengah Selatan (TTS). The information reported in this case study from TTS is designed to supplement the material already collected and provide input to the consolidated report.

2. Approach taken

Initial meetings were held in the TTS District headquarters to obtain an insight into the regulatory framework for Sandalwood conservation and management in the District, as well as more general forest management functions.

The approach taken in carrying out the case study was to select a small number of villages which covered the range of conditions typical of those found in the District (see Figure 1 for locations of the villages visited).

Figure 1. Location of villages sampled in the case study

Visits were made to each of the villages over a five day period in April 2010 and discussions held with key informants. Information was collected using informal semi-structured interviews where the following topics were covered during the course of the interview:

- Forest condition in the area and changes over time (farm land as well as State Forest land);
- Land tenure situation of the farm/village (particularly tenure security);
- Proximity to State Forest land;
- Interest in growing Sandalwood (source of seedlings, number of seedlings planted, extent of natural regeneration, etc.) on farm land (as well as other trees);
- Success rates of plantings—reasons and other problems associated with Sandalwood management;
- Compliance requirements needed to sell Sandalwood (certificates, taxes, etc.);
- Constraints (policy or other) that inhibit expanded planting Sandalwood seedlings and management of naturally occurring Sandalwood on private land;
- Incentives needed to increase Sandalwood plantings on private land;
- Value of Sandalwood in the market;
- Sale of Sandalwood in past 10 years (pressure from buyers);
- Problems with security of Sandalwood (stealing);
- Attitudes to Sandalwood planting and management on State Forest land;

The interviews were generally supplemented by walks in the farm land adjacent to the house to view Sandalwood plantings and natural regeneration and to elaborate many of the points outlined above.

This approach was adopted rather than using a structured questionnaire as it allows for interesting lines of enquiry to be followed as they emerge during discussions, without being constrained by the structure and content of a formal questionnaire. It is also much more informal and allows the informant freedom to express views rather than simply answer questions. Formal questionnaires often constrain the interaction between interviewer and interviewee because of the implied "official" connotations associated with them. Semi-structured interviews also give a better sense of the dynamics surrounding a topic.

The villages sampled and the key informants are shown in Table 1.

Table 1. Villages sampled during case study.

Village	Altitude (m asl)	Land tenure	Key informant(s)
Binaus	997	Half of village is within State Forest land, and half is outside State Forest land	Mr Nahor Tasgkeb (Village head)
Oelbubuk	1,069	Outside State Forest land	Mrs Rosalina Mnune (farmer) plus family members
Kualeu	630	Enclave village (inside State Forest land)	Mr Yohanis Banoet (Head of community development group) plus extended family members
Nule	841	State Forest land (Government Sandalwood plantation)	Mr Christian Koenunu (TTS Forestry Service)
Boti	590	Outside State Forest land (Traditional customary-*adat*-management system)	Mr Namah Benu (Boti *radja*)
Bikekneno	759	Outside State Forest land	Mrs Martincea Mella (Farmer and household head)
Fatukoto	1,144	Enclave village (Inside Conservation Area)	Mr Abdis Kase (Farmer)

Two women and five men were included among the key informants.

3. Regulatory framework for forests in general and Sandalwood in particular

3.1 National level

The national Government has committed itself to work towards the sustainable management of the country's forest resources and to develop a national macro policy environment to support this goal. In order to achieve this overall goal the Government has developed eight priority programs, which include:

Rehabilitation and increased carrying capacity of forest resources,

- Revitalisation of forest utilisation and forest industries,
- Empowerment of people living around the forest, and
- Strengthening forest institutions.

These four programs recognize the importance of two key aspects of the national policy, i.e. the biophysical one of resource conservation (including sustainable management) and the socio-economic one related to community empowerment and local economic development.

The strategic planning framework of the Ministry of Forestry (MOF) for 2003-2009 also mentions Sandalwood (*Santalum album*) as one of the priority species for development of forest plantations.

There are several key instruments at the national level that help to inform national orientation of forest policy in general and Sandalwood policy in particular. These include:

- Forest Sector Master Plan
- Forest Law
- Sandalwood Master Plan (2010) for 25 years

In the past, the regulatory framework was framed to emphasise regulation and policing and control by the State rather than providing an enabling environment in which communities and government can work in partnership to achieve mutually agreed and beneficial objectives. However, this past emphasis is changing slowly in the reform era.

3.2 Province level

At the Provincial level national policy directions are interpreted through Provincial Perdas and other instruments that give direction to the Districts for implementation. The ENT provincial government is in the process of developing a Master Plan for Sandalwood development for the next 20 years. The Province has stated that the establishment of Sandalwood plantations is a priority issues that requires immediate actions by all District governments and related stakeholders. Each District government is required to allocate local budget to maintain sandalwood nurseries and plantations.

Recent instruments and other relevant statements emanating from the Provincial government include:

- Sandalwood Strategic Action Plan (2010) for the period 2009-2013;
- Implementation Guidelines for Sandalwood Strategic Action Plan;
- Governor's statement on "Cendana Icon" (1997).

3.3 District level

Some Districts in the Province have enacted District Perdas (e.g. TTS and Sumba Timur) but some have not, (e.g. Alor and Flores Timur).

Policy orientation in TTS District

About 30% of the TTS District is covered by registered State Forest land, of which about 83% is gazetted. Much of this land is also under cultivation by farmers. The major programs of the TTS District Forestry Service are directed towards:

- Protection and supervision of State Forest land;
- Empowerment of communities for protection and supervision;
- Providing extension to communities (technical and administrative);
- Rehabilitation of critical land.

There programs reflect both the National and Provincial focus for forest management in general and Sandalwood management in particular and illustrate the steadily changing emphasis that recognises the importance of empowering communities to become effective partners with government in development. However, the overriding emphasis is on using the participation of communities to achieve **forest-centred** outcomes (such as forest protection and rehabilitation) rather than **people-centred** outcomes (such as improved control over their own resources and improved livelihoods).

The relevant TTS District Perdas (2002, 2005 and 2009) contain numerous ambiguities and overlapping statements that lead to a lack of clarity about the situation regarding "ownership" and "control" of forest resources on private land. There is also ambiguity over the official position in regard to levying taxes on the harvest and transport of Sandalwood, e.g. it is unclear whether taxes are required, and if so, who should pay them and under what conditions. However, a thorough analysis of these regulations is not possible in this report as none of the relevant documents are available in English. An example of the extent of the ambiguities in the Perdas can be seen by reference to the situation in nearby Sumba District (see Box 1).

Box 1. Ambiguities in Sumba District Perda relating to the ownership and management rights of Sandalwood (Dr Titiek Setiawati, pers.com.) [A similar situation exists in TTS District]

1. All Sandalwood trees are under local government control (Pasal 2, SK Bupati No. 33/2000 and Pasal 2, Perda No. 19/2000).
2. All Sandalwood trees in private land are owned by the landowners (Pasal 4, Perda No. 19/2000). Pada Pasal 3, SK Bupati No. 33/2000, terminology "owned" and "controlled" are not defined, e.g. it seems that the trees are privately owned but may be "controlled" by the District.
3. Sandalwood exploitation is banned under Pasal 4, SK Bupati No. 33/2000 (6 July 2000) but not under Perda No. 19/2000 (15 November 2000) – there is no clarification about when the new regulation is enacted and when the previous one was withdrawn.
4. Sandalwood trade is determined by the District (covers AAC/production, harvesting operation, trade and marketing) (Pasal 8, Perda No. 19/2000) although there is no clear relationship between regulation and ownership/owner's right.
5. Income from selling Sandalwood as assigned by the District and will be under the right of local government and will be deposited in the local government trust fund (Pasal 12, Perda No. 19/2000).

A full analysis of the policy settings in TTS District and their evolution over time is given in the TTS consultancy report by Dr Michael Riwu and Mr Polunun Boroh. A summary of their conclusions is given in Box 2.

Box 2. Summary of conclusions of study on enabling policies for Sandalwood in TTS District (Dr Michael Riwu, pers. com.)

1. In the past, Sandalwood trees were viewed as exclusive commodities belonging to the government (and previously the local radja). There was direct involvement of elites in Sandalwood management that ignored any rights of local communities on whose land the Sandalwood occurred.
2. During the New Order era (prior to 1998), all policies relating to Sandalwood were designed to benefit the central government. There was almost no benefit to local people. This resulted in people losing their sense of belonging to Sandalwood, most of which occurred on State Forest land.
3. Ironically, even though there was a very strong hand of government on Sandalwood management, there was no significant action taken to prohibit Sandalwood stealing. People perceived that the government did not accept any responsibilities to limit stealing.
4. As a result of this situation, the population of Sandalwood declined sharply, particularly on State Forest land, from about 500,000 market size trees in the 1970s to about 250,000 in the 1990s. During this time local people received very little economic benefit from Sandalwood.
5. Just prior to the reform era (1998), the central government influenced the Provincial government to modify Provincial regulations to guarantee some benefits to local people from harvesting Sandalwood trees on their private land. However, these benefits were limited and gave little economic incentive. There was also no technical support to communities who wanted to become involved in Sandalwood management.

3.4 Evolution of regulatory framework

In spite of the positive direction of the recent reforms in terms of encouraging farmers to become involved in Sandalwood management, the overall focus of the regulatory framework remains on **enforcing** people to protect Sandalwood rather than providing an **enabling** environment. An enabling environment would enable (and empower) farmers to manage Sandalwood (and other tree species) on their own land for their own economic benefit while at the same time achieving the government's objectives of sustainable resource management and improved socio-economic conditions for rural dwellers. Experience in many countries indicates clearly that an enabling framework is far more effective than an enforcing one for achieving both biophysical and socio-economic management objectives.

A perusal of the various parts of the regulatory framework suggests that there are four distinct threads running through the reforms of the past decade. These include changes to:

1. Forest management objectives, which have broadened to encompass more explicit recognition of empowering communities and enhancing livelihoods.
2. The regulatory framework, which has evolved to support the new forest management objectives (e.g. by modifying crippling taxes on Sandalwood on private farm land).
3. Tenure, which currently accepts the rights of farmers to benefit from forest products that grow on their own land (still partial).
4. Governance systems, which have implied changed relationships between government and communities, and, by inference, changes to the way that decisions are made with regard to resource management.

The purpose of the ITTO project is to improve the enabling conditions for sustainable management of Sandalwood, and the activities are focused primarily on the regulatory framework. However, while changes to the regulatory framework are necessary to achieve Sustainable Forest Management, they are not sufficient in themselves. Equal attention needs to be directed at improving the other key domains that interact with the regulatory framework to ensure that forest management objectives are achieved (see Figure 2).

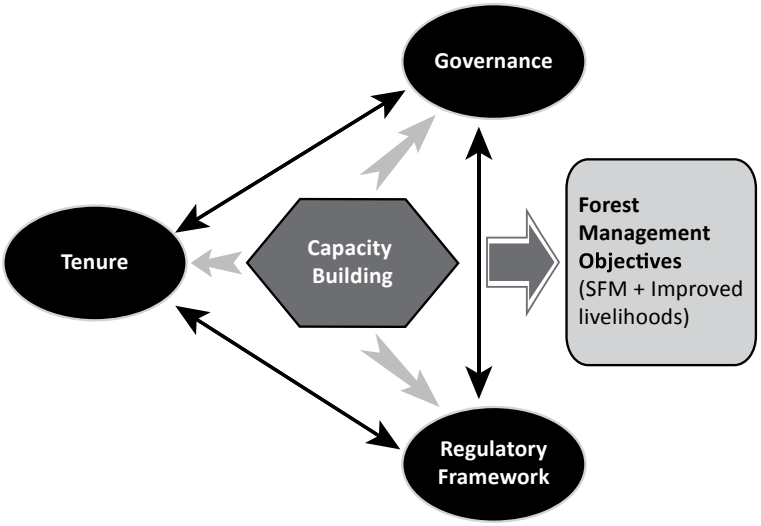


Figure 2. Key domains that influence the achievement of forest management objectives (Gilmour and Fisher 2010)

This means that focused attention needs to be given to reforming:

- Tenure arrangements (to ensure that community members have guaranteed rights of access to, and usage of, forest products on their own land), and
- Governance arrangements (to ensure that the way in which decisions are made and implemented is supportive of the new policy orientations). Good governance, as it is commonly understood, takes into account meaningful participation by a range of stakeholder groups.

These changes cannot come about without the exercise of considerable political will at all levels of government as well as willingness to make the necessary changes. Inevitably, capacity building will be needed to support the reform processes.

4. Results of interviews

In all villages except one the land that people farm is considered to be private farm land held by the family, and the boundaries of this land are largely uncontested. Some families have formal land registration certificates, but some do not. Decisions made on what to plant, where and when to plant, are made by the family. The one exception was Boti village, which is a very traditional village where customary (*adat*) practices still apply, and there is a fierce and proud determination to retain these traditions. In Boti, the land is held as communal property, and a local "king" (*radja*) is still the paramount decision maker about all land use management (and other) decisions in the village. Any villagers who transgress local rules and norms are dealt with by the *radja* and other relevant village custodians. However, they reported that it is increasingly difficult to retain this control when young village men, with education and connections with outsiders, choose to steal Sandalwood. It is a case of a clash of cultures. Some people in other villages indicated that similar customary practices were widespread in TTS until the 1960s and 70s, but they faded away in the face of greater outside influence and they became less relevant in the modern world.

Because all aspects of Sandalwood growth and conservation on private land differed greatly from that for Sandalwood on State Forest land, these two categories are treated separately in the following discussion.

4.1 Sandalwood on private land

Changes to tree cover on private farm land over past few decades

All informants commented on the steady decline of valuable trees in general and Sandalwood in particular during the past few decades on their own land and that of the whole village. There were no dissenting opinions expressed on this topic.

Security of tenure

Almost all informants expressed the view that their land tenure was secure, and respected by their neighbours and village authorities, even if they had no formal land registration certificate.

Experience in planting/protecting Sandalwood

The majority of the Sandalwood seen during the case study investigations has resulted from natural regeneration. Informants commented that they have actively protected naturally regenerated Sandalwood on their private land, and many relatively large trees (around 60-90 cm circumference) were seen during the forest walks.

Most informants advised that they had been active in planting Sandalwood seedlings in their farm land during the past 10 years. Some of these plantings were of small numbers (3-10) but several were of large numbers (20-100). Survival and growth of the planted seedlings has been mixed, although it is clear that there is a fairly high mortality rate, perhaps as high as 70%. Everyone was aware of the need for a host plant to be planted at the same time as the Sandalwood seedling, with chilli and crocus being cited as the most common host plants. Some people have cut the host plant after a few years, claiming that there is no further requirement for a host plant after the seedlings are well established with plenty of other plants in the vicinity. However, in several cases the growth of the advanced seedlings is very poor.

Knowledge of compliance requirements when selling Sandalwood

Most people said that they need to obtain a certificate from the Head of the village certifying that the Sandalwood to be cut is the rightful property of the person, although some noted that when selling Sandalwood in the past they just negotiated directly with a buyer and did not require a certificate. All informants said that there were no additional official requirements, such as the payment of tax to the government.

Suggestions for incentives to increase Sandalwood production

Most people stated that they would appreciate help from the government in improving the technical aspects associated with Sandalwood production, and this would be a major incentive to encourage them to plant more seedlings.

A few people suggested financial incentives (supply of seedlings, etc.) but technical support was the major requirement.

Experience in selling Sandalwood during past 10 years and knowledge of the current market value

Almost all informants commented that they had been approached by buyers during the past few years, but had refused to sell until their trees become bigger and there is a real need to capitalise their Sandalwood assets. Everyone was aware that Sandalwood commands a high price, although many did not know the current market value. Several people commented that they see Sandalwood as money in the bank that will increase in value over time. Instances were given where several sandalwood trees had been harvested in the past to pay for special purposes, such as education expenses or cultural festivals.

Problems with stealing Sandalwood

The majority of informants felt that they had sufficient security of tenure (irrespective of whether it was formally registered or locally recognised) and capacity to withstand any efforts to steal their Sandalwood. This also applied to enclave villages located within State Forest land and Conservation Areas. However, there were one or two exceptions to this, where people felt that stealing Sandalwood was an on-going problem.

In many of the instances where stealing has occurred during the past 10 years, the culprit was an insider (sometimes a relative) with outside connections. This was found to be particularly difficult to deal with. However, an example was cited (in Fatukotu village) where a locally applied system of fines on people who steal Sandalwood was claimed to be reasonably effective. In Boti village an example was given where a Sandalwood thief had been apprehended and taken to the police, but no action was taken.

Several people felt that when strong outside organisations, such as the army or police or other government agencies are the buyers, then villagers are scared and feel powerless.

4.2 Sandalwood on State Forest land

Tenure ambiguities associated with State Forest land

The present boundaries of State Forest land were set in the early 1980s when the earlier boundaries set by the Dutch in the 1920s were substantially expanded. This increased the area of State Forest land in ENT from about 1.1 billion ha to about 1.8 billion ha (Michael Riwu pers. com.). Anecdotal evidence suggests that people still contest this takeover of their land by the State. Thus there overlapping and conflicting tenure rights, that will need to be addressed before allocating any additional rights to individuals, communities or companies via social or community forestry interventions.

Changes to condition of State Forest land over past few decades

A universal view expressed by all informants was that the condition of the State Forest land adjacent to the villages has deteriorated significantly in recent decades, in terms of the number and size of trees (this applied to Sandalwood as well as other high value trees). There are now few if any large trees left in State Forest land. Some people expressed the view that in the past most of the large Sandalwood occurred in State Forest land. Efforts by the government to rehabilitate State Forest land have been largely unsuccessful, as the villagers feel no sense of ownership over the forest, even if they have been involved in tree planting as wage labourers.

In most villages people recognise small areas of land, often containing particular hills or rocks, which have ritual and spiritual significance. These areas are often considered to be "forbidden spaces" and have a local name (e.g. in Binaus this space is called *afuah*). These areas are generally on State Forest land rather than on private farm land. Hence, there is still a ritual and spiritual connection between people and at least some parts of the State Forest land. More importantly, there are functional local

institutional arrangements in place that dictate behaviour in relation to this land. It may be possible to build on these in the future to develop institutional arrangements for other aspects of land management (such as forest protection and development) in State Forest land.

Attitudes to Sandalwood plant ing and management on State Forest Land

All informants were questioned on the topic of what would be needed to rehabilitate the State Forest land. Most considered this to be an impossible task because of the difficulty of protecting valuable trees. When pressed, one village leader wrote a series of conditions that he felt could work (see Box 3).

Box 3. Conditions needed to encourage participation of community in Desa Kuale'u, TTS to rehabilitate State Forest land (suggestions from Mr. Yohanis Banoet)

1. Community needs government guarantee to allow them to live on and cultivate State Forest land, with legal permission, for 35 years or more.
2. Community needs financial and technical supporting from government to undertake all silviculture steps, from seedling to harvesting.
3. Community needs government guarantee to allow them to have all tress and non-tree products that are produced on State Forest land which they occupy with legal permission.
4. Community needs permission from the government to plant and manage some tree species along the road side in State Forest land.
5. Community expects rewards from the government when people succeed with their rehabilitation on State Forest land through facilitating their children to access formal education.
6. Community needs capacity building in order to improve their knowledge and ability to rehabilitate State Forest land.

It is worth keeping these suggestions in mind when considering the possibilities for locally relevant modalities for social/community forestry.

5. Status of the Sandalwood resource in TTS

An inventory was conducted in TTS District in early 2010 to obtain an indication of the number of Sandalwood "mother trees" in the District. Mother trees were considered to be those of a size sufficient to produce viable crops of seed that can be harvested for propagation. A total of 1,426 trees[1] were identified and measured on selected patches of private land across 23 of the 240 villages in the District. The emphasis was on recording trees greater than 20 cm circumference, but smaller trees were measured if it was considered that they could produce viable seed. Figure 3 shows the location of the sampled trees across the District (data provided by Christian Koenunu).

1. This figure can be put into perspective by remembering that it represents a little more than one hectare of Sandalwood plantation as grown in Australia.

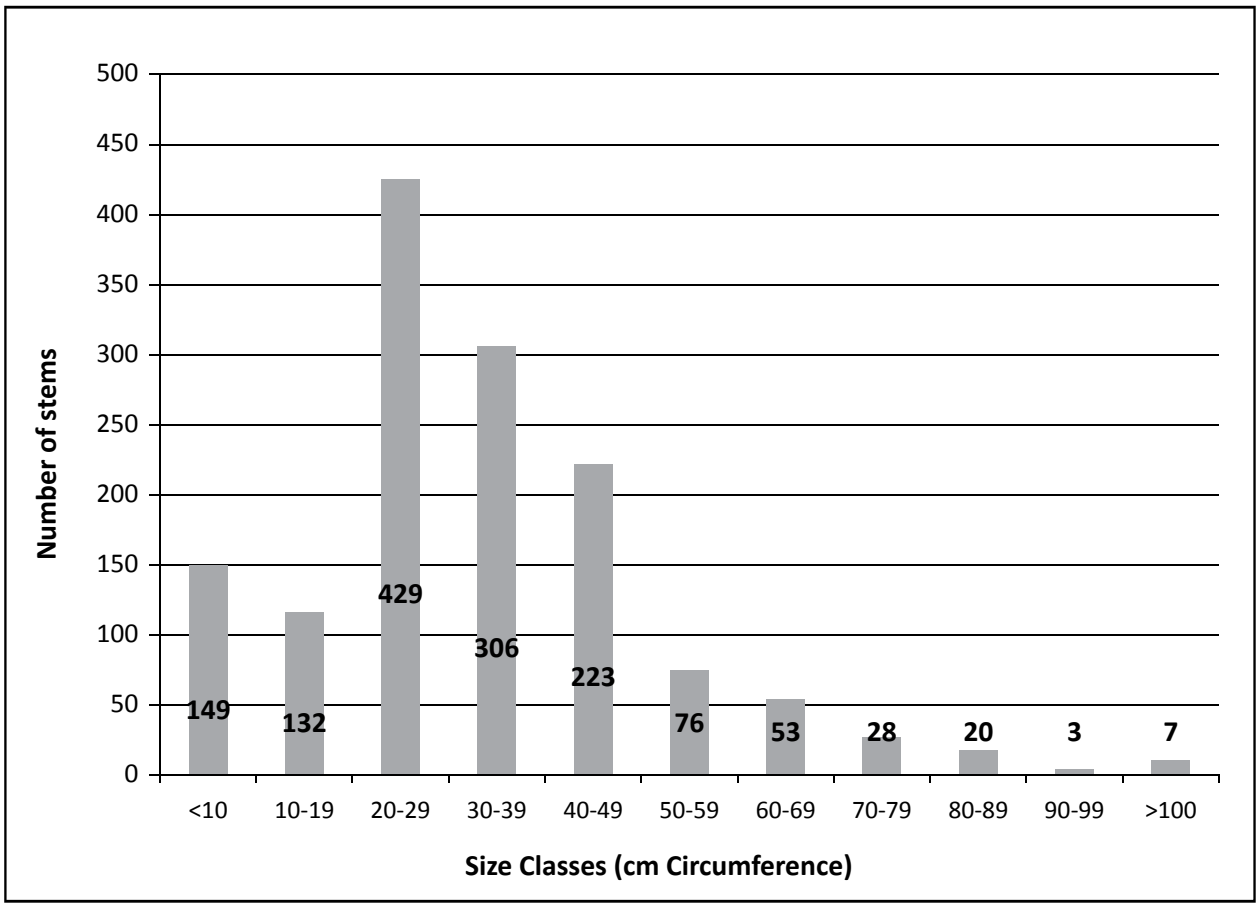
Figure 3. Location of the 23 villages sampled for the "mother tree" survey

While the intention of the survey was to determine the number of mother trees, the data can also be used to obtain an indication of the extent of the total Sandalwood resource on private farm land across the District and the stand dynamics. This can be useful in estimating the number of trees that will reach commercial size in the short to medium term, as well as the overall viability of the resource. The mother tree survey was carried out in 23 villages, which represent 9.6% of all the villages in the District. The survey team estimated that in each village about 50% of the area of the village was covered. If the spacial coverage of Sandalwood across the whole District is the same as that in the area covered by the survey, then, by extrapolation, there would be about 29,700 mother trees on private farm land in the District. Thus, there is a substantial source of seed readily available for future propagation.

The data from the survey have not yet been fully summarised and analysed, but an indication of the size class distribution of the mother trees can be seen in the stand table shown in Figure 4. Quite a few of the trees recorded in the survey were below 10 cm circumference, but it is not clear whether these represent all trees in this size category that were encountered, or only those considered being able to produce viable seed (i.e. there may be many more smaller stems in the population than were actually recorded).

The stand table indicates that the Sandalwood in the District appears to be a reasonably viable population (in terms of medium term survival) particularly for those size classes above 20 cm circumference, where the distribution across the larger size classes conforms to that of a "normal forest". Of some concern is the relatively small number of stems in the smaller size classes (< 20 cm) which indicates, if the data are correct, that there are only a relatively small number of trees that will be recruited into the larger size classes in the coming decade. This poses a threat to the viability of the overall resource in the longer term.

Figure 4. Stand table of sandalwood in TTS district (sample of 1.426 trees)
Raw data provided by Christian Koenunu



It would be of interest to carry out a 100% survey in a few selected villages across the District to obtain information on the entire population (from seedlings through to the largest trees) to clarify the structure of the remnant Sandalwood population. This would enable a clearer picture to emerge on the long term possibilities for a viable Sandalwood supply to develop. There are anecdotal reports that there are many small seedlings and saplings in the private farm land, and it would be useful to obtain quantitative data to support or refute these reports.

The stand table demonstrates clearly that there are a substantial number of trees above 40 cm circumference among those surveyed (a total of 410 with 30 of them being above 80 cm circumference). This is larger than might be expected from anecdotal suggestions about the widespread depletion of all Sandalwood of any size.

The experience of officers carrying out the survey is that virtually every rural household in the District has at least 1-2 Sandalwood trees growing in their fields, while quite a few have more than 100. If it assumed that, on average, there are about 10 trees of all sizes per household (this approximate figure was arrived at during discussions with several farmers), then with about 60,000 households in the District there would be about 600,000 Sandalwood trees of all sizes in the District. However, if the 30,000 mother trees above 20 cm circumference are taken into consideration, the majority of the total

(about 570,000) must be small trees less than 20 cm circumference, It should be kept in mind that there seems to be a high mortality of seedlings and small stems, so it is unclear just how many of this large number might grow through to maturity. Nonetheless, this represents a potential large financial asset in the hands of villagers that will be available for harvesting in the future.

In additional to the 23 villages where the detailed survey was carried out, the survey team collected information from people across the whole District who reported that mother trees occurred in their land, and the locations are shown in Figure 5. This shows that Sandalwood is widely spread across the District and is not confined to a few discrete areas. However, there was considerable variability in the number of Sandalwood measured in each of the 23 villages during the survey, with the range being from 1 to 275 per village. Hence, the Sandalwood density does seem to be very different in different villages. It would be of interest to explore this aspect further to determine whether the differences are due to different site conditions or farmer attitudes.

Figure 5. Locations across TTS District where mother trees of Sandalwood are reported to occur.

6. Sandalwood market in TTS

The Sandalwood market is currently in very limited due to a severe shortage of mature Sandalwood trees. The only oil factory in the district closed in 2009 due to a lack of supply. There is still one buyer operating in the District and he reports that he buys between 2.5 and 3 tonnes of sandalwood each month. He supplied an indicative range of prices that he pays farmers for different grades of Sandalwood, and the prices that he obtains from the factories in Bali, Surubaya or Jakarta. These figures are shown in Table 2, although it should be emphasised that they should be treated with caution.

Table 2. Price differential for Sandalwood between farm and factory

Category of Sandalwood	Price paid to farmer by buyer (Rp per kg)	Price paid to buyer at factory (Bali, Surabaya, Jakarta) (Rp per kg)
White wood (sapwood)	2,500	7,000-7,500
50% sapwood and 50% heartwood	30,000-40,000	65,000-70,000
Good heartwood	80,000-100,000	150,000-170,000
Small twigs	15,000	25,000-30,000
Long block (10-100 cm circum)	350,000-400,000	500,000
Short blocks (10 cm circum)	150,000-200,000	150,000-200,000

If the figures are to be believed then there is not an exorbitant mark up between the price paid to farmers and the price received from the factory. A Sandalwood oil producer in Kupang advised that most of his Sandalwood comes from Timor Leste, as there is very little commercial Sandalwood remaining in ENT.

7. Indicative value of the Sandalwood resource on private farm land in TTS

It can be reasonably predicted that the 958 trees in the 20-49 cm circumference size classes on private farm land measured in the mother tree survey (see Figure 4) will grow through to harvestable size in the coming decade or so. This presumes that farmers will resist the temptation to harvest them earlier, and stand up to pressure from buyers or thieves. The sampled trees in this size class equate to almost 20,000 trees across the District if the assumptions outlined in Section 5 about the representativeness of the survey are correct. If each mature tree contains about 40 kg green weight of heart wood in the stems and branches[2] (excluding the roots), then each tree will be worth about Rp 8 million to the farmer at the present price quoted by the buyer in Soe of about Rp 200,000 per kg for high quality wood. By extrapolation, this means that the entire crop of 20,000 trees would be worth about Rp 160 billion.

2. These estimates are based on Rohadi et al. (2004).

These figures should be considered as indicative only, as there are many uncertainties such as the future local and international demand and therefore price. These calculations also assume that farmers will retain their Sandalwood trees for a further decade until they reach an optimum size for harvesting. Even if there are substantial errors in these calculations, it is clear that the existing Sandalwood crop is worth a very substantial sum of money to the farmers who own it, and there is a huge potential to increase this resource significantly in the future.

8. Discussion

Past policies dictated that the ownership of all Sandalwood rested with the government, and villagers on whose land it grew were paid only a token sum to be involved in its harvest. Thus, these policies acted as a major disincentive for villagers to encourage or even allow Sandalwood to grow on their land, as virtually all the economic value went to the government. It seems clear that this has contributed to the degradation of the Sandalwood resource in the District and inhibited the active involvement of villagers in Sandalwood rehabilitation and management. These policies are now changing, but to some extent the perceptions created by them still exist and influence community attitudes to Sandalwood production.

Field investigations revealed that, in spite of positive changes in policy orientation, there is some ambiguity and uncertainty in the interpretation of the current policies that relate to Sandalwood. For example, the TTS District Perda no. 25 of 2001 for Sandalwood states that a tax of 10% is payable to the government on the sale of Sandalwood (but it is not clear who is responsible for paying the tax). However, in practice no taxes are payable to the government if the Sandalwood is sold within the District, but a 10% tax applies if the Sandalwood is taken out of the District (again, it is not clear who is responsible for paying the tax). In fact, farmers selling Sandalwood in recent years have not been levied any tax by the District. So, in practice there are no real policy disincentives.

A common perception is that the mindset and attitude of communities needs to be changed so that they can benefit from becoming active Sandalwood managers. The results of this case study have demonstrated clearly that communities are well aware of the value and importance of Sandalwood in their farming system, and they are already actively involved in planting and protecting Sandalwood. However, communities recognise that they could do this better if they received technical support and guidance from the government to improve their capacity to be more effective tree and forest managers. This is in spite of some residual uncertainties as a result of past policies.

Another perception in some government and academic circles seems to be that Sandalwood is close to extinction. This is clearly not the case in TTS, where there is a large Sandalwood resource on private land (although it seems to have largely disappeared from State Forest land). The protection of natural regeneration and the supplementary planting of seedlings that has allowed this situation to develop is the result of active community involvement. However, importantly for the future viability of the resource, there seems to be a dearth of young trees (< 20 cm circumference) in the overall resource base to form the basis for the future commercial crop.

The reform era has given space to communities to participate actively in Sandalwood management in order to be able to benefit economically from their efforts. However, a perusal of the current regulatory framework and the key District programs suggests that the forest management objectives of the District are still strongly oriented towards rehabilitation and management of the forest resources (i.e. **forest-centred**), with a much lesser emphasis on socio-economic outcomes such as enhanced local livelihoods and local community empowerment (i.e. **people-centred**). Such a focus determines the mindset of the government officials charged with implementing the District programs and influences their attitudes towards communities. In spite of the reform era shift in emphasis, the changes to the regulatory framework need to continue to evolve to empower communities to take a greater role in conservation and management of the forest resources under their direct control and for government officials to be mandated to support this approach.

The reality in Districts such as TTS is that communities are an integral part of the forest ecosystem and without their active participation in forest conservation and management there is little likelihood of government programs being effective. This means more than simply using people's participation to achieve **government objectives**. It also means re-orienting government programs to meet **people's objectives** as well. This involves re-assessing governance arrangements in government agencies so that they match with the new objectives. This may require capacity building for government officials to reorient them from policing and licensing functions to community facilitation and development functions.

Most of the Sandalwood trees in the District are relatively small, and it will be 10 years or more before they reach valuable marketable size. Hence, there is a period of time in which to sort out many of the tenure, regulatory and governance arrangements that are needed to provide an enabling environment conducive to the long term viability and sustainability of the Sandalwood resource. The most important issues for the immediate future are considered to be:

- Revise the regulatory framework to:
    - Remove any elements that act as a disincentive for people to engage in Sandalwood production on their farm land.
    - Introduce incentives (financial and technical) to encourage people to become engaged in planting and managing Sandalwood on their farm land.
- Revise the governance arrangements that impact on the management of Sandalwood on private land to give emphasis to empowerment of rural people to take effective control over their natural resources and benefit from their sustainable management.

9. Recommendations

Following on from the results of this brief case study, several recommendations can be made to improve the overall enabling environment for Sandalwood production in TTS.

1. *Land category for priority attention*

As a first priority support the on-going efforts of villagers to grow Sandalwood on their private land. This will build on existing interest and capacity, be relatively low cost, cover large areas and have a high chance of success. As a much lower priority, consider social/community forestry modalities that could be trialled on State Forest land. This will be high cost, cover small areas, and have an uncertain chance of success.

2. *Regulatory framework*

Communities should receive 100% of the economic benefit from the sale of Sandalwood harvested from their farm land. In this sense, Sandalwood should be treated as just another high value crop grown by farmers. This will provide the maximum incentive for farmers to become more engaged in Sandalwood protection and management.

The regulatory framework (including the formulation of government programs) should evolve to become more **people-centred** to balance the **forest-centred** approach that still prevails.

3. *Tenure*

Secure the tenure of farmer's land, where necessary, so that farmers can have confidence that they will benefit from investing in a long term crop such as Sandalwood.

4. *Governance*

Government officials should move from a focus on policing/licensing to facilitation of community development (see also under capacity building recommendation).

Explore the possibility of establishing farmer networks that could become effective vehicles to negotiate with (1) Sandalwood traders and buyers to ensure that farmers receive a fair price for their Sandalwood, and (2) government officials to ensure that government policies and practices are supportive of their efforts and are applied fairly and equitably. Such farmer Sandalwood networks could also be a part of the evolving civil society and could work to counter the efforts of unscrupulous agencies, such the army and police, that put unfair pressure on individual farmers to sell their Sandalwood.

Help to strengthen useful local institutions (such as the local system for applying fines in Fatukotu village) and build the capacity of villagers to take more effective control of their local situation (contributing to local empowerment).

5. *Capacity building*

Carry out targeted capacity building activities aimed at improving the technical capacity of farmers to plant and manage Sandalwood more effectively.

Carry out capacity building of government officials to assist them to re-orient their operational focus from policing/licensing to community facilitation and support.

6. Awareness raising

Carry out a focused program of awareness raising among all key stakeholders (communities, government officials in relevant agencies and the private sector) of the rights and responsibilities of communities and others. This could include the transmission of market information so that communities are aware of the current price of Sandalwood.

7. Policing and enforcement

Take a firmer policing role aimed at unscrupulous buyers and other arms of government that might try to capture the benefits of community efforts in conserving Sandalwood.

Support the efforts of local communities to police their own Sandalwood resources.

10. Acknowledgements

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