

INTERNATIONAL TROPICAL TIMBER ORGANIZATION

ITTO

PROJECT PROPOSAL

TITLE	INITIATING THE CONSERVATION OF CEMPAKA TREE SPECIES (<i>ELMERRILLIA SPP</i>) THROUGH PLANTATION DEVELOPMENT WITH LOCAL COMMUNITY PARTICIPATION IN NORTH SULAWESI, INDONESIA
SERIAL NUMBER	PD 646/12 Rev.3 (F)
COMMITTEE	REFORESTATION AND FOREST MANAGEMENT
SUBMITTED BY	GOVERNMENT OF INDONESIA
ORIGINAL LANGUAGE	ENGLISH

SUMMARY

In recent years, cempaka wood supply from natural forest is declining. The unbalance between supply and demand for cempaka wood may result in unsustainable utilization of cempaka resource in the North Sulawesi. The alternative solution is to promote the development of cempaka plantations which currently are very limited in extent. The development objective of the proposed project is to contribute to the conservation of cempaka species that are the icon species of North Sulawesi. Its specific objective is **to develop the conservation and plantations of cempaka with the involvement of local communities in North Sulawesi.**

The expected outputs of the project are: (i) capacity of local communities in cempaka plantation development enhanced, (ii) participation of local communities in cempaka plantation development increased, and (iii) **government policy on the conservation and utilization of cempaka species reviewed and strengthened**

EXECUTING AGENCY	MANADO FORESTRY RESEARCH INSTITUTE (MFRI), FORESTRY RESEARCH AND DEVELOPMENT AGENCY (FORDA), MINISTRY OF FORESTRY (MOF).
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DURATION	36 MONTHS
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APPROXIMATE STARTING DATE	TO BE DETERMINED
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BUDGET AND PROPOSED SOURCES OF FINANCE	Source	Contribution in US\$	Local Currency Equivalent
	ITTO	435,187.20	
	Gov't of Indonesia	128,850.00	
	TOTAL	564,037.20	

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List of Abbreviation and Acronyms

AAC	: Annual Allowable Cut
BPTH/RFSC	: Balai PerbenihanTanaman Hutan/Regional Forestry Seed Center of MOF
BPK	: Balai Penelitian Kehutanan (Forestry Research Institute)
BPS	: Badan Pusat Statistik (Buareu of Statistical Center)
BT	: Bujur Timur (East Langitude)
DAS	: Daerah Aliran Sungai (Watershed)
DFA	: District Forestry Agency
DGWMSDF	: Directorate General of Watershed Management and Social Forestry Development
EA	: Executing Agency
FLR	: Forest and Land Rehabilitation
FORDA	: Forestry Research and Development Agency
FANSP	: Forestry Agency of North Sulawesi Province
Gol	: Government of Indonesia
HR	: Hutan Rakyat (Community Forest)
IC	: International Consultant
ITTA	: International Tropical Timber Agreement
ITTO	: International Tropical Timber Organization
LU	: Lintang Utara (North Latitute)
NC	: National Consultant
NE	: National Expert
MFRI	: Manado Forestry Research Institute
MoF	: Ministry of Forestry
NGO	: Non Government Organization
REDD	: Reduced Emission from Deforestation and Forest Degradation
RFM	: Reforestation and Forest Management
PC	: Project Coordinator
PS	: Project Secretary
PSC	: Project Steering Committee
PT	: Professional Trainer
PTC	: Project Technical Committee
SK	: Surat Keputusan (Decree Letter)
SOP	: Standard Operating Procedures
TOR	: Terms of Reference
USR	: University of Sam Ratulangi
UCP	: User Charge Principle
WMIT	: Watersheed Management Institute of Tondano

Project Brief

Cempaka are indigenous and local species trees in North Sulawesi. The utilization of cempakawood by local community in North Sulawesi increases with the high demand of local wood production as raw material for traditional house (Woloan), ships, traditional music tools and other house hold tools. The demand of Woloan as traditional house is increasing around 60% in the 2011.

The high international demand comes from Middle East, Dubai, Saudi Arabia, and Japan. In the several decades, wood supplies from nature forest are limited. The unbalanced between supply and demand cempaka wood can made the wood industry in the north Sulawesi will be shortage. The alternative solution is development Forest Community Plantation, which is currently not optimized. Mahfudz (2011) pointed that there was a good potency and supported by land resources.

To support ex-situ the conservation of cempaka, seed sources have been designated in Bolaang Mogondow district. The problem is, the seed has not yet had a good quality. The lack of silviculture technique and cempaka characteristic seed is recalcitrant which more easily is degraded. To improve the awareness and antusias of Minahasa community, the local government through cultural approach has put cempaka tress as icon for sustainable nature and environment.

The general objective of project is to contribute the conservation and sustainability of cempaka wood by improving the understanding of indigenous and local communities on sustainable management of cempaka tress both in natural and plantation forest. After the project completed cempaka forest plantation area are increase 10% and the silviculture techniques can be applied at least six villages in three districts in North Sulawesi. **To develop the conservation and plantations of cempaka with the involvement of local communities in North Sulawesi** is the specific objective of the project. The indicators of achievement will be measured with to building up 30 Ha of demonstration plot using the silviculture techniques in three districts, availability of draft policy on incentives for communities to support cempaka conservation, availability of policy on cempaka seed certification in north Sulawesi.

The assumptions used in this proposed project are the government supports, high participatory of community, local government, university and relevant institutions to implement and support forest policy. Many factors influencing the successful implementation of cempaka plantation include motivation, seriousness, or the right decision. For example, conducting intensive consultation can mitigate lack of government or stakeholder support, the silviculture technique failed to adopt by the local people can be handled by increasing the enthusiasm on implementation, and the periodic socialization will be conducted. In the end of project, cempaka plantation would give inspiration and strong spirit to development of forest community for cempaka and other primary woods in North Sulawesi.

The project will be implemented within three years, with some activities to be conducted to enhance the capacity cempaka plantation, developing appropriate seedling technologies, establishment a nursery model for production of quality seed, promote the production of seedling quality with nurseries small scale, studying silviculture techniques, training, workshop, monitoring and evaluation for planting and many others activities. Source funds were from ITTO and GoI.

The amount of project budget proposed is **US\$ 564,037.20** comprising **US\$ 435,187.20** contribution of ITTO and **US\$ 128,850.00** contribution of GOI. The ITTO funds are allocated **36%** to personnel and **2,6%** to capital items.

Map of Project Area

Sulawesi Island

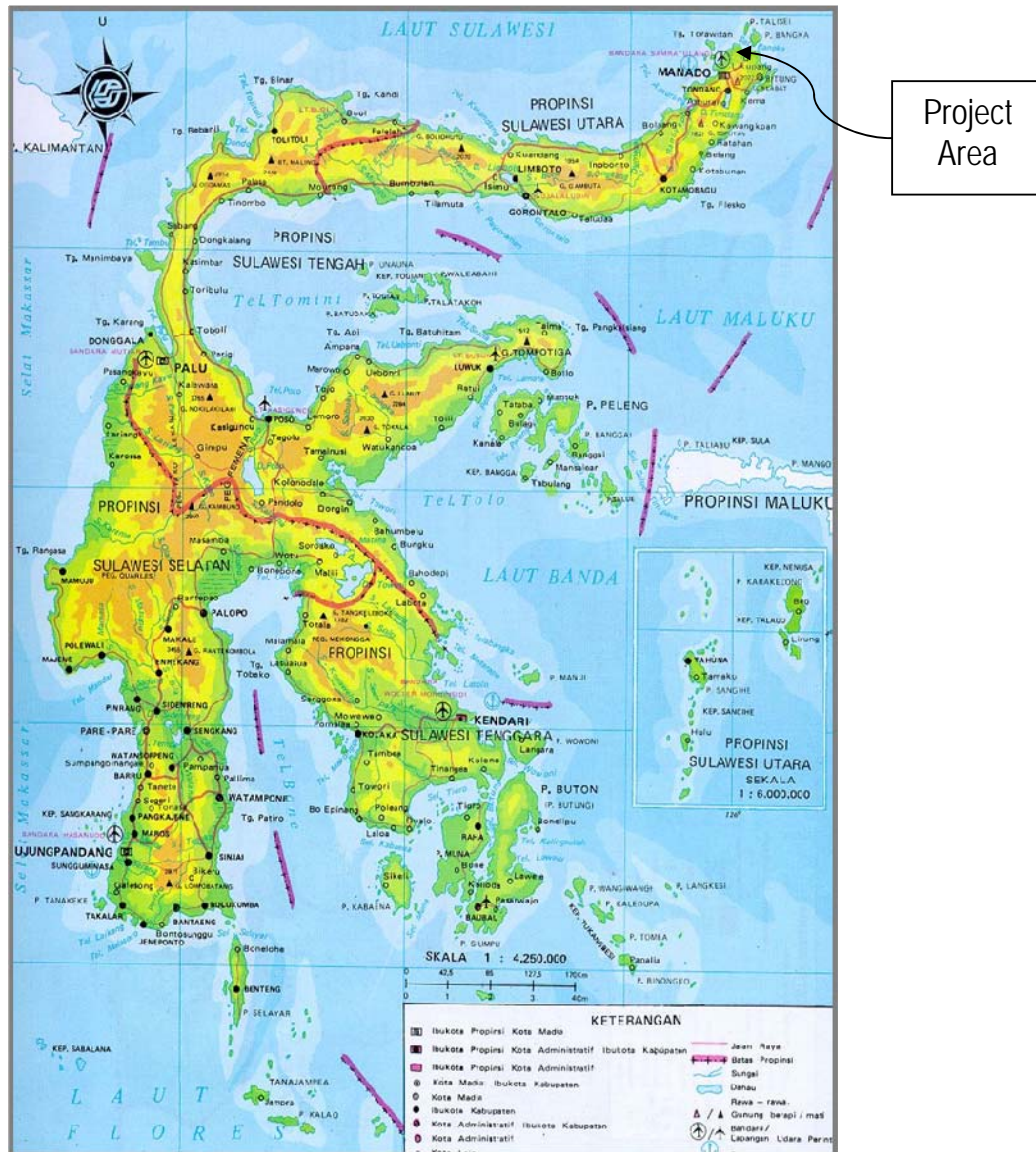


Figure 1. Map of project area

PART 1 : Project Context

1.1 Origin

Utilization of cempaka wood by local community in North Sulawesi is increasing due to high demand of local wood products. Cempaka wood is used as raw materials for traditional houses of Minahasa ethnic namely “Rumah Woloan”, ships, “kolintang” music tools, and other household tools.

The increase of total population in North Sulawesi escalate the demand for housing. Furthermore, steady economic growth push the promotion of traditional housing “rumah woloan” to international market as non-earthquake housing (*knocked down housing*) as shown in Figure 2. The advantage of non-earthquake housing has increased the demand.



Figure 2. Traditional house of Minahasa ethnic (rumah woloan) made of cempaka wood

Kristianto (2011) pointed out that the increasing demand on woloan traditional housing in 2011 reach around 60%. The increased demand is caused by both local and international high. International demand are mostly from Middle East, Dubai, Arab Saudi, and Japan. The head of Industrial and Trade Service of Tomohon City underlined that 100 wood crafters involved in woloan traditional house making with a transaction value of Rp. 15 miliar, equivalent to US \$ 1.6 million per year (Layuck, 2011).

In last several decades, wood supply from nature and community forest were limited. Decree letter from Directorate of Development of Natural Forest Management No: SK.235/vi-bpha/2009 regarding the national AAC from legal IUPHHK-HA stated that AAC in North Sulawesi were 35.000 m³. Kaban (2007) stressed that yield of production forest achieves 12 million cubic meter per year and AAC were only 9.3 million cubic meter. However, Priyambodo (2011) mentioned that the wood demand for national wood industry is approximately 43 million cubic meter per year. This implies to the shortage of wood material for woloan house making.

Current condition indicates cempaka wood supply from both production and private forest were limited, while the demand for woloan house making was increasing. It caused the cempaka wood shortage in North Sulawesi. The cempaka wood supply which does not meet the demand causes economic loss of wood industry in North Sulawesi. The alternative solution is to develop community plantation in several district in North Sulawesi. As the research states that community forest in Java island has successfully contributed around 16 million or 40% of the total demand per year within the island. However, the challenge is the optimalization of the community forest in North Sulawesi remains low. Mahfudz (2011) in a multi-stakeholder discussion explained that the large area of community land of 48,140 hectares was highly potential to develop community forest in North Sulawesi. Furthermore, the development of high quality seed sources in an area of 100 Ha in Bolang district support the ex-situ conservation effort and sources of genetic material for *breeding* activity and biotechnology of Campaka (Ratnaningrum dan Wibisono, 2002). Both of the large area and seed source encourage the development of community forest even though the development of seed source had several challenges: (i) lack of silviculture technique and (ii) seed of cempaka is recalcitrant (easily degraded). The enthusiasm of community to put cempaka as icon for sustainable nature and environment at the traditional agenda of Pinawetangan conducted on July 2010 showed the awareness of Minahasa community to plant cempaka trees slowly improves. (Arini & Tabba, 2010).

The selection of cempaka wood to develop is due to high preference of North Sulawesi community and increasing demand of woloan housing export. The high demand and lack of forest plantation supply caused exploitation of cempaka trees into a conservation area in North Sulawesi especially in the national park of Bogani Nani Wartabone. Continued exploitation would cause the degradation of primary genetic sources because high quality master trees are scarcely found. Therefore, the cempaka sustainable plantation would be one of solutions before the distinction of cempaka genetic and species occurs and at the same time it would empower community in North Sulawesi to obtain sustainable income.

This proposed project is an initiative of MFRI and WMIT to follow-up the consensus and conclusion that have been made by previous consultative main stakeholder meetings concerning cempaka tree species.

1.2 Relevance

1.2.1 Conformity with ITTO's objectives and priorities

Compliance with ITTA 2006 Objectives

The proposed project is objected to contribute the conservation and sustainable use of cempaka wood. The objectives comply with the ITTO objectives especially in Article 1 of the ITTA, 2006 by:

- (c) Contributing to sustainable development and to poverty alleviation;
The development of cempaka plantation, wood shortage case for woloan housing can be solved and local community would have sustainable income. The income contributes to the poverty alleviation for community in North Sulawesi.
- (j) encouraging members to support and develop tropical timber reforestation, as well as rehabilitation and restoration of degraded forest and, with due regard for the interests of local communities dependent on forest resources;
The implementation of cempaka plantation supported by local community participation and local government would establish participatory forest and land rehabilitation program with the full support from multi-stakeholders.
- (m) Encouraging members to develop national policies aimed at sustainable utilization and conservation of timber producing forests, and maintaining ecological balance, in the context of the tropical timber trade;
Giving direct and indirect benefits from cempaka plantation and improved performance of woloan house making, stakeholders would support and contribute to the development of national policies on sustainable utilization and conservation of timber producing forests and maintaining ecological balance, in the context of the tropical timber trade.
- (r) Encouraging members to recognize the role of forest-dependent indigenous and local community in achieving sustainable forest management and develop strategies to enhance the capacity of these communities to sustainably manage tropical timber producing forests.
Improving the understanding of indigenous and local communities on sustainable management of cempaka trees both in natural and plantation forest, would enhance the capacity of these communities to sustainably manage tropical timber producing forests.

Compliance with the ITTO Action Plan 2008- 2011

This project meets the priority actions identified under ITTO Action Plan 2008-2011 of one of the ITTO thematic programmes, namely reducing deforestation and forest degradation and enhancing environmental services in tropical forests. This project is also relevant with the Committee on RFM as below:

This outcome related to the objectives (b), (c), (d), (f) and (g) of Article 1 of ITTA 2006 and ITTO actions as follow:

- (b) in cooperation with other organizations, monitor the potential implications for the resource base of climate change and the relevance and appropriateness of policy developments;
Establishing multi-stakeholders forum on participatory cempaka plantation would create cooperation and coordination among organizations involved in Cempaka wood utilization. The Cempaka plantation development is really relevant with the efforts to reduce the impacts of climate change.
- (c) contribute to national and international efforts in the prevention and management of forest fire;
Establishing multi-stakeholders forum on participatory Cempaka plantation would clearly describe rights and obligations of stakeholders coping with the improvement efforts on degraded environment. The efforts are to prevent and manage forest fire through intensive tree maintenance.

- (d) in cooperation with relevant organizations, support studies and activities related to reducing deforestation and degradation and enhancing carbon sinks;
Developing cempaka plantation through multi-stakeholders participation would create contribution from relevant institutions to reduce deforestation and forest degradation and enhance carbon sinks.
- (f) support studies and other activities for the effective role of forest-dependent indigenous and local communities in securing the PFE as the tropical timber resource base and contributing to poverty alleviation;
Developing participatory cempaka plantation would provide job opportunities and good business environment for local communities. At the end, this activity would alleviate poverty of local community.
- (g) Support an understanding of the impact of emerging issues such as carbon sequestration and REDD on tropical forest development.
Giving direct and indirect benefits from good environment through cempaka plantation would develop better understanding of the stakeholders on the impact of emerging issues such as carbon sequestration and REDD on tropical forest development.

Expected outcome 6: Tropical forest resources sustainably managed

This outcome relates to the objectives (c), (d), and (f) of Article 1 and the ITTA, 1994 and ITTO actions as follow:

- (c) review progress on new opportunities (e.g. REDD) for the management of secondary tropical forests, the restoration of degraded tropical forests and the rehabilitation of degraded tropical forest land

Implementing participatory cempaka plantation in North Sulawesi would support rehabilitation and restoration of degraded tropical forest land program. It would create strategies and new opportunities (e.g. REDD) for the management of secondary tropical forests.

- (d) monitor and assess the social, economic and environmental costs and benefits of sustainable management of natural and planted forests.

Establishing multi-stakeholder forum on cempaka plantation which can be functioned as an independent body appointed to monitor and assess the social, economic and environmental costs and benefits of sustainable management of natural and planted forest.

- (f) Provide guidance and improving the sustainable yield of timber and non-timber products and services by intensifying the silviculture management of natural tropical forests and by restoring degraded forests.

To improving the understanding of indigenous and local communities on sustainable management of cempaka tree species would force relevant institutions to provide guidance and improving the sustainable yield of timber and non-timber products (cempaka oil) and services by intensifying the silviculture management of natural tropical forests and by restoring degraded forests.

Based on the above information, this project proposal was really related to the development of Cempaka plantation through local community participation in North Sulawesi. Therefore, this proposal is submitted to the Reforestation and Forest Management (RFM) program.

1.2.2 Relevance to Indonesia's policies

Indonesia has also confirmed its adherence to international commitment. This includes ITTO Action Plan 2008-2011, the objectives and recommendation of the United Nations Conference on the Environment and Development held in Rio de Janeiro in 1992, the CITES and the Copenhagen Accord 2009. Indonesia would reduce national carbon emission 26% at business as usual and 41% with the international aids). Since Indonesia is a member of ITTO, it has an obligation to support the ITTO objectives towards SFM.

Development of cempaka plantations would support four out of eight main priority programs of the Ministry of Forestry in accordance with the Forestry Minister Decree No. P.10/Menhut-II/2011 as follows:

- (ii) Forest rehabilitation and increased carrying capacity of watershed system
Development of cempaka plantations, 30 Ha under the project, would contribute to forest and land rehabilitation program; at the end, a massive plantation initiative would be undertaken to improve the carrying capacity of watershed system (related to activities 1.3; 1.5 and Outputs 1 and 2).
- (iv) Biodiversity conservation
The establishment of model small-scale nurseries at six sites and plantation demonstration plots in three districts (30 Ha) would improve biodiversity conservation (related to activities 1.3; 1.5 and the development objective).
- (v) Revitalization of industry and utilization of forest
Utilization of cempaka wood by local industries in North Sulawesi is continuously strong due to the high demand for cempaka wood housing. Cempaka wood is used as raw materials for the manufacturing of Minahasa ethnic houses called "Rumah Woloan", ships, "kolintang" music tools, and other household utensiles as well as furnitures. As to date, most of the home industries in North Sulawesi are depending on cempaka wood as the primary raw material. After the project completion, area of cempaka plantation will be increased at least by 300 Ha (related to the development objective, as the impact of achieved specific objective).
- (vi) Empowerment of community living in and around the forests
A series of training and workshop would be conducted to improve skills of local communities; therefore local communities will be able to participate in the establishment of nurseries and plantations of cempaka. These activities are expected to improve livelihood of local communities in the long-run (related to activities 2.1; 2.2; 2.3; 2.4; 3.6; 3.7 and the specific objective)

1.3 Target Area

1.3.1 Geographic location

North Sulawesi Province lies at northern part of Sulawesi island. Geographically, it lies on 0°20'–5°45' North Latitude and 123°00'–127°30' East Longitude. Administratively, North Sulawesi bordered with Philippine country in North part, North Maluku province at East part, and Maluku sea at South part and Sulawesi sea and Gorontalo at West part 1). North Sulawesi consists of 12 districts and 3 cities with total land area of 15,364.29 km² (<http://www.sulut.go.id>, 2011).

Number of population in North Sulawesi is increasing each year. In 2010, total population is 2,270,596 people and now in 2011 it achieves 2,415,782 people with an population growth of 1.02%. Sources of economy in North Sulawesi are mainly coming from tourism that has a growth of 8.79% in 2011 compared to the growth in 2010, while agriculture and forestry sector has given a contribution of 6.58% (BPS Sulut, 2011).

The project will be implemented in three districts of the North Sulawesi Province, namely; 1) North Minahasa district around Klabat Mountain, 2) South Minahasa district in Poigar, and 3) Minahasa district in Tombasian Atas village, Kawangkoan sub-district.

North Minahasa district, with the mother city in Airmadidi and geographically lies in 1°14' – 1°56' LU dan 124°42 – 124°13' BT. Average rain fall recorded at Kayuwatu climate station in Airmadidi is 2.408 mm. (Review RTL-RLKT DAS Tondano, 2003). Highest temperature average is 26°C in August and the lowest in Januari (25,3°C). Most of North Minahasa area is started from flat to slightly hill and other part from hilly area to steepy area. Klabat mountain is one of active mountains in North Minahasa with the elevation of ± 1.995 m. Soil type around Klabat mountain is regosol. Regosol soil is alluvial soil that newly sedimented and come from active mountain material.

South Minahasa is tropical area with two seasons, air humidity is around 60 – 90%, while an average monthly temperature is 23,5°C (Water Resources Departement of North Sulawesi, 2002). Average rain fall annually is 1.282 mm with rainy season fall in from Nopember to Pebruari. However, at some cases, average rain fall data since 1987 indicated that rain fall is still high up to June. Dry season is from July to October. South Minahasa area is dominated by mountain area across from north to south, one of active mountain is Soputan Mountain (± 1.780 m). The map of geographic location is show in Figure 3.

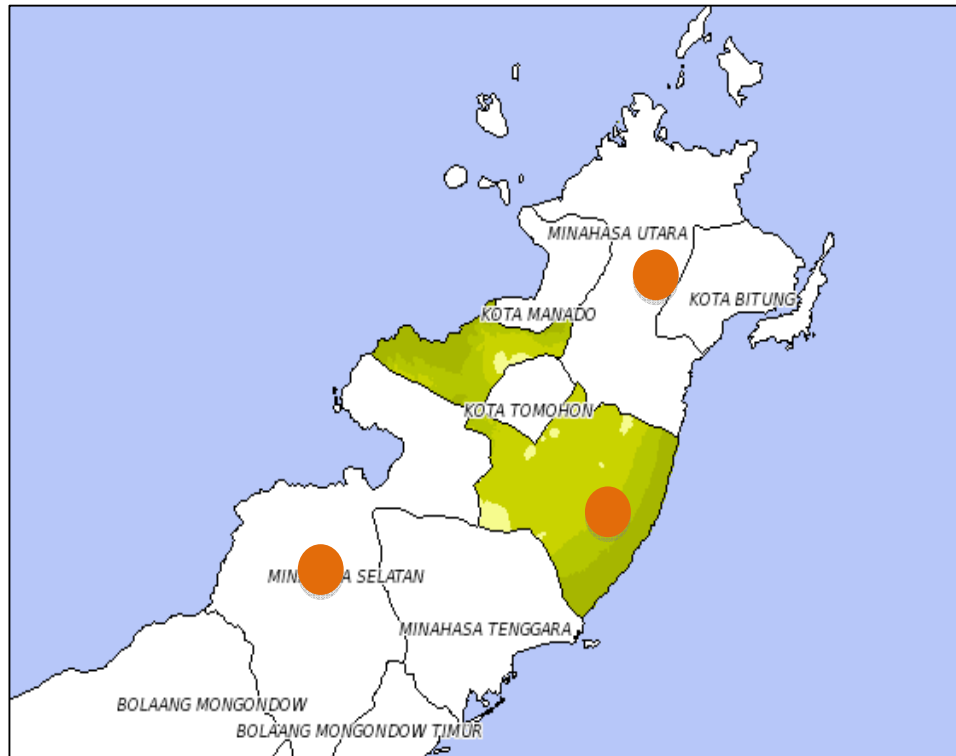


Figure 3. Target area of cempaka plantation project

● : Location area

1.3.2 Social, cultural, economic and environmental aspects

Social aspects

The current social condition of local community is relatively poor and unemployment rate is very high which reach 98.232 lives in 2011(BPS Sulut, 2011). The people living in the area are people who have been eliminated from tough living competition in the North Sulawesi districts due to lack of knowledge and skill or capacity in certain working environment.

This project will positively contribute to social aspects. The core activities are directed to open working employment through cempaka plantation program. As an illustration, all payments for environmental service products which are collected properly would provide huge financial sources both for better environmental improvements and community's prosperity. In addition, the most important thing of the successful project is to generate awareness of local people on environmental improvement for their health and living environment. This would bring environmentally friendly behavior for communities and would also reduce a pressure on living environment.

Cultural aspects

Cempaka is a type of wood that have significant value in the history of the people of North Sulawesi in particular Minahasa communities (one of the native tribes of North Sulawesi). Based on research from Graafland (Wenas, 2007), Tongkimbut sub-ethnic is one of three main sub-ethnic societies of Minahasa ancestors who live in the region near the stone Pinawetengan Tumaratas. Sub ethnic Tongkimbut, led by the head of the family named Kopero, Pandeiro, Kalangi and Mamusung. They inhabit Wasian forest wood which is then called Tombasian. Wasian is the local name for several species of the Magnoliaceae, including *Elmerillia celebica*, *E.ovalis* and *Talauma liliifera*.

Cempaka wood used as raw material for making the traditional house called "Woloan". in response to the scarcity of cempaka wood, the North Sulawesi Government has initiative to lift the timber back cempaka in one ceremonial "Watu Pinawetengan" every July 7. In 2010 the theme is "Eluran Eng Kayobaan" which means "to arrange this earth, this natural Arrange". Sub-themes in this ceremony "In the spirit of our shared mapalus preserve and develop the production potential of cempaka (Minahasa) for the welfare of the people of North Sulawesi." Through these ceremonies, the public were invited to bring a unified culture and organize the environment by planting trees on Mount Soputan cempaka, Lolombulan, Sinonsayang, Lengkoan and Kawatak.

Economic aspects

Cempaka wood has quality with durable class II and class III strong, specific gravity 0.41 to 0.61, wood density 400-500 kg/m³. Chemical properties of wood containing cempaka cellulose 45.59%, 29.99% lignin, pentosan 18.50%, ash content of 1.55% and 1.5% silica (Idris et al, 2008). High tree reaches a height of 45 m with a diameter of 150-200 cm, branch-free height 12-16 m. In natural habitat, cempaka can reach 60 m high and 150-250 cm in diameter with a cylindrical rod. Cempaka is able to live well in almost all types of land in North Sulawesi (Kinho and Mahfudz, 2011). The study results of Sumijarto and Dewi (2002) about the pace of growth show that cempaka can be harvested in short time, as shown in Table 2.

Table 2. The potential cempaka tree at some age in Minahasa

Plant Age (year)	Plant height (meters)	Diameter (centimeters)	Volum (m ³)
4	6,1	9	0,06
11	13,7	38	1,15
16	19,7	48	2,50
34	20,2	65	4,70

Data source : Sumijarto dan Dewi (2002)

The utilization of cempaka wood in North Sulawesi cempaka already started centuries ago, since the ancestors of Minahasa tribe inhabits woodland wasian tree. The utilization of cempaka wood as an industry material has developed rapidly. The projected bright future of cempaka and the demand of the earthquake-resistant and environmentally friendly houses increase Woloan home orders from local, domestic and international buyers (Kristianto, 2011). The increasing scarcity of raw material of cempaka timber, increase the price from Rp 2.7 million to 3.3 million per m³. Furthermore, the results of analysis on the expected value of land and the rental value of land in forest plantation development of the people shows that the management of the HTR cempaka has a high feasibility to be developed. Land expected value of cempaka Community Forest Plantation is Rp 92.841.452 and land rental value is Rp. 82.894.154 , with interest rates below 29% (Kinho and Mahfudz, 2011).

Environmental Aspects

In term of biodiversity, North Sulawesi has various ecosystem types distributing from costal area to hilly area. It known as area with high diversity level due its strategic position in formation of transition zone. It implies to high number of endemic species both flora and fauna (Whitten *et all.*, 1996; Supriatna, 2008). One of them is cempaka tree from Family Magnoliaceae. North Sulawesi has approximately six cempaka species and two of them were endemic species.

The high demand for cempaka wood cause excessive exploitation of natural forests, both legall and illegal. Excessive exploitation of forests would reduce the primary function as retaining water which causes natural disasters such as flooding and erosion (Kumurur, 2006). Excessive logging has a long term impact on the fragmentation and the stability of ecosystem biodiversity, disruption of wild animals inside the area and the loss of species and endemic biota potential (Supriatna, 2008). Ecosystem damage causes breakdown of the food chain and reduce wildlife habitat spacelike animal attacking residential area, the outbreak of caterpillars and the emergence of new diseases and so forth.

Cempaka able to grow in lowlands to the mountains of 2,000 meter above sea level. In North Sulawesi, this tree thrives mainly on the type of volcanic soil (Tabba and Arini, 2011). In the Minahasa region, cempaka tree is the most dominant species in natural forests and community forests, which grow naturally or planted. There are many types of *Elmerillia celebica* Dandy in North of Mount Klabat and Minahasa regency in South Minahasa. Cempaka tree stand has significant value of carbon sink. Langi (2007), mentions that the average weight of cempaka (*Elmerillia ovalis*) biomass with a diameter of 25-75 cm, ages 70-30 years in Tererang (Tomohon) is 124,991 kg / ha.

1.4 Expected outcomes at project completion

Quality cempaka natural stands at several sites will be identified as seed sources. It is expected that these stands will be able to sufficiently supply quality seed to support plantation program even after project completion. Seed will be collected, selected and tested by the Regional Forestry Seed Center (RFSC) and distributed to local communities free of charge.

- Cempaka nursery and plantation demonstration will be established in three districts. The nursery and plantation will be developed involving local communities and will serve as the facility for training of local communities. The plantation will also be used for long-term research on growth and development of cempaka trees that will produce information useful for formulating relevant guidelines in due time. Training of local communities will extend beyond the project deviation and involve local communities from outside the project sites.
- A stakeholder forum will be operational wherein stakeholder can exchange experience and views on cempaka wood utilization and resource conservation. The forum will facilitate fruitful communication between the government authorities, local communities and private sector which is the initial step towards partnership formation.
- Harvest of natural cempaka wood will be based on reliable AAC determined using results of growing stock survey while capacity of the forestry agencies in monitoring of forest operations and timber legality will be enhanced to ensure sustainability of the remaining cempaka resource.

PART 2: Project Rationale and Objectives

2.1 Rationale

2.1.1 Institutional set-up and organizational issues

Cempaka tree species are naturally distributed only in the North Sulawesi province of Indonesia. Management of cempaka resources is the domain and responsibility of the Ministry of Forestry. At the regional and local levels, management of cempaka resources is the responsibility of Forestry Agencies attached to the Ministry of Domestic Affairs at both the provincial and district governments. The other authorities that are also involved are:

- The Agencies for Industry and Trade which deal primarily on the collection of fees and charges relating to cempaka wood processing and sales of processed wood products.
- The technical units of the Ministry of Forestry consisting of Agency for watershed management (BPDAS) and Agency for forestry research and development (MFRI)

The Forestry Agencies attached to the Ministry of Forestry has a lack of capacity to adequately manage cempaka resource. The capacity needed to monitor forest operations is surely not in place resulting in incompliance with existing rules and regulation. Lack of accurate information on economic of cempaka does not allow assessment of reasonable level of charges that reflects the real value and scarcity of cempaka wood. Coordination amongst the authorities concerned with the utilization of cempaka resource in a sustainable manner hardly exists to current situation.

The proposed project is expected to serve as the useful vehicle to enhance the capacity of the Forestry Agencies in coping with operational management of cempaka resource and strengthen coordination with other authorities in view of sustaining the resource and its contribution to the local economy

The MFRI would act as the Executing Agency (EA) for the proposed project for MFRI has conducted many research activities related to the type cempaka in areas of North Sulawesi such as in Rurukan (Tomohon); Research on Degraded Land Rehabilitation Technology trials with agroforestry systems by combining plant forestry (Cempaka and Mahogany) with horticultural crops. Observations in three consecutive years (2005,2006,2007), showed the increase of the average tree height is 117.13 cm /year, equivalent to 1.17 m /year and the diameter is 27.90 mm /year (Asir, L. et al, 2007). Assuming accretion stem diameter 2.7 cm/year then at the age of 15 years planting, Wood cempaka already can be harvested at the age of 15 years with a diameter of 40.5 cm/tree.

Land use with mixed cropping systems, with application of soil conservation techniques beds combined vertical mulching and planting crops scallion, chrysolite and mahogany suppressed the runoff at 17.5%. While the application of soil conservation techniques combine the use of vertical mulching and planting of onion leaves suppressed the runoff by 10%. Results of analysis of erosion at the highest tested treatment occurred in the treatment of soil conservation in the form of raised bed that is 1.0 tonnes/ha. While the treatment of soil conservation techniques in combination mulch beds are vertical and maize, sweet potato, chrysolite and mahogany produced the lowest runoff of 0.752 tonnes/ha. (Asir, L. et al, 2007). Other research activities related to the cempaka in North Sulawesi was Cempaka Biodiversity Assessment in North Sulawesi which have identified six types of cempaka namely: 1) *Elmerrillia celebica* Dandy. 2) *Elmerrillia ovalis* (Miq.) Dandy., 3) *Elmerrillia tsiampacca* (L.) Dandy subsp. *Tsiampacca*., 4) *Magnolia elegans* (Blume.) H.Keng., 5) *Magnolia candollei* (Blume) H.Keng., 6) *Michelia champaca* L.

The MFRI would closely collaborate with Agriculture Faculty, University of Samratulangi, which has many experts on natural resources economics. The Agriculture Faculty is best and well recognized Samratulangi as government university in North Sulawesi province. The Agriculture Faculty is also ready to share its research working facilities in Manado for cempaka plantation project.

MFRI in collaboration with WMIT and Forest Service District of North Minahasa, South Minahasa District Forestry Office and District Forestry Office Minahasa, North Sulawesi Province which will provide its forest area to be a garden area of cempaka quality seed and prepare policies and regulations related to the preservation of species through the establishment AAC chrysolite be able to be responsible. The MFRI would closely collaborate with local NGOs for increasing the rate of cempaka plantation. MFRI would also collaborate with BPTH Sulawesi as a source of quality seed certification agency. It needs the cooperation and assistance in the management of seed sources.

To ensure the efficient collaboration between concerned agencies, the EA would have a coordination meeting every three months period to find problems and its immediate solution for the smooth running of the project. The EA and its working collaborators would also monitor the implementation of each activity and bring the monitoring report to the all project partners. If necessary, the monitoring report would be brought to the nearest coordination meeting. This kind of communication strategy would create the transparency and accountability of project working environment.

2.1.2 Stakeholder analysis

A series of consultative meetings involving the main stakeholders of cempaka resource have been conducted including local communities, local wood industry and local government which were organized by Manado FRI prior to formulating the project. The main purpose of the meeting is to exchange information and experience and obtain inputs as well as insights from participating stakeholders especially as regards the key problem to be addressed and needed interventions by the project.

The last consultative meeting, held in Manado on May 13, 2011 was also attended by the main stakeholders whom expressed their support to the proposed project by elaborating their need, interest and problems as well as their potential to get involved in project implementation as summarized in Table 2.1

Notes on stakeholder analysis

- Training of local communities on the skills needed for cempaka plantation development will be carried out during the establishment of the demonstration plantation. In fact, this training is in the form of “on-the-job-training” wherein involved farmers are also paid for wages. Mastering the necessary skills is an incentive to participate in planting initiative;
- During the training, local communities will be informed of the potential benefits of cempaka plantation that accruable to the communities in the long-run. By acquiring deep understanding on such long-run benefits, interest of local communities in planting cempaka will be growing. This understanding will be preserved over time through continuous dialogue which is one of the primary activities of forest extension program
- In addition, ownership of cempaka wood will be made clear: that wood harvested from communities; lands are fully owned by the communities; this is a form of incentive to plant cempaka
- Planting of cempaka trees on degraded state forest land is feasible if it is accomplished in a collaborative manner, between the forestry agencies and local communities. Cempaka wood harvested will be shared in accordance with agreed upon conditions. This yield sharing is a form of incentive for local community to participate in cempaka planting initiative
- In case agro-forestry system is adopted in cempaka plantation development, the inter-planted crops will be fully owned by the farmers involved. This is another form of incentive for local communities to participate in planting initiatives

In essence, the full and effective participation of local communities in cempaka planting initiatives can be secured if incentives for participation are made available and applied on the ground. Availability of economic incentive and implementation of government policy that is pro-poor and pro-job will certainly able to sustain an active participation of local communities in cempaka plantation development.

Table 2.1 Summary of stakeholder analysis

Stakeholder group	Characteristics	Problems, needs, interests	Potentials	Involvement in the proposed project
Primary stakeholders				
FORDA and Manado Forestry Research Institute	<ul style="list-style-type: none"> • Responsible for R&D on forests including cempaka 	<ul style="list-style-type: none"> • Lack of resources for R&D on cempaka • Long-term research on cempaka growth and yield • In need of field research laboratory • Lack of experience in cempaka resource development 	<ul style="list-style-type: none"> • Possess researchers and some research facilities • Raising understanding of stakeholders on cempaka conservation 	<ul style="list-style-type: none"> • Proponent and executor of the project • Coordinator of SHF
Provincial and District Forestry Services	<ul style="list-style-type: none"> • Responsible for forest resource management, policy making and law enforcement 	<ul style="list-style-type: none"> • Lack of reliable information • Weak policy making and law enforcement • In need of external assistance to promote sustainable cempaka resource management 	<ul style="list-style-type: none"> • Land allocation for cempaka plantation development • Familiar with forestry extension program 	<ul style="list-style-type: none"> • Nursery and plantation development activities • Member of PSC snf SHF
Local communities	<ul style="list-style-type: none"> • Poor people • Forest dependent, strong cultural value • Decreasing income from cempaka wood 	<ul style="list-style-type: none"> • Adore cempaka wood • Lack of skills on planting • Need immediate income cropping on forest lands • Continuous income from cempaka wood 	<ul style="list-style-type: none"> • Familiar with cempaka • Knowledge on cempaka characteristics 	<ul style="list-style-type: none"> • Trainees • Wagers • Production of seedlings • Plantation development • Member of PSC and SHF
Local housing industries	<ul style="list-style-type: none"> • Main user of cempaka wood • Experienced in cempaka housing business • Inefficient processing 	<ul style="list-style-type: none"> • Need sufficient and continues supply of cempaka wood • Lack of interest in cempaka planting • No experience in cempaka planting • Lack of efficient processing techniques 	<ul style="list-style-type: none"> • Potential investor on cempaka plantation • Good relation with local communities • Collaborator in plantation development 	<ul style="list-style-type: none"> • Member of PSC and SHF • Trainees
NGOs	<ul style="list-style-type: none"> • Familiar with community values and setting • Experienced in mobilizing local people 	<ul style="list-style-type: none"> • Lack of financial resource • In need of sponsor for rural development • Improved welfare of local communities 	<ul style="list-style-type: none"> • Mobilization of local people • Posses operational personnel 	<ul style="list-style-type: none"> • Seedling production • Planting operations • Development of extension program • Member of PSC and SHF

Stakeholder group	Characteristics	Problems, needs, interests	Potentials	Involvement in the proposed project
<u>Secondary Stakeholders</u>				
BAPPEDA	<ul style="list-style-type: none"> •Responsible for development planning 	<ul style="list-style-type: none"> • Lack of understanding on cempaka conservation • Information on forestry programs • Workable forestry programs 	<ul style="list-style-type: none"> • Capacity in sectoral planning 	<ul style="list-style-type: none"> • Member of PSC and SHF
Samratulangi University	<ul style="list-style-type: none"> •Actively involved in research activities •Pool of scientific knowledge 	<ul style="list-style-type: none"> •Lack of networking 	<ul style="list-style-type: none"> • Experienced working on basic research and development 	<ul style="list-style-type: none"> • Partner in project implementation • Involved in survey, studies and policy analyses
BPTH (RFSC) of North Sulawesi	<ul style="list-style-type: none"> •Mandated to test seed quality and issue seed certificate 	<ul style="list-style-type: none"> •Lack of networking 	<ul style="list-style-type: none"> • Experienced in working on seed certification 	<ul style="list-style-type: none"> • Partner in seed collection, testing and certification

2.1.3 Problem analysis

For decades, demand for cempaka timber in North Sulawesi has been consistently strong. The timber is used primarily in the production of knocked-down houses called “rumah woloan” or woloan houses. Reportedly, there is a firm, namely; PT. Lembah Hijau Semesta producing woloan houses in 2010 consuming around 1.825 m³ of cempaka sawn timber in total. Center woloan houses construct industry in Tomohon consist of around 35 home industries and they need 10-20 m³ of cempaka wood for a home industry. They need 1-2 month to finished a house construction. The sawn timber was sourced entirely from natural and private stands.

The potential of utilizing cempaka apart from the construction of wooden houses are used as raw materials for ships floor, traditional music tools “kolintang”, and other household tools/furniture. Besides the sawn timber of cempaka, its flowers can also be processed into cempaka oil as a parfum material. The flowers are boiled with hot water, the vapors are then condensed through pipes. After that the water and oil would be separated manually or mechanically.

Representatives of the woloan housing industry have repeatedly expressed their difficulty in obtaining sufficient volume of cempaka timber. Harvestable natural growing stock is only available at ever remote sites implying increased scarcity and higher price. In addition, suppliers of cempaka timber are no longer able to provide the volume of cempaka timber needed by the housing industry because of a larger volume of other local wood species such as Bolangitang (*Litsea Sp*) and Nantu (*Palaquium sp.*) which have to be used at the expense of lower selling price of woloan house.

Actually the low rate of cempaka plantation is caused by three main factors, namely: (i) limited capacity in cempaka plantation development, (ii) lack of participation of local communities or farmers and (iii) weak government policy on cempaka conservation. Brief explanation on three factors would be described below:

a. Limited capacity in cempaka plantation development

Cempaka and Wasian are local designations by the community in North Sulawesi for two species of timber trees of different cempaka namely *Magnolia elegans* and *Elmerrillia ovalis*. These two types of wood are timber species which most widely exploited from natural forests for personal needs as well as for commercial needs. Cempaka timber extraction from natural forests is carried out continuously over time led to the scarcity of these species in natural forests in North Sulawesi since the turn of the plant generally lasts about 30 naturally regenerated cempaka and wasian discovered each year in an area of 20 ha (Langi, Y.A.R 2007) so that expected in an area of 1 Ha there is a natural regeneration cempaka. Cempaka wood seeds generally have a rather tough skin like a shell that protects the embryo, is black. Shell is covered by aryl pink skin that encloses the seeds. Aryl skin is often rapid decay cempaka if seed falls on or above ground litter on the forest floor and invite pests and diseases that decrease the quality of seed germination so that the success rate is naturally very slow. (Kinho, J.2010). However, cempaka plantation development has been extremely slow because the success rate is still low. This is due to silviculture techniques has not been mastered by the people, the source of quality seeds has not been well developed, the technique has not been mastered germination and silviculture techniques have not been studied.

Actually, the limited capacity in cempaka plantation development was attributable to four driving forces as follows:

- Source of cempaka seed from natural stands has not been identified. Available seed are insufficient in volume with unclear genetic origin of mother trees. This kind of seed supply has resulted in limited supply of quality seed;
- Seeding technologies are yet to be developed including for collection, selection, storage and germination

- Production of quality seedlings is limited to date which was brought about primarily by the limited production capacity of existing nurseries and lack of knowledge on appropriate nursery techniques
- Limited knowledge on silviculture techniques is the logical consequence of the absence of demonstration plantations to conduct relevant research and development.

b. Lack of participation of local communities

As to date, participation rate of local communities in cempaka plantation development has been very low as evidenced by the very small area of cempaka plantations that are owned by the communities, only around 1,500 Ha in total in 2011 in the entire province, scattering on home-yards and small parcels of community land with low quality of stands. This problem of participation is caused by three main forces namely: i) poor understanding on potential benefits of cempaka plantation accruable to local communities in the long-run; ii) lack of skills on cempaka plantation development, and iii) lack of incentives for local communities to participate.

Potential contribution of cempaka plantation to long-run livelihood is not well understood by local communities. They are not aware of the necessity to plant today for future harvest, because the established cultural value is to enter forest, cut cempaka trees, haul and sell for immediate income. In addition, local communities do not understand the fact that income streams are also obtainable from cempaka planting through application of agro-forestry system in the planting exercise. Therefore, there is a need to improve understanding of local communities on intermediate as well as future benefits of cempaka plantations which will in turn increase participation in cempaka planting initiatives.

Prerequisite to participating in cempaka plantation development is that local communities must first acquired the skills needed to participate; without such skills, it is not possible for local communities to engage in cempaka related planting activities. Therefore, there is a need to train local communities on the necessary skills including skills on site preparation, planting of seedlings, nurturing of young plants, etc. The lack of skills is due mainly to the absence of cempaka plantation demonstration (CPD). Such plantation demonstration is needed for training of local communities on proper planting techniques. An effective training strategy is certainly to directly engage local communities in the development of CPD. Please note that the CPD will also function as a field laboratory, to conduct long-term research on growth and development of cempaka tree species by Manado FRI.

To participate in planting initiatives, local communities require incentives in one form or another; otherwise, the communities are better-off by just entering the forest, cutting trees and selling timber for immediate income. In fact, there have been disincentives for local communities to take part in tree planting in general. Assessment of charges on wood harvested from communities' lands, costly transport permit for hauling of community-grown wood and difficulty in obtaining quality seedlings at affordable price are among the disincentives for local communities to take part in planting initiatives. Therefore, it is indispensable that such disincentives abolished while attractive incentives identified and introduced in a collaborative manner to ensure their applicability on the ground. Please note that over 200,000 hectares of degraded state forest lands are currently available and have the potential as the area for cempaka plantation development, subject to suitability of the lands.

Cempaka plantations will be developed on both state forest and community lands. Planting of cempaka on state forest land shall be carried out in-collaboration with local communities. The government will allocate land, provide training on planting techniques and make seedlings available. The appropriate strategy to pursue would be agro-forestry system. The income derived from harvesting of crops planted between trees will be fully belong to the farmers involved. Wood yield harvested at maturity shall be shared between the government and farmers in accordance with agreed upon sharing conditions established prior to commencing in planting operations.

Cempaka wood harvested from community or household lands are fully belong to planting farmers. While charges at certain rate may be assessed by local government, the rates shall not be too large that planting of cempaka becomes unattractive to local communities. It is worth emphasizing that nearly 50,000 Ha of community-owned lands are degraded and have the potential to be planted with cempaka, subject to land suitability.

Please note that CPD will be developed on state forest lands; this must be so because the primary purposes of such plantation are for training of local communities and for conducting long-term research and development on growth and development of cempaka tree species.

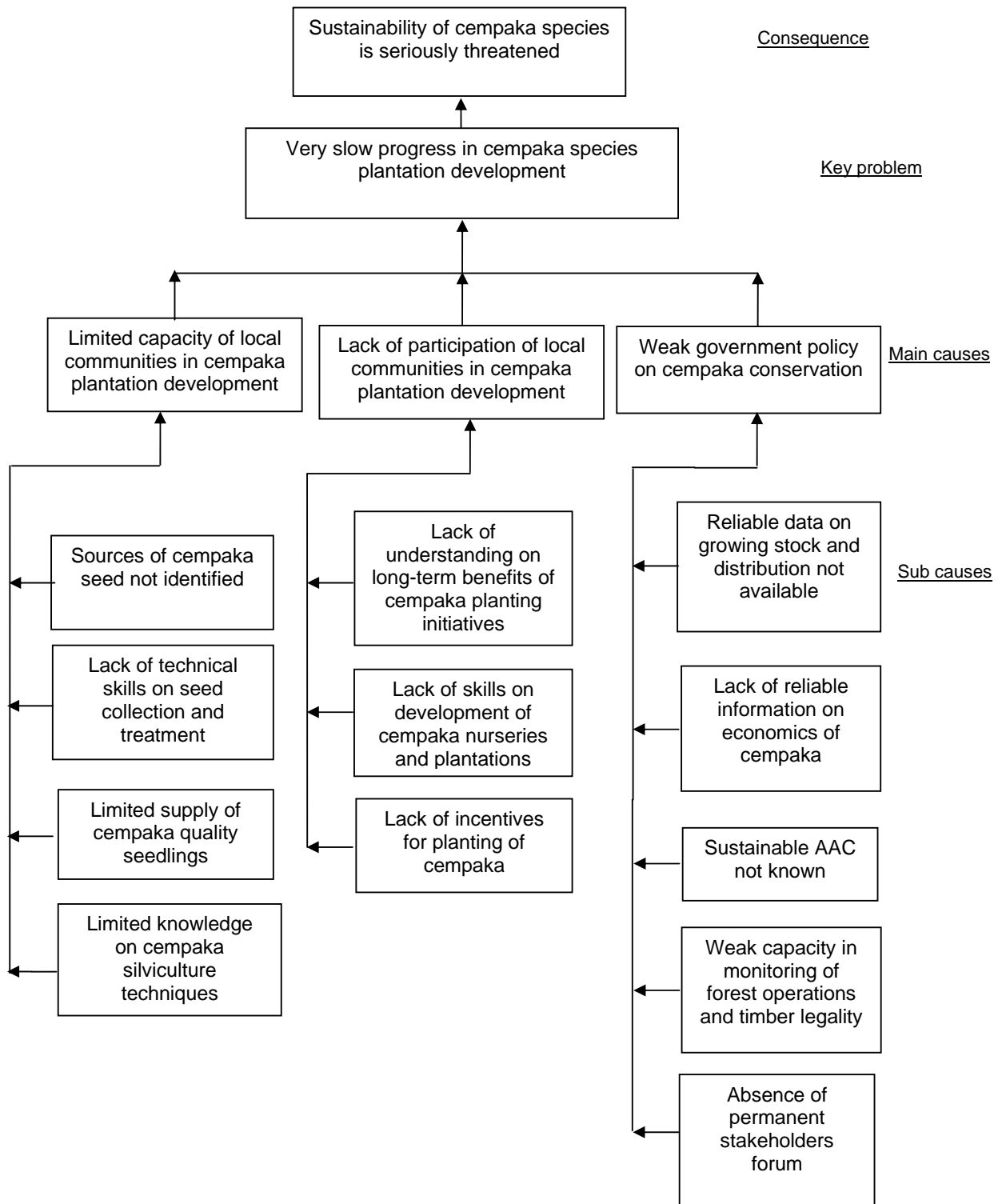
c. Weak government policy

The weak government policy in cempaka conservation which is attributable to at least five forces: i) reliable data on growing stock and distribution not available, ii) lack of reliable information on economics of cempaka, iii) sustainable AAC is not known, iv) weak capacity in monitoring of forest operations and timber legality, and v) absence of stakeholder forum. It is worth emphasizing that reliable information on growth and yield is essential for determination of sustainable AAC; that forest operations can not be left out uncontrolled; that charges on wood products must be based on monetary value of wood that reflects scarcity and; that permanent stakeholder forum is needed to enhance coordination and to aid decision making over time.

Above problem analysis and cause-effect relationship are summarized in the Problem Tree (Figure 4). An objective tree (Figure 5) has been constructed as the mirror of the Problem Tree and shows “means-end relationship” as the basis for defining project interventions keeping in mind that the “means” inside the boxes may need detailing to ensure sufficiency of project activities to deliver defined outputs and achieve the intended project outcome.

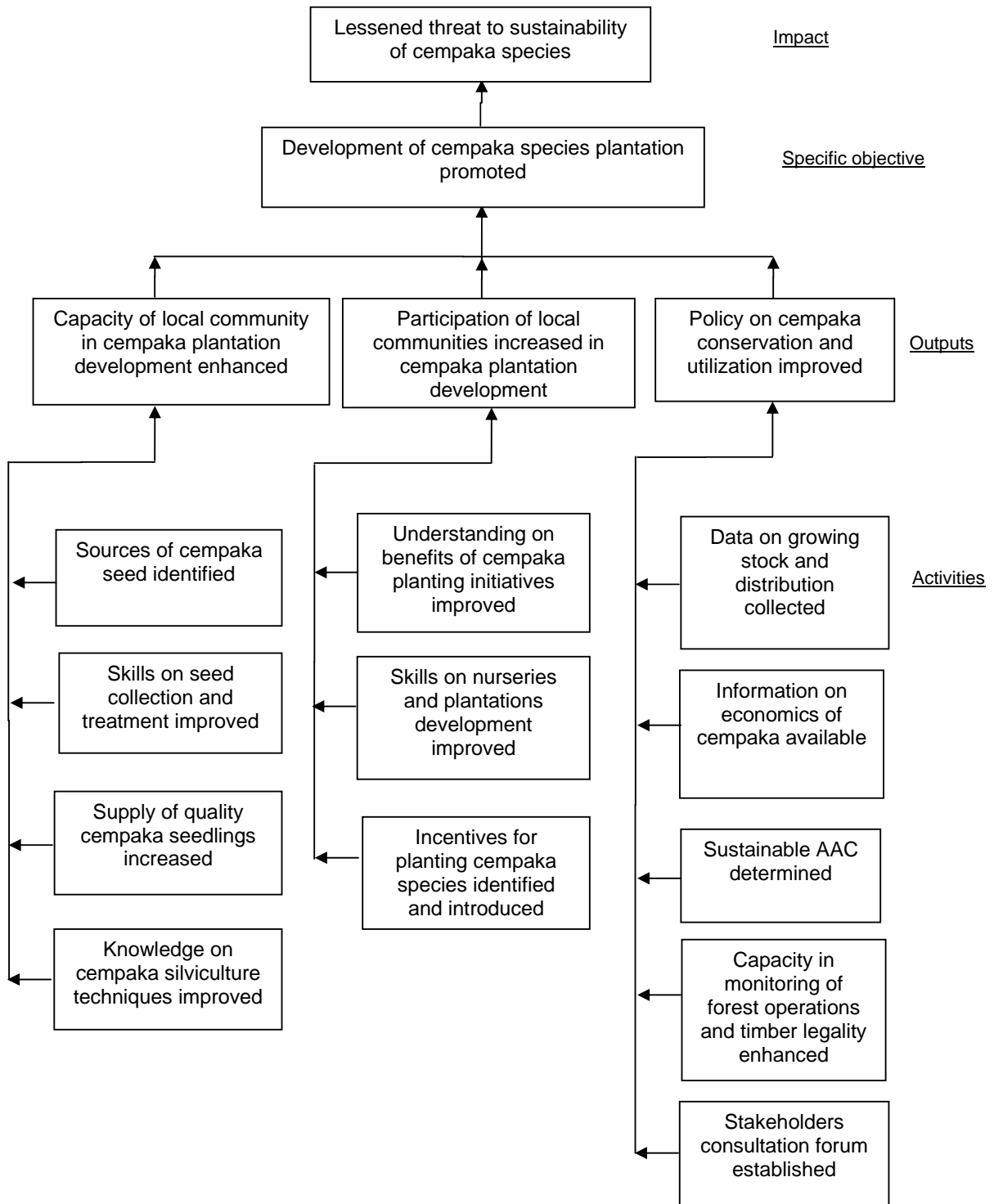
During the project implementation, it is feasible to increase cempaka plantation outside forest area through several approaches, such as dissemination of the ecological and economical benefits of cempaka planting to local community and providing of planting incentives, and underlining of cempaka planting as maintaining of their cultural heritage. At present, an average land ownership in North Sulawesi is around 0,4 ha. The critical land outside state forest area in 2006 is approximately 155,498 ha (Departemen Kehutanan, 2009). By giving free of charge seedlings and good extension approach, local community would plant cempaka trees enthusiastically in their bare land due to ecological, cultural, and economical benefits of cempaka plantation. It means the increasing plantation of cempaka outside forest is really feasible.

Figure 4: Problem Tree



Notes: Sub-causes of the 2nd main cause have been re-ordered re-phrased

Figure 5: Objective Tree



2.1.4 Logical framework matrix

Strategy of Intervention	Measurable Indicator	Means of Verification	Key Assumption
<u>Development Objective</u> To contribute to the conservation of cempaka species in North Sulawesi	<u>Impact Indicators</u> <u>3 years after project completion</u> <ul style="list-style-type: none"> <u>At least 300 Ha of cempaka plantation established in North Sulawesi</u> Harvest of natural cempaka is based on reliable AAC estimate <u>At least 20 villages involved in cempaka plantation development activities</u> 	<ul style="list-style-type: none"> Reports of Forestry Services Field check 	Supportive local communities and authorities Skills acquired by local communities applicable
<u>Specific objective</u> <u>To develop the conservation and plantations of cempaka with the involvement of local communities in North Sulawesi</u>	<u>Outcome Indicators</u> <u>At project completion:</u> <ul style="list-style-type: none"> <u>Quality seed available for producing seedling to support at least 100 Ha of cempaka plantation per annum</u> <u>30 Ha of cempaka demonstration plantation established</u> <u>6 small-scale nurseries operational in 3 districts</u> 60 community leaders trained on nursery and plantation development <u>Reliable AAC of cempaka determined</u> <u>Cempaka stakeholder forum operational</u> 	<ul style="list-style-type: none"> Report of seed collection Report of FORDA and RFSC Report of RFSC Technical documents Field check, interviews 	Supportive local communities and authorities Seed available for laboratory experiments, nurseries and plantation demo plots Local communities interested in Cempaka training and planting
<u>Outputs</u> <u>Output 1:</u> Capacity of local communities in cempaka plantation development enhanced	<u>Output Indicators</u> <ul style="list-style-type: none"> In year 1 potential sources of seed identified and mapped at six sites <u>In year 1 experiments on techniques for seed collection, storage and germination completed</u> <u>6 small-scale nurseries established in 3 districts by year 2</u> <u>Cempaka's silviculture techniques reviewed in year 1</u> <u>30 Ha of plantation demonstration plots established in 3 districts in years 1 & 2</u> 	<ul style="list-style-type: none"> Report of field survey <u>Report of experiments</u> <u>Field check</u> <u>Technical report</u> <u>Report of contractor</u> 	Supportive local communities and authorities

Strategy of Intervention	Measurable Indicator	Means of Verification	Key Assumption
	<ul style="list-style-type: none"> • <u>Local communities of twenty villages trained on nursery and plantation development techniques</u> • <u>Technical manuals on seed collection, storage and germination as well as planting available for use by local communities</u> 	<ul style="list-style-type: none"> • <u>Training report</u> • <u>Manual document</u> 	
Output 2: Participation of local communities in cempaka plantation development increased	<ul style="list-style-type: none"> • <u>Dialogue with 20 villages on cempaka conservation conducted in year 1</u> • <u>60 community leaders from 3 Districts trained on both cempaka nursery and plantation development techniques in years 1 and 2</u> • <u>In year 1 incentives for local communities to plant cempaka collaboratively identified</u> • <u>In year 2 an extension program on cempaka collaboratively developed and implemented since year 3</u> • <u>At least 10 villages involved in cempaka related planting activities</u> 	<ul style="list-style-type: none"> • Report of consultant • Training reports • Minutes of consultative meetings • Document of extension program • Field check 	<u>Growing interest of local communities in cempaka plantation development</u> <u>Understanding of local communities on benefits of planting cempaka improved</u> Enhanced extension program adopted by the FANSP
Output 3: <u>Government policy on the conservation and utilization of cempaka species reviewed and strengthened</u>	<ul style="list-style-type: none"> • <u>In year 1 survey on growing stock of cempaka in North Sulawesi completed</u> • <u>Sustainable AAC determined</u> • <u>Study on economics of cempaka wood utilization completed in year 2</u> • <u>SOP developed and equipment & facilities procured for monitoring of forest operations and timber legality in year 2</u> • <u>A stakeholder forum established and operational since year 3</u> • <u>One provincial workshop on cempaka conservation and utilization organized in year 3</u> 	<ul style="list-style-type: none"> • <u>Survey report</u> • <u>Report of consultant</u> • <u>Report of national expert</u> • <u>Field check</u> • <u>Minutes of consultative meetings</u> • <u>Report of workshop</u> 	Supportive local stakeholders

2.2. Objectives

2.2.1 Development objective and impact indicators

Development objective: To contribute to the conservation of cempaka species in North Sulawesi.

Impact indicators:

3 years after project completion

- **At least 300 Ha of cempaka plantation established in North Sulawesi**
- ~~Harvest of natural cempaka is based on reliable AAC estimate~~
- **At least 20 villages involved in cempaka plantation development activities**

2.2.2 Specific objective and outcome indicators

Specific objective: **To develop the conservation and plantations of cempaka with the involvement of local communities in North Sulawesi**

Outcome indicators:

At project completion:

- Quality seed available for producing seedling to support at least 100 Ha of cempaka plantation per annum
- 30 Ha of cempaka demonstration plantation established
- 6 small-scale nurseries operational in 3 districts
- ~~60 community leaders trained on nursery and plantation development~~
- ~~Reliable AAC of cempaka determined~~
- Cempaka stakeholder forum operational

PART 3: Description of Project Interventions

3.1 Outputs and activities

3.1.1 Outputs

Three outputs have been defined correspond to the main causes of the problem to be addressed by the project as follows:

- Output 1 : Capacity of local communities in cempaka plantation development enhanced
- Output 2 : Participation of local communities in cempaka plantation development increased
- Output 3 : **Government policy on the conservation and utilization of cempaka species reviewed and strengthened**

Indicators of individual outputs are as specified in the logical framework matrix (Table 2.1.4).

3.1.2 Activities

Output 1. Capacity of local communities in cempaka plantation development enhanced

- Activity 1.1. To identify sources of quality cempaka seed at six sites
- Activity 1.2. To conduct experiments on appropriate techniques for cempaka seed collection, storage and germination
- Activity 1.3. To establish six small-scale nurseries at village level to be managed by local communities
- Activity 1.4. To review available information on cempaka's silviculture techniques
- Activity 1.5. To establish 30 Ha of plantation demonstration for purpose of long-term research and training of local communities as well as other local stakeholders

Notes: Activities 1.4 and 1.5 correspond to sub-cause #4 (see problem tree).

Output 2. Participation of local communities in cempaka plantation development Increased

- Activity 2.1. To conduct intensive dialogues on long-term benefits of cempaka plantation with 20 villages in 3 districts
- Activity 2.2. To train local communities on cempaka nursery development techniques at the small-scale nurseries
- Activity 2.3. To train local communities on cempaka planting techniques at the plantation demonstration plots
- Activity 2.4. To collaboratively identify and introduce appropriate incentives for local communities to plant cempaka trees
- Activity 2.5. To collaboratively develop a sound extension program on cempaka resource conservation

Notes: Activities 2.2. and 2.3. correspond to sub-cause #2 (see problem tree).

Output 3. **Government policy on the conservation and utilization of cempaka species reviewed and strengthened**

- Activity 3.1. To conduct survey on growing stock and distribution of cempaka species
- Activity 3.2. To conduct study on economics of cempaka wood utilization
- Activity 3.3. To determine sustainable level of AAC
- Activity 3.4. To develop SOP and procure equipment & facilities for monitoring of forest operations and timber legality

- Activity 3.5. To pilot test application of SOP, equipment and facilities in one forest district
- Activity 3.6. To establish and operate a stakeholder forum at provincial level
- Activity 3.7. To organize one provincial workshop on cempaka conservation and utilization

Notes: Activities 3.4 and 3.5 correspond to sub-cause #4 (see problem tree)
 Activity 3.7 is necessary for dissemination of information

The role of local communities in implementation of Activities 1.3 and 1.5 is both as laborers and trainees. One of the critical inputs of the activities is laborer which is best to be sourced from local communities. The laborers are also learning nursery and planting techniques by directly involved in the activities. It is expected that this on-job-training will increase their technical skills and induce interest in cempaka plantation development in future time. As regards Activity 3.1, the role of local communities is in providing assistance for tree identification in local names and also as laborers for the forest surveys.

3.2. Implementation approach and methods

It is important to note that local communities are the main target of the trainings under the project due to the fact that they are owners of the bulk of cempaka resource, but poor and the communities are expected to become the primary supplier of skillful “labor” to support cempaka industry development.

Experience shows that any unilaterally implemented project failed to achieve its intended outputs and objectives. Therefore, this project will be implemented using participatory approach, i.e. activities will be executed in consultation, cooperation or collaboration with stakeholders. The following main steps will be taken in a participatory manner.

- a. Dissemination of quality information
 To promote investment or “capital” in cempaka industry development (Output 1), to enhance decision making and policy formulation (Output 2) and to increase “labor” participation Output 3), quality information must be made available and disseminated to main stakeholders of the industry. Generation and dissemination of information will involve consultants and experts, government authorities, local communities, universities and NGOs since there is a general lack of stakeholders’ interest in cempaka industry development. To promote participation of stakeholders, there is a need to launch an effective national campaign using the right various media tools e.g. television, radio broadcast, printed materials, etc. to disseminate information on cempaka resources and their development nationwide.
- b. Training on cempaka industry development
 Scope of the training covers management of natural cempaka, development of cempaka plantation, production of planting materials, efficient processing techniques and business development. Training participants will include local communities (job hungry due to poverty), practitioners (job seekers for better life) and civil servants (decision makers). Training program and modules will be developed with the assistance of professionals in close consultation with practitioners, and implemented in cooperation with universities, NGOs and local authorities.
- c. Establishment of coordinating forum.
 The forum will be established at the provincial and local level where stakeholders can exchange information, experience and ideas. In such a forum, farmers have the opportunity to meet with business leaders to discuss business ideas and partnership; authorities may regularly meet with each other to improve mutual understanding and coordination; business leaders may provide insights for policy formulation, etc.
- d. Enhancement of institutional framework
 Institutional framework will be enhanced during the project implementation by establishing a clear project organization structure, clarity of working mechanism, selection of the professional project staffs, and efficient budgeting plan. Training of government officials and staffs both under the project and overseas, availability of reliable information as well as strengthen coordination amongst stakeholders shall lead to enhance local government capacity in planning, monitoring, decision making and policy formulation.

e. Security and sustainability of the project

To secure the project area in the long-run, especially the nurseries and plantation demonstration sites, the land must be officially designated by concerned local governments as the cempaka plantation development zone. By so doing, training program on cempaka plantation development can be implemented on the sites in the long-run using existing facilities, particularly the demonstration plots of cempaka plantation thus sustaining impacts of the project.

f. Monitoring system

Prior to commencing project operations, the Project Coordinator is to develop a monitoring system establishing indicators to monitor, frequency of monitoring and parties responsible for doing the task, source of finance, etc. In this way, any deviation to the project design and workplan can be detected at early stage and necessary corrective actions taken.

In designing the above implementation approaches and methods, the information below has been taken into account:

- Cempaka processing technologies
Include the techniques for harvesting of cempaka stands, production of lumber sharing, making of parquets for flooring, finger-jointing, cempaka drying and preservation.
- Small business enterprise and cooperative development
Most members of the communities in urban and rural areas have no knowledge and experience in establishing and managing business entity in accordance with existing government rules and procedures. Therefore, the project should provide technical assistance to these communities.
- Demonstration plots
They will be established for both natural and planted cempaka stands. On natural cempaka, the main purpose is to develop technical guidelines on the harvesting of mature cempaka and on the nurturing of residual stands in view of improving quality and ensuring sustainability of the stands. On cempaka plantation plots, the primary aims are to produce technical guidelines on the selection of species, site preparation, planting and maintenance of young cempaka plants.
- Capacity building
It covers the capacity of private sector and local communities in survey of cempaka growing stock, harvesting and maintenance of natural cempaka, establishment of cempaka plantation including production of quality planting materials, processing of cempaka wood, establishment and management of business cooperatives by local communities and institutional strengthening including coordination of stakeholders, decision making, policy formulation and planning.

Employment of sub-contractors for the implementation of Activities 1.3; 1.5 and 3.1 is justifiable for the following reasons:

- **For nursery and demo plantation development activities (Act. 1.3 and 1.5), full timer practitioners and supervisors are surely needed; the Executing Agency does not have such resource readily available**
- **There are a number of local NGOs that have engaged in the government greening movement program; these NGOs have accumulated experience in nursery and forest plantation development**
- **The local NGOs also are much more familiar with rural environment and culture than government staff and are willing to stay at the villages for an extended period of time**
- **As regards growing stock survey (Act. 3.1), it is best to employ local university considering its experience in such activity and its competence to conduct forest inventory survey using scientifically sound procedures and techniques.**

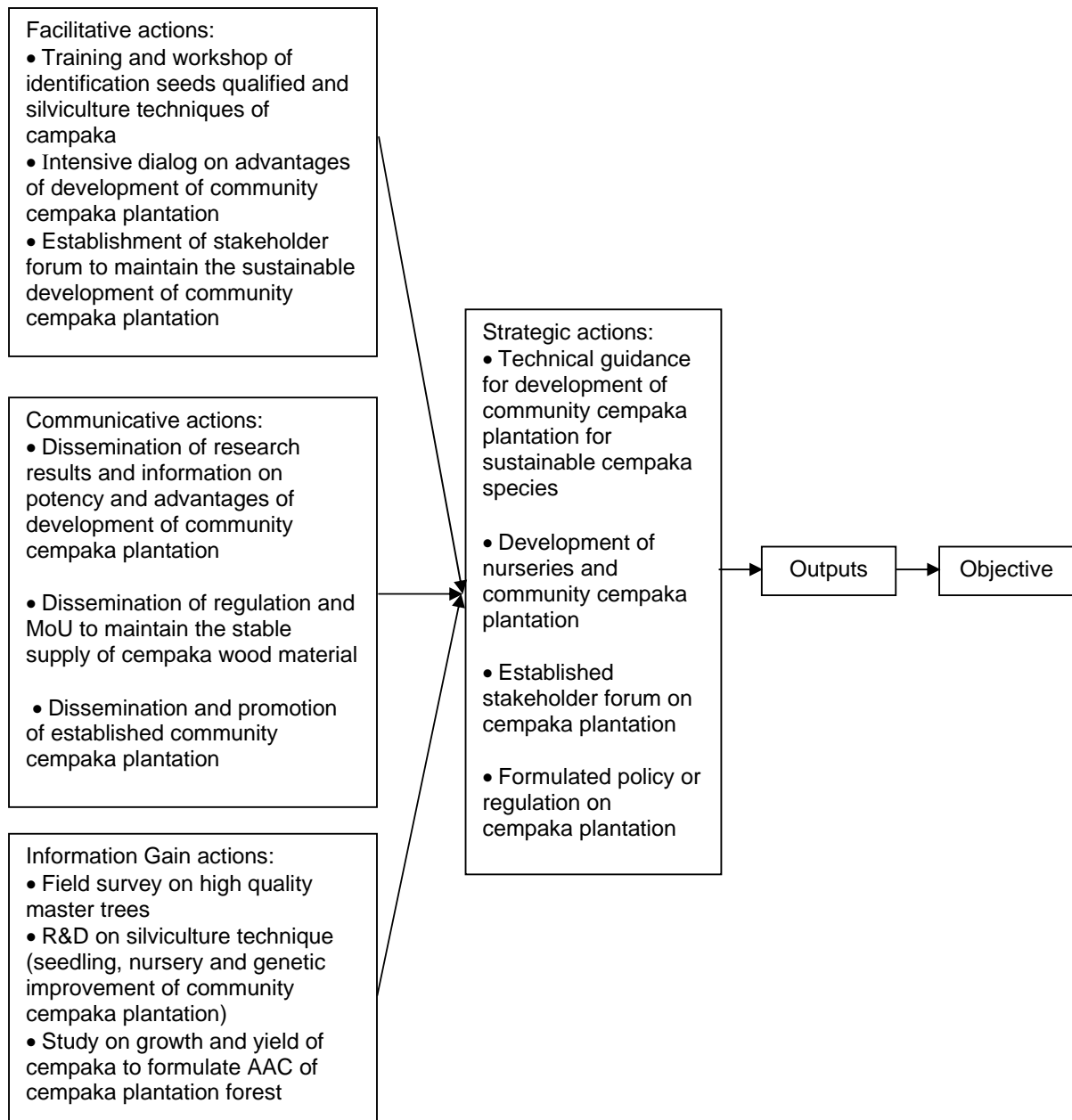


Figure 6. Implementation methods and approach

3.3. Work plan

Outputs and Activities	Responsible Party	Year 1				Year 2				Year 3			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Output 1: Capacity of local communities in cempaka plantation development enhanced													
Activity 1.1. To identify sources of quality cempaka seed at six sites	PC, NE, RFSC	√	√										
Activity 1.2. To conduct experiments on appropriate techniques for cempaka seed collection, storage and germination	PC, NE, RFSC		√	√	√								
Activity 1.3. To establish six small-scale nurseries at village level to be managed by local communities	PC, NGO, DFA				√	√							
Activity 1.4. To review available information on cempaka's silviculture techniques	PC, NC	√	√										
Activity 1.5. To establish 30 Ha of plantation demonstration for purpose of long-term research and training of local communities as well as other local stakeholders	PC, NGO, DFA			√	√	√							
Output 2: Participation of local communities in cempaka plantation development increased													
Activity 2.1. To conduct intensive dialogues on long-term benefits of cempaka plantation with 20 villages in 3 districts	PC, NC, DFA		√	√	√								
Activity 2.2. To train local communities on cempaka nursery development techniques at the small-scale nurseries	PC, PT, DFA				√	√	√						
Activity 2.3. To train local communities on cempaka planting techniques at the plantation demonstration plots	PC, PT, DFA			√	√	√	√						
Activity 2.4. To collaboratively identify and introduce appropriate incentives for local communities to plant cempaka trees	PC, NC, DFA			√	√								
Activity 2.5. To collaboratively develop a sound extension program on cempaka resource conservation	PC, NC					√	√	√	√				

Outputs and Activities	Responsible Party	Year 1				Year 2				Year 3			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<u>Output 3: Government policy on the conservation and utilization of cempaka species reviewed and strengthened</u>													
Activity 3.1. To conduct survey on growing stock and distribution of cempaka species	<u>PC, Univ.</u>	√	√										
Activity 3.2. To conduct study on economics of cempaka wood utilization	<u>PC, IC</u>					√	√						
Activity 3.3. To determine sustainable level of AAC	<u>PC, NC</u>			√	√								
Activity 3.4 To develop SOP and procure equipment & facilities for monitoring of forest operations and timber legality	<u>PC, NE</u>					√	√	√					
Activity 3.5 To pilot test application of SOP, equipment and facilities in one forest district	<u>PC, NE, DFA</u>							√	√	√	√		
Activity 3.6 To establish and operate a stakeholder forum at provincial level	<u>PC, NC</u>									√	√	√	√
Activity 3.7 To organize one provincial workshop on cempaka conservation and utilization	<u>PC, Con.</u>												√

Notes:

PC = Project Coordinator
RFSC = Regional Forestry Seed Center
NGO = Non-Government Organization
DFA = District Forestry Agency
NE = National Expert

Con. = Contractor
IC = International Consultant
Univ. = University
PT = Professional Trainer
NC = National Consultant

3.4. Budget

3.4.1. Master Budget Schedule

Output/Activity	Quarter	Budget Component	Inputs	Unit	Quantity		Unit Cost	ITTO Contribution				GoI Contribution				Grand Total
					ITTO	GOI		Year 1	Year 2	Year 3	Total	Year 1	Year 2	Year 3	Total	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Output 1: Capacity of local communities in Cempaka plantation development																
Activity 1.1: To identify sources of quality cempaka seed at six sites	Q1-Q2, Y1	15	a. National Consultant (NC)	MM	2.00	-	2,000.00	4,000.00	-	-	4,000.00	-	-	-	-	4,000.00
		312	b. DSA, National Consultant	MD	30.00	-	80.00	2,400.00	-	-	2,400.00	-	-	-	-	2,400.00
		33	c. Local transport	Trip	-	5.00	250.00	-	-	-	-	1,250.00	-	-	1,250.00	1,250.00
		61	d. Miscellaneous, meeting	Package	-	2.00	1,750.00	-	-	-	-	3,500.00	-	-	3,500.00	3,500.00
		51	e. Materials	Package	5.00	-	300.00	1,500.00	-	-	1,500.00	-	-	-	-	1,500.00
Sub-total Activity 1.1								7,900.00	-	-	7,900.00	4,750.00	-	-	4,750.00	12,650.00
Activity 1.2: To conduct experiments on appropriate techniques for cempaka seed collection, storage and germination	Q2-Q4, Y1	16	a. National Expert (NE)	MM	-	6.00	500.00	-	-	-	-	3,000.00	-	-	3,000.00	3,000.00
		51	b. Lab Materials	Package	3.00	1.00	2,000.00	6,000.00	-	-	6,000.00	2,000.00	-	-	2,000.00	8,000.00
		61	c. Miscellaneous meetings	Package	-	6.00	300.00	-	-	-	-	1,800.00	-	-	1,800.00	1,800.00
Sub-total Activity 1.2								6,000.00	-	-	6,000.00	6,800.00	-	-	6,800.00	12,800.00
Activity 1.3: To establish six small-scale nurseries at village level to be managed by local communities	Q4, Y1	21	a. Sub contract with NGO	Contract	0.60	0.40	32,400.00	9,720.00	9,720.00	-	19,440.00	6,480.00	6,480.00	-	12,960.00	32,400.00
	Q1, Y2	62	b. Miscellaneous, consultation	Package	3.00	-	1,000.00	1,500.00	1,500.00	-	3,000.00	-	-	-	-	3,000.00
Sub-total Activity 1.3								11,220.00	11,220.00	-	22,440.00	6,480.00	6,480.00	-	12,960.00	35,400.00
Activity 1.4: To review available information on cempaka's silviculture techniques	Q1-Q2, Y1	15	a. National Consultant (NC)	MM	2.00	-	2,000.00	4,000.00	-	-	4,000.00	-	-	-	-	4,000.00
		312	b. DSA, NC	MD	20.00	-	80.00	1,600.00	-	-	1,600.00	-	-	-	-	1,600.00
		33	c. Local transport	Trip	-	4.00	250.00	-	-	-	-	1,000.00	-	-	1,000.00	1,000.00
		63	d. Miscellaneous, discussion	Package	2.00	-	1,500.00	3,000.00	-	-	3,000.00	-	-	-	-	3,000.00
Sub-total Activity 1.4								8,600.00	-	-	8,600.00	1,000.00	-	-	1,000.00	9,600.00
Activity 1.5: To establish 30 Ha of plantation demonstration for purpose of long-term research and training of local communities as well as other local stakeholders	Q3-Q4, Y1	22	a. sub contract with NGO: (30 Ha plantation plots)	Contract	0.60	0.40	40,000.00	12,000.00	12,000.00	-	24,000.00	8,000.00	8,000.00	-	16,000.00	40,000.00
	Q1, Y2	61	b. Miscellaneous meetings	MM	-	4.00	300.00	-	-	-	-	600.00	600.00	-	1,200.00	1,200.00
Sub-total Activity 1.5							500.00	12,000.00	12,000.00	-	24,000.00	8,600.00	8,600.00	-	17,200.00	41,200.00
Total Output 1								45,720.00	23,220.00	-	68,940.00	27,630.00	15,080.00	-	42,710.00	111,650.00

Output 2: Participation of local communities in cempaka plantation development increased																	
Activity 2.1: To conduct intensive dialogues on long-term benefits of cempaka plantation with 20 villages in 3 districts	Q2-Q4, Y1																
		15	a	National Consultant (NC)	MM	2.50	-	2,000.00	5,000.00	-	-	5,000.00	-	-	-	-	5,000.00
		31.2	b	DSA, National Consultant	MD	40.00	-	60.00	2,400.00	-	-	2,400.00	-	-	-	-	2,400.00
		33	c	Local transport	Trip	-	6.00	250.00	-	-	-	-	1,500.00	-	-	1,500.00	1,500.00
		62	d	Miscellaneous, consultation	Package	6.00	-	1,500.00	9,000.00	-	-	9,000.00	-	-	-	-	9,000.00
		51	e	Materials	Package	6.00	-	300.00	1,800.00	-	-	1,800.00	-	-	-	-	1,800.00
Sub-total Activity 2.1									18,200.00	-	-	18,200.00	1,500.00	-	-	1,500.00	19,700.00
Activity 2.2: To train local communities on cempaka nursery development techniques at the small-scale nurseries	Q4, Y1	17	a	Fee Trainers	MD	20.00	-	150.00	1,500.00	1,500.00	-	3,000.00	-	-	-	-	3,000.00
	Q1-Q2, Y2	31.4	b	DSA, Trainers	MD	20.00	-	60.00	600.00	600.00	-	1,200.00	-	-	-	-	1,200.00
		31.5	c	DSA, Trainees	MD	240.00	-	40.00	4,800.00	4,800.00	-	9,600.00	-	-	-	-	9,600.00
		33	d	Local transport	Trip	-	3.00	250.00	-	-	-	-	375.00	375.00	-	750.00	750.00
		51	e	Materials	Package	3.00	-	500.00	750.00	750.00	-	1,500.00	-	-	-	-	1,500.00
		61	f	Miscellaneous, meeting	Package	-	3.00	300.00	-	-	-	-	-	450.00	450.00	900.00	900.00
Sub-total Activity 2.2									7,650.00	7,650.00	-	15,300.00	375.00	825.00	450.00	1,650.00	16,950.00
Activity 2.3: To train local communities on cempaka planting techniques at the plantation demonstration plots	Q3-Q4, Y1	17	a	Fee Trainers	MD	30.00	-	150.00	2,250.00	2,250.00	-	4,500.00	-	-	-	-	4,500.00
	Q1-Q2, Y2	31.4	b	DSA, Trainers	MD	25.00	-	60.00	750.00	750.00	-	1,500.00	-	-	-	-	1,500.00
		31.5	c	DSA, Trainees	MD	300.00	-	40.00	6,000.00	6,000.00	-	12,000.00	-	-	-	-	12,000.00
		33	d	Local transport	Trip	-	3.00	250.00	-	-	-	-	375.00	375.00	-	750.00	750.00
		61	e	Miscellaneous, meeting	Package	-	3.00	300.00	-	-	-	-	450.00	450.00	-	900.00	900.00
Sub-total Activity 2.3									9,000.00	9,000.00	-	18,000.00	825.00	825.00	-	1,650.00	19,650.00
Activity 2.4: To collaboratively identify and introduce appropriate incentives for local communities to plant cempaka trees	Q3-Q4, Y1	15	a	National Consultant (NC)	MM	2.00	-	2,000.00	4,000.00	-	-	4,000.00	-	-	-	-	4,000.00
		31.2	b	DSA National Consultant	MD	24.00	-	60.00	1,440.00	-	-	1,440.00	-	-	-	-	1,440.00
		33	c	Local Transport	Trip	-	6.00	250.00	-	-	-	-	1,500.00	-	-	1,500.00	1,500.00
		31.6	d	DSA, participants	MD	120.00	-	35.00	4,200.00	-	-	4,200.00	-	-	-	-	4,200.00
		62	e	Miscellaneous, consultation	Package	6.00	-	1,500.00	9,000.00	-	-	9,000.00	-	-	-	-	9,000.00
Sub-total Activity 2.4									18,640.00	-	-	18,640.00	1,500.00	-	-	1,500.00	20,140.00
Activity 2.5: To collaboratively develop a sound extension program on cempaka resource conservation	Q1-Q4, Y2	15	a	National Consultant (NC)	MM	2.00	-	2,000.00	-	4,000.00	-	4,000.00	-	-	-	-	4,000.00
		31.2	b	DSA, National Consultant	MD	20.00	-	80.00	-	1,600.00	-	1,600.00	-	-	-	-	1,600.00
		33	c	Local transport	Trip	-	5.00	250.00	-	-	-	-	-	1,250.00	-	1,250.00	1,250.00
		61	d	Miscellaneous, meeting	Package	-	2.00	300.00	-	-	-	-	-	600.00	-	600.00	600.00
Sub-total Activity 2.5									-	5,600.00	-	5,600.00	-	1,850.00	-	1,850.00	7,450.00
Total Output 2									53,490.00	22,250.00	-	75,740.00	4,200.00	3,500.00	450.00	8,150.00	83,890.00

Output 3: Government policy on the conservation and utilization of cempaka species reviewed and strengthened																	
Activity 3.1: To conduct survey on growing stock and distribution of cempaka species	Q1-Q2, Y1	23	a.	Sub contract with University (survey on growing stock)	contract	0.60	0.40	30,000.00	18,000.00	-	-	18,000.00	12,000.00	-	-	12,000.00	30,000.00
		61	b.	Miscellaneous, meetings	package	-	3.00	80.00	-	-	-	-	240.00	-	-	240.00	240.00
Sub-total Activity 3.1									18,000.00	-	-	18,000.00	12,240.00	-	-	12,240.00	30,240.00
Activity 3.2: To conduct study on economics of cempaka wood utilization	Q1-Q2, Y2	14	a.	International Consultant	MM	1.00	-	10,000.00	-	10,000.00	-	10,000.00	-	-	-	-	10,000.00
		31.1	b.	DSA, International Consultant	MD	10.00	-	150.00	-	1,500.00	-	1,500.00	-	-	-	-	1,500.00
		32.1	c.	Air ticket, International Consultant	Trip	1.00	-	2,000.00	-	2,000.00	-	2,000.00	-	-	-	-	2,000.00
		33	d.	Local transport	Trip	-	1.00	500.00	-	-	-	-	-	500.00	-	500.00	500.00
		61	e.	Miscellaneous, meeting	package	-	2.00	300.00	-	-	-	-	-	600.00	-	600.00	600.00
Sub-total Activity 3.2									-	13,500.00	-	13,500.00	-	1,100.00	-	1,100.00	14,600.00
Activity 3.3: To determine sustainable level of AAC	Q3 - Q4, Y1	15	a.	National Consultant	MM	1.00	-	2,000.00	2,000.00	-	-	2,000.00	-	-	-	-	2,000.00
		31.2	b.	DSA, National Consultant	MD	10.00	-	80.00	800.00	-	-	800.00	-	-	-	-	800.00
		33	c.	Local transport	Trip	-	1.00	500.00	-	-	-	-	500.00	-	-	500.00	500.00
		63	d.	Miscellaneous, discussion	package	2.00	-	1,500.00	3,000.00	-	-	3,000.00	-	-	-	-	3,000.00
Sub-total Activity 3.3									5,800.00	-	-	5,800.00	500.00	-	-	500.00	6,300.00
Activity 3.4: To develop SOP and procure equipment & facilities for monitoring of forest operations and timber legality	Q1-Q3, Y2	15	a.	National Consultant (NC)	MM	2.00	-	2,000.00	-	4,000.00	-	4,000.00	-	-	-	-	4,000.00
		31.2	b.	DSA, National Consultant	MD	20.00	-	80.00	-	1,600.00	-	1,600.00	-	-	-	-	1,600.00
		42	c.	GPS Garmins 76 CSX	unit	9.00	-	500.00	-	4,500.00	-	4,500.00	-	-	-	-	4,500.00
		41	d.	Motor cycle	unit	2.00	1.00	2,000.00	-	4,000.00	-	4,000.00	-	2,000.00	-	2,000.00	6,000.00
		33	e.	Local transport	Trip	-	2.00	250.00	-	-	-	-	-	500.00	-	500.00	500.00
		61	f.	Miscellaneous, meeting	package	-	2.00	300.00	-	-	-	-	-	600.00	-	600.00	600.00
Sub-total Activity 3.4									-	14,100.00	-	14,100.00	-	3,100.00	-	3,100.00	17,200.00
Activity 3.5: To pilot test application of SOP, equipment and facilities in one forest district	Q3-Q4, Y2 Q1-Q2, Y3	15 31.2 33 62	a. b. c. d.	National Consultant (NC) DSA, National Consultant Local transport Miscellaneous, consultation	MM MD Trip package	2.00 30.00 - 2.00	- - 2.00 -	2,000.00 80.00 250.00 1,500.00	2,000.00 1,200.00 - 1,500.00	2,000.00 1,200.00 - 1,500.00	2,000.00 2,400.00 - 3,000.00	4,000.00 - - -	- - 250.00 -	- - 250.00 -	- - 500.00 -	- - 500.00 -	4,000.00 2,400.00 500.00 3,000.00
Sub-total Activity 3.5									-	4,700.00	4,700.00	9,400.00	-	250.00	250.00	500.00	9,900.00
Activity 3.6: To establish and operate a stakeholder forum at provincial level	Q1-Q4, Y3	15 31.2 33 67 68	a. b. c. d. e.	National Consultant DSA, National Consultant Local transport Meeting facilities Stakeholder meetings	MM MD Trip package package	2.00 25.00 - 1.00 6.00	- - 5.00 - -	2,000.00 80.00 250.00 7,000.00 1,000.00	- - - 7,000.00 6,000.00	4,000.00 2,000.00 - 7,000.00 6,000.00	4,000.00 2,000.00 - - -	- - - - -	- - 1,250.00 -	- - 1,250.00 -	- - -	- - -	4,000.00 2,000.00 1,250.00 7,000.00 6,000.00
Sub-total Activity 3.6									-	-	19,000.00	19,000.00	-	-	1,250.00	1,250.00	20,250.00
Activity 3.7: To organize one provincial workshop on cempaka conservation and utilization	Q4, Y3	24	a	Sub-contract, provincial workshop	contract	0.80	0.20	10,000.00	-	8,000.00	-	8,000.00	-	-	2,000.00	-	10,000.00
Sub-total Activity 3.7									-	-	8,000.00	8,000.00	-	-	2,000.00	2,000.00	10,000.00
Total Output 3									23,800.00	32,300.00	31,700.00	87,800.00	12,740.00	4,450.00	3,500.00	20,690.00	108,490.00
Non-activity based	Q1-Q4, Y1 Q1-Q4, Y2 Q1-Q4, Y3	11 12 13 43 44 52 31.7 32.2 64 65 66 67	a. b. c. f. g. h. i. j. k. l. m. n.	Key Personnel Project Coordinator (PC) Secretary Technicians Capital items Computer Printer Office utilities Duty travel DSA, PC Air ticket Others PSC meetings Financial auditing Office space Facilities	MM MM MM unit unit Month MD trip Meeting Yearly month set	36.00 36.00 36.00 2.00 1.00 - 36.00 6.00 3.00 3.00 - - 3.00 3.00 - 1.00	- - - 100 - 36.00 3.00 - - - - - - - - - -	2,000.00 500.00 6,000.00 400.00 1,500.00 500.00 80.00 300.00 2,000.00 1,500.00 600.00 900.00	24,000.00 500.00 6,000.00 4,800.00 3,000.00 - 960.00 600.00 2,000.00 1,500.00 - - - - - -	24,000.00 6,000.00 6,000.00 4,800.00 - - 960.00 600.00 2,000.00 1,500.00 - - - - - -	24,000.00 18,000.00 14,400.00 - 3,000.00 500.00 - - - - - - - - - -	72,000.00 18,000.00 14,400.00 - 1,500.00 - - - 6,000.00 300.00 - 300.00 300.00 - 7,200.00 300.00	- - 4,800.00 - - 6,000.00 - - - - - - - 7,200.00 300.00	- - 4,800.00 - - 6,000.00 - - - - - - - 7,200.00 300.00	- - 4,800.00 - - 6,000.00 - - - - - - - 7,200.00 300.00	- - 14,400.00 - 1,500.00 - - 900.00 - - - - - 21,600.00 900.00	72,000.00 18,000.00 28,800.00 4,500.00 500.00 18,000.00 2,880.00 2,700.00 6,000.00 4,500.00 21,600.00 900.00
Total Non-activity based									43,360.00	39,860.00	39,860.00	123,080.00	20,100.00	18,600.00	18,600.00	57,300.00	180,380.00
Grand Total Project Costs									166,370.00	117,630.00	71,560.00	355,560.00	64,670.00	41,630.00	22,550.00	128,850.00	484,410.00
ITTO Monitoring and Review												18,000.00					18,000.00
ITTO Ex-post Evaluation												15,000.00					15,000.00
ITTO Programme Support												46,627.20					46,627.20
National Management Cost																	
												435,187.20				128,850.00	564,037.20

3.4.2. Consolidated Budget by Component

Category	Description	Total	Year 1	Year 2	Year 3
10	Personnel				
11	Project coordinator	72,000.00	24,000.00	24,000.00	24,000.00
12	Secretary	18,000.00	6,000.00	6,000.00	6,000.00
13	Technicians	28,800.00	9,600.00	9,600.00	9,600.00
14	International Consultant	10,000.00	-	10,000.00	-
15	National Consultants	35,000.00	19,000.00	10,000.00	6,000.00
16	National Experts	3,000.00	3,000.00	-	-
17	Trainer	7,500.00	3,750.00	3,750.00	-
19	Sub total	174,300.00	65,350.00	63,350.00	45,600.00
20	Sub contracts				
21	sub contract with NGO (to establish model small scale nurseries at 6 sites)	32,400.00	16,200.00	16,200.00	-
22	Sub contract with NGO (30 Ha. of demonstration plantations at 3 sites)	40,000.00	20,000.00	20,000.00	-
23	Sub contract with University (survey on growing stock and distribution of cempaka species)	30,000.00	30,000.00	-	-
24	Provincial workshop	10,000.00	-	-	10,000.00
29	Sub total	112,400.00	66,200.00	36,200.00	10,000.00
30	Duty Travel				
31	Daily Subsistence Allowance	-	-	-	-
31.1.	DSA International Consultant	1,500.00	-	1,500.00	-
31.2.	DSA National consultants	16,240.00	8,640.00	4,400.00	3,200.00
31.3.	DSA National Experts	-	-	-	-
31.4.	DSA Trainers	2,700.00	1,350.00	1,350.00	-
31.5.	DSA Trainees	21,600.00	10,800.00	10,800.00	-
31.6.	DSA Participants	4,200.00	4,200.00	-	-
31.7.	DSA Project coordinator	2,880.00	960.00	960.00	960.00
32	Air ticket	-	-	-	-
32.1.	Air ticket International Consultant	2,000.00	-	2,000.00	-
32.2.	Air ticket	2,700.00	900.00	900.00	900.00
33	Local Transport	11,250.00	6,500.00	3,250.00	1,500.00
39	Sub total	65,070.00	33,350.00	25,160.00	6,560.00
40	Capital Items				
41	Motor cycle	6,000.00	-	6,000.00	-
42	GPS	4,500.00	-	4,500.00	-
43	Computer	4,500.00	4,500.00	-	-
44	Printer	500.00	500.00	-	-
49	Sub total	15,500.00	5,000.00	10,500.00	-
50	Consumables items				
51	Materials	12,800.00	12,050.00	750.00	-
52	Utilities	18,000.00	6,000.00	6,000.00	6,000.00
59	Sub total	30,800.00	18,050.00	6,750.00	6,000.00
60	Miscellaneous				
61	Meeting	10,340.00	6,590.00	3,300.00	450.00
62	Consultation	24,000.00	19,500.00	3,000.00	1,500.00
63	Discussion	6,000.00	6,000.00	-	-
64	PSC meetings	6,000.00	2,000.00	2,000.00	2,000.00
65	Financial Audit	4,500.00	1,500.00	1,500.00	1,500.00
66	Office space	21,600.00	7,200.00	7,200.00	7,200.00
67	Meeting Facilities	7,900.00	300.00	300.00	7,300.00
68	Stakeholders Meetings	6,000.00	-	-	6,000.00
69	Sub total	86,340.00	43,090.00	17,300.00	25,950.00
70	Total Project	484,410.00	231,040.00	159,260.00	94,110.00
80	National management cost	-	(See executing agency budget)		
90	Project monitoring and administration				
91	ITTO monitoring & review	18,000.00			
92	ITTO ex-post evaluation	15,000.00			
95	ITTO Programme support (70 + 91 +92) x 12%	46,627.20			
100	Total Project Monitoring and	79,627.20			
	GRAND TOTAL (70 + 100)	564,037.20			

3.4.3. ITTO Yearly Budget

Category	Description	Total	Year 1	Year 2	Year 3
10	Personnel				
11	Project coordinator	72,000.00	24,000.00	24,000.00	24,000.00
12	Secretary	18,000.00	6,000.00	6,000.00	6,000.00
13	Technicians	14,400.00	4,800.00	4,800.00	4,800.00
14	International Consultant	10,000.00	-	10,000.00	-
15	National Consultants	35,000.00	19,000.00	10,000.00	6,000.00
16	National Experts	-	-	-	-
17	Trainer	7,500.00	3,750.00	3,750.00	-
19	Sub total	156,900.00	57,550.00	58,550.00	40,800.00
20	Sub contracts				
21	sub contract with NGO (to establish model small scale nurseries at 6 sites)	19,440.00	9,720.00	9,720.00	-
22	Sub contract with NGO (30 Ha. of demonstration plantations at 3 sites)	24,000.00	12,000.00	12,000.00	-
23	Sub contract with University (survey on growing stock and distribution of cempaka	18,000.00	18,000.00	-	-
24	Provincial workshop	8,000.00	-	-	8,000.00
29	Sub total	69,440.00	39,720.00	21,720.00	8,000.00
30	Duty Travel				
31	Daily Subsistence Allowance	-	-	-	-
31.1.	DSA International Consultant	1,500.00	-	1,500.00	-
31.2.	DSA National consultants	16,240.00	8,640.00	4,400.00	3,200.00
31.3.	DSA National Experts	-	-	-	-
31.4.	DSA Trainers	2,700.00	1,350.00	1,350.00	-
31.5.	DSA Trainees	21,600.00	10,800.00	10,800.00	-
31.6.	DSA Participants	4,200.00	4,200.00	-	-
31.7.	DSA Project coordinator	2,880.00	960.00	960.00	960.00
32	Air ticket				
32.1.	Air ticket International Consultant	2,000.00	-	2,000.00	-
32.2.	Air ticket	1,800.00	600.00	600.00	600.00
33	Local Transport	-	-	-	-
39	Sub total	52,920.00	26,550.00	21,610.00	4,760.00
50	Consumables items				
51	Materials	10,800.00	10,050.00	750.00	-
52	Utilities	-	-	-	-
59	Sub total	10,800.00	10,050.00	750.00	-
60	Miscellaneous				
61	Meeting	-	-	-	-
62	Consultation	24,000.00	19,500.00	3,000.00	1,500.00
63	Discussion	6,000.00	6,000.00	-	-
64	PSC meetings	6,000.00	2,000.00	2,000.00	2,000.00
65	Financial Audit	4,500.00	1,500.00	1,500.00	1,500.00
66	Office space	-	-	-	-
67	Meeting Facilities	7,000.00	-	-	7,000.00
68	stakeholders meetings	6,000.00	-	-	6,000.00
69	Sub total	53,500.00	29,000.00	6,500.00	18,000.00
70	Total Project	355,560.00	166,370.00	117,630.00	71,560.00
80	National management cost	-	(See executing agency budget)		
90	Project monitoring and administration				
91	ITTO monitoring & review	18,000.00			
92	ITTO ex-post evaluation	15,000.00			
95	ITTO Programme support (70 + 91 + 92) x 12%	46,627.20			
100	Total Project Monitoring and Administration	79,627.20			
	GRAND TOTAL (70 + 100)	435,187.20			

3.4.4 Executing Agency Yearly Budget (Gol)

Category	Description	Total	Year 1	Year 2	Year 3
10	Personnel				
13	Technicians	14,400.00	4,800.00	4,800.00	4,800.00
16	National Experts	3,000.00	3,000.00	-	-
19	Sub total	17,400.00	7,800.00	4,800.00	4,800.00
20	Sub contracts				
21	sub contract with NGO (to establish model small scale nurseries at 6 sites)	12,960.00	6,480.00	6,480.00	-
22	Sub contract with NGO (30 Hs. of demonstration plantations at 3 sites)	16,000.00	8,000.00	8,000.00	-
23	Sub contract with University (survey on growing stock and distribution of cempaka	12,000.00	12,000.00	-	-
24	Provincial workshop	2,000.00	-	-	2,000.00
29	Sub total	42,960.00	26,480.00	14,480.00	2,000.00
30	Duty Travel				
31	Daily Subsistence Allowance	-	-	-	-
	31.3. DSA National Experts	-	-	-	-
32	Air ticket				
	32.2. Air ticket	900.00	300.00	300.00	300.00
33	Local Transport	11,250.00	6,500.00	3,250.00	1,500.00
39	Sub total	12,150.00	6,800.00	3,550.00	1,800.00
40	Capital Items				
41	Motor cycle	2,000.00	-	2,000.00	-
43	Computer	1,500.00	1,500.00	-	-
49	Sub total	3,500.00	1,500.00	2,000.00	-
50	Consumables items				
51	Materials	2,000.00	2,000.00	-	-
52	Utilities	18,000.00	6,000.00	6,000.00	6,000.00
59	Sub total	20,000.00	8,000.00	6,000.00	6,000.00
60	Miscellaneous				
61	Meeting	10,340.00	6,590.00	3,300.00	450.00
62	Consultation	-	-	-	-
66	Office space	21,600.00	7,200.00	7,200.00	7,200.00
67	Meeting Facilities	900.00	300.00	300.00	300.00
69	Sub total	32,840.00	14,090.00	10,800.00	7,950.00
70	Total Project	128,850.00	64,670.00	41,630.00	22,550.00
80	National management cost	-	(See executing agency budget)		
	GRAND TOTAL (70 + 100)	128,850.00			

Notes on Budget Items 21 – 24 of Table 3.4.3 (ITTO yearly budget)

Budget Item 21

The current total cost of establishing a small-scale nursery in Indonesia is IDR 50 million, equivalent to US\$ 5,400; this figure is verifiable. To establish six nurseries will cost US\$ 32,400 of which **40%** will be borne by the Executing Agency (**up from 20%**). Hence, Budget Item 21 cannot be substantially reduced as recommended by the Panel.

Budget Item 22

The current total cost of establishing forest plantation in Indonesia ranges between IDR 12 to 14 million, equivalent to US\$ 1,270 to US\$ 1,470/Ha. To establish 30 hectares of plantation will cost about US\$ 40,000 or about US\$ 1,333 /Ha **of which 40% will be shouldered by EA (up from 20%)**. The cost of establishing demonstration plantation cannot be substantially reduced as recommended by the Panel.

Budget Item 23

Proposed survey on cempaka growing stock will cover an area of nearly 300,000 Ha. Using a systematic strip sampling method with random start at intensity of 0,2% the area of samples will be around 600 Ha or 300 Km in length using a 20 M width of strip. With daily productivity at 2 Km, the required Team-day is approximately 150 days. With a total daily cost of survey team comprising 7 persons at US\$ 180 (honorarium, consumables, equipment, transport, survey kits, etc.) the total cost of survey would be around US\$ 24,000 excluding data analysis. By adding cost of data analysis and reporting at US\$ 6,000 the total cost of the survey would be around US\$ 30,000 of which **40% (up from 20%)** will be shouldered by the Executing Agency. Therefore, the cost of growing stock survey cannot be substantially reduced as recommended by the Panel.

Budget Item 24

The cost of a workshop is variable depending on many factors. A total cost between US\$ 8,000 to US\$ 10,000 is reasonable and common in Indonesia in organizing a small workshop. Therefore, the cost of organizing proposed workshop cannot be substantially reduced as recommended by the Panel.

3.5 Assumptions, risks and sustainability

3.5.1 Assumptions and risk

The assumptions used in this proposed project are:

- Government supports are available
- High participatory of community and district government in cempaka Plantation in North Sulawesi is created
- High commitment of community, local government and university to implementation and support the regulation was created
- Market of environmental services products is available
- Government policy supports the development of cempaka plantation is available
- Government support the establishment of forum stakeholder cempaka plantation is available
- Government and business industries related to develop cempaka plantation are available

It seems that many factors influencing the successful implementation of cempaka plantation in North Sulawesi. Human factor includes motivation, commitment, and right decision making in relation to cempaka plantation. Therefore, this really requires same perception and good collaboration from wide range of stakeholders. If this situation does not handle properly, the whole project activities will not successfully implemented.

The potential risks and its mitigation associated with the project and likely will affect its implementation are:

1.	Risks	Lack of government and stakeholders supporting
	Mitigation	Socialization of cultural, ecological, and economical benefits of cempaka plantation project Implementing of good communication strategies Involving of government institutions and stakeholders in the project implementation.
2.	Risks	Lack of local community participation
	Mitigation	Socialization of cultural, ecological, and economical benefits of cempaka plantation project to local community Involving of local community in training on cempaka cultivation Providing of appropriate incentives for local communities who planted cempaka tree in their own land.
3.	Risk	Technological adoption failure for local community on silviculture techniques of cempaka
	Mitigation	Providing of cheap and easy technology for cultivation of cempaka trees. Good selection of communities who are eager to participate actively in the project implementation. Transfer of knowledge should be properly planned including target groups, location and time schedule.

3.5.2 Sustainability

The sustainability of the project can be achieved through: (i) various supports from key and primary stakeholders indicated by sustainable running of cempaka plantation forum, (ii) there is regulation or system to manage wood market mechanism in North Sulawesi, and (iii) future management of cempaka plantation in other location must be created.

Cempaka plantation forum with members of various stakeholders would be good media for giving alternative solutions related problems rising in the cempaka tree cultivation. The presence of the forum is very important to eliminate the bureaucracy handicaps.

For the sustainable cempaka plantation, it requires good monitoring and control on the trading of cempaka timber based on the Wood Legality Verification System (SVLK) as mentioned in Forestry Minister Decree No. P.

The results of the project in cempaka sustainable plantation should be disseminated widely in other districts in North Sulawesi for good adoption in their region. The successful project implementation would give inspiration and strong spirit to the development of community forests for cempaka and other primary wood species in North Sulawesi. As a result, man power absorption in cempaka plantation program would increase self-financed and prosperity of local community so that it is able to support the biodiversity conservation efforts in North Sulawesi (*Hotspot Wallace Are and Coral Triangle*).

The mechanisms for ensuring sustainability of nurseries and demonstration plantations can be outlined as follows:

- i) **The small-scale nurseries are established for two purposes: to show case production techniques of quality cempaka seedlings and to serve as site for training on seedling production. Therefore, management of this nurseries will be the full responsibility of District Forestry Agencies (DFA). To ensure its sustainability after project completion, associated operational budget will have to be shouldered by concerned agencies through Districts' development budget in a routine manner.**
- ii) **The seedlings produce under the six nurseries will be distributed to surrounding local communities free of charge; this is meant to become an incentive for cempaka planting. Interest in cempaka planting will be further raised through conduct of dialogues under the enhanced extension program in order to deepen understanding of local communities on long-term benefits of cempaka trees accruable to them. Increased interest in cempaka planting would require larger quantity of seedling; the nurseries managed by DFAs might not be able to meet demand that local communities would have to produce seedlings by themselves by running their own nurseries.**
- iii) **As regards the demonstration plantation, it will be consistently managed by the Manado Forestry Research Institute (MFRI) because it serves as a long-term field laboratory to generate information on cempaka growth and yield of planted cempaka under different treatments. Information on growth and yield will be periodically published and disseminated in view of raising and intensifying interest of local stakeholders in cempaka planting. In addition, the demo plantation will serve as a real example of planted cempaka trees that can be directly observed by the local communities. Consequently, resources needed for properly managing the demo plantation will have to be fully borne by MFRI after project completion.**

PART 4 : Implementation Arrangements

4.1 Organization structure and stakeholder involvement mechanisms

4.1.1 Executing agency and partners

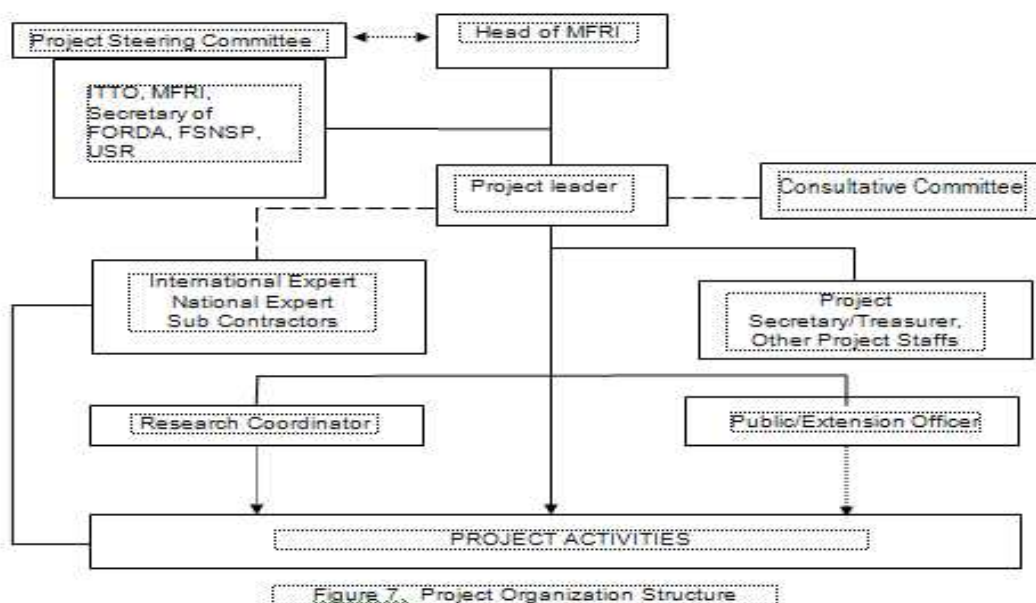
MFRI as Executing Agency will establish a Project Steering Committee (PSC) and appoints PSC chairman, members and secretary. The task of the PSC will be : (1) to share inputs on the implementation of project activities; (2) to conduct annual evaluation of project implementation; (3) to evaluate and approve progress reports and final reports before submission to the Government of Indonesia and the ITTO. The PSC members will be recruited from representative stakeholders from the local and regional levels, as well as from the MOF.

MFRI has many researchers with various professional background (tree breeding, silviculture, economic, forest management and social forestry fields). This condition would fully support MFRI to implement the project in field area.

MFRI has a close relation and good communication and coordination with local government institutions and local universities (University of Sam Ratu Langi) and local farmer groups in its research working location area.

4.1.2 Project management team

In the execution of all activities, a Project Leader will be appointed by the Head of MFRI as the Executing Agency (EA). The EA would consult and coordinate with the project steering committee (PSC). Working of Project Leader is under supervision of both the Head of MFRI and PSC. The project leader leads, monitors and evaluates the works of his/her project staff (Research Coordinator, Public Officer and Secretary and other Staffs). International and National Experts would assist the work of project leader. Figure 7 illustrates the project organization structure. Job description and TOR for each position is presented in Annex C. The Project Leader will be recruited from the FORDA. The task of Project Leader is to do the planning, implementation, monitoring and evaluation of the project. The Research Coordinator is to assist the Project Leader, particularly, in research/survey/desk-field study activities. The Public Officer is to assist the Project Leader in disseminating the project results and organizing training/extension/workshop.



41.3 Project steering committee

The proposed PSC members will be represented by:

- DG of FORDA
- MFRI
- ITTO Project Coordinator, Japan
- Secretary of FORDA
- Center for Foreign Cooperation (CFC), Ministry of Forestry
- FANSP
- WMIT
- USR

4.1.4 Stakeholder involvement mechanisms

MFRI is the primary implementing agency for the project. To implement the project, it will work closely with Faculty of Agriculture, University of Samratulangi, Forestry Service of North Sulawesi Province, and Watershed Management Institute of Tondano. Detail arrangement has already been set out.

In order to provide a platform for stakeholders to provide inputs into the project, the project has designed the consultative committee. The member of the committee comes from local NGOs, local universities, local forestry extension officers and heads of villages where the demonstration plots of project is located (See Figure 7).

4.2 Reporting, review, monitoring and evaluation

- a. **Project Progress Reports**
The first project progress report will be submitted to ITTO 6 months after the project starts. Progress report will be submitted at least 4 week before the date of the monitoring visit (or Steering Committee Meetings and or 2 months before Council Meetings (in May and November). The submitted report will have been reviewed by the PSC.
- b. **Project Completion Report**
Completion Report will be submitted 3 months after project completion. The submitted report will have been reviewed by the PSC.
- c. **Project Technical Reports**
Project Technical Report for each activity will be submitted 2 months after completion of each activity.
- d. **Monitoring, Review and Steering Committee's Visits**
The PSC meeting will be held at least once a year. The first PSC meeting will be held within 1 month after the project starts. ITTO monitoring visits, if considered still necessary, will be arranged after the achievement of the respective outputs according to the Work Plan, at least every 12 months. The venues or the monitoring visits and meetings of the Steering Committee will be proposed by the Executing Agency.
- e. **Evaluation**
Project evaluation consists of mid-term and after project completion. Mid-term Evaluation will be conducted in the middle of project period and Post Evaluation will be carried out after project completion (end of project period) and determined by ITTO.

4.3 Dissemination and mainstreaming of project learning

4.3.1 Dissemination of project results

All of the project outputs such as technical reports, scientific reports, teaching or extension materials, database and other documents or publication materials will be submitted to the Government of Indonesia and ITTO as an information base and tools for sustainable development of timber preservation industry. All project assets, such as vehicle, computers and the remained office supplies will be delivered to the Executing Agency-MFRI to support their research capacity. Demonstration plots on Cempaka conservation, Cempaka nursery and facilities provided by ITTO will be maintained by MFRI

4.3.2 Mainstreaming project learning

The cempaka project would create lesson learned from ITTO-Bali Project implementation in conservation of indigenous species. Although, cempaka project implementation has site specific issue, the process and steps of cempaka conservation approach can be adopted for other areas.

The results of cempaka project implementation would be good inputs to both North Sulawesi provincial dan districts governments to formulate local regulation regarding the sustainable cempaka plantation and its utilization for small scale business of wooden housing industry.

The results of cempaka project implementation would be good example to the central government when designing national conservation policies on extinguish and valuable tree species to become an icon of the native species in several regions.

The central government can also duplicate this kind of tree conservation project into several province locations by adopting the integrating of cultural aspect and ecological dan economical benefits into sustainable cempaka plantation.

In order to speed up the adoption of the cempaka conservation project in North Sulawesi to other provinces, the Ministry of Forestry would disseminate the project results in its web site and further proceed into forestry extension material and training manual. Continuous improvement on extension material and training manual during and after its implementation to the relevant stakeholders.

The project would also share a cempaka database, cempaka conservation approach, and community involvement mechanism to other tree conservation implementation agencies both in provincial and regional areas. The implementation and experiences of cempaka project would also be shared with many institutions in other countries through international seminar or workshop related to tree conservation scheme.

Annex 1 : Profile of the executing and collaborating agencies

Profile of the executing agency

The executing agency will be the MFRI. It is the one of the technical agencies of FORDA who is responsible for coordinating, supervising and carrying out research and development in forest and nature conservation in North Sulawesi, North Maluku and Gorontalo Province. The organization structure of MFRI consists of (i) head of MFRI, (ii) section of program, planning & budgeting, (iii) section of research monitoring and evaluation, (iv) section of means and infrastructure services and (v) administration sub-section and (vi) group of researcher division as shown in Figure 8.

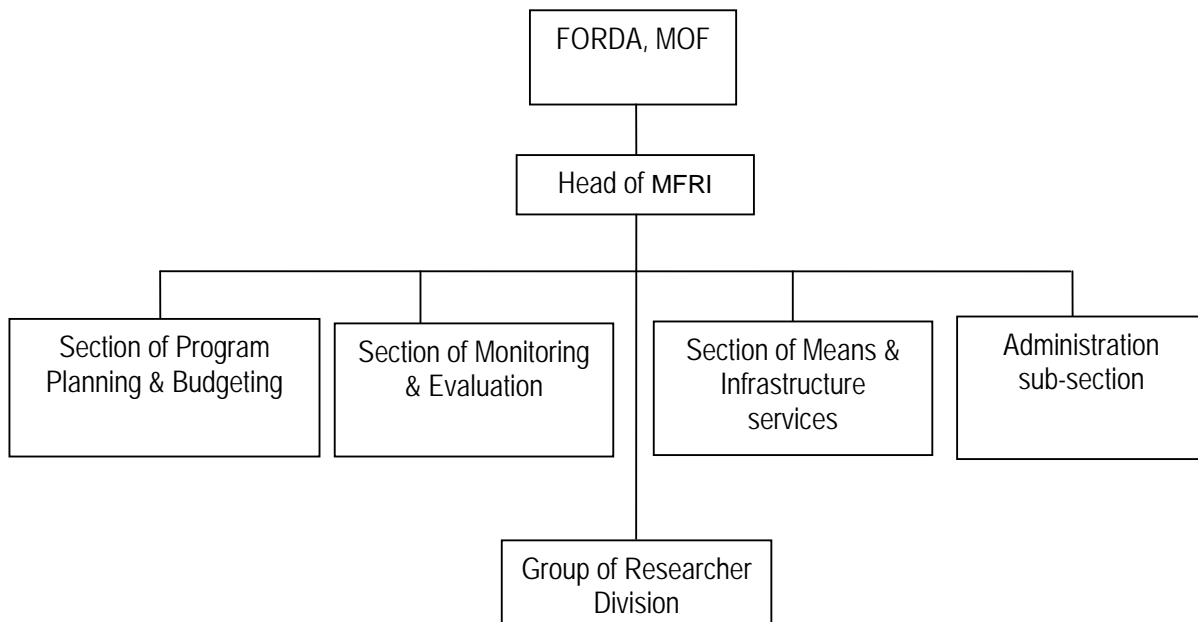


Figure 8. Organization structure of MFRI

As of 2011, the MFRI is equipped with 2 research divisions with around 15 scientists working in various aspects of conservations of flora and fauna, watershed and critical land management, development and management of forest plantation, protected area and biodiversity management, development of private and community forests, improvement of non forest products for small and medium enterprises, utilization and marketing of forest services.

A number of qualified results have been produced throughout years of research experience. These include innovative development in the biodiversity exploration of flora dan fauna, tree volume estimation, regional mapping for sustainable forest and land rehabilitation, study of population and habitat of Anoa (*Bubalus deprecicornis*), study of population and habitat of Eboni (*Diospyros* spp.), microhydro electric developing based on community participation in forest boundaris, optimalisation of watersheed management in Tondano catchment area, study of watersheed institution, study of domestication traditional medicine plants, and study of cempaka woods substitution by six local woods as material for producing woloan house.

The institution has developed intense collaboration with several domestic organizations. Private companies are PT Bella Berkas Anugerah (tree volume estimation). The MFRI has the flexibility to deploy its staff, when necessary, to handle its collaborative projects.

Profile of the collaborating agency

The collaborating agency will be the Watershed Management Institute of Tondano (WMIT) in North Sulawesi Province. It is the one of the technical implementation unit under the Directorate General of Watershed Management Development and Social Forestry (DGWMDSF), Ministry of Forestry (MoF). WMIT has basic tasks of planning, institutional development and evaluation of watershed management in North Sulawesi. To carry out these basic tasks, WMIT has the function of watershed management planning, preparation and presentation of information watershed, watershed management model development, institutional development and partnership watershed management and monitoring and evaluation of watershed management.

The organization structure of WMIT consists of (i) head of WMIT, (ii) section of watershed program, (iii) section of watershed institutional development, (iv) section of watershed monitoring and evaluation and (v) administration sub-section and (vi) functional group as shown in Figure 9.

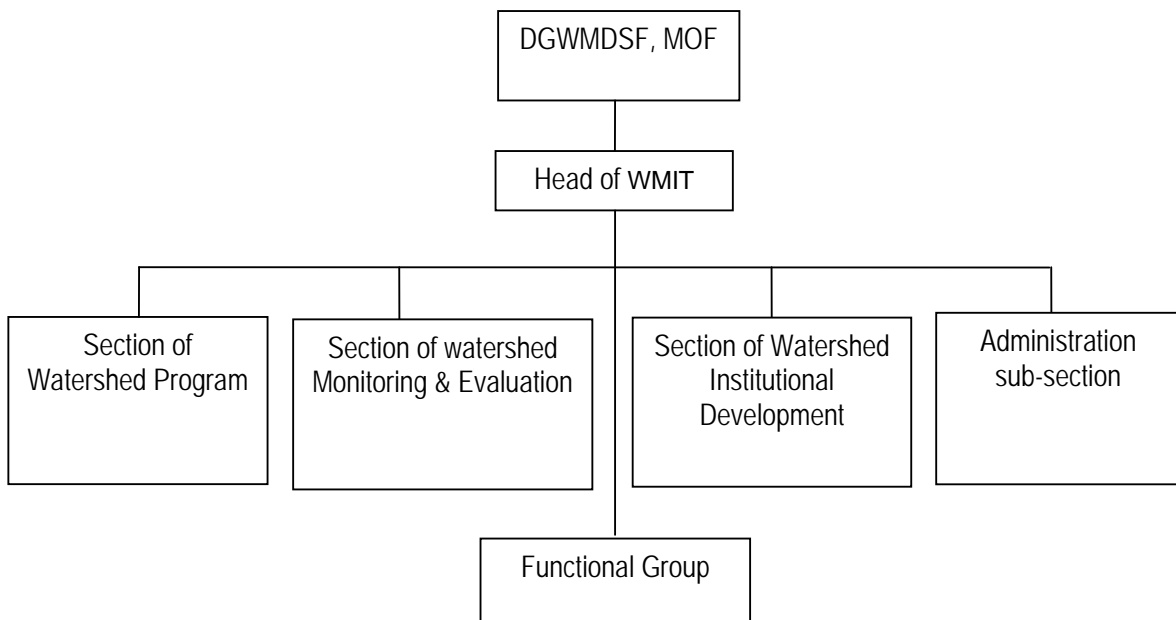


Figure 9. Organization structure of WMIT

In accordance with the basic tasks and functions, the nature of service is to provide facilitation and technical supervision of regional governments and other stakeholders, so that efforts and watershed management including forest and land rehabilitation efforts can be run smoothly and achieve optimal results.

The missions of WMIT are:

- To develop the watershed information system
- To develop the watershed management model
- To strengthen the monitoring and evaluation watershed management
- To enhance community participation in order to optimize the functions of forests and land
- To develop partnerships in watershed management
- To increase cooperation with stakeholders in order to optimize the functions of forests and land

Annex 2 : Task and responsibilities of key expert provided by executing agency

No	Name	Professional Education	Position in present organization	Experience relevant to the project	Task and responsibilities in the project
1	Kristian Mairi	Magister degree	Researcher in socio economic of forestry MFRI, FORDA	Implementor of institutional watershed research activity	Project Coordinator/ National expert for output 3
2	Julianus Kinho	Bachelor degree	Researcher in flora conservation, MFRI, FORDA	Implementor of flora conservation research activity	National expert for output 1
3	Diah Irawati D. Arini	Bachelor degree	Researcher in fauna conservation, MFRI, FORDA	Implementor of fauna conservation research activity	National expert for output 2
4	Isdomo Yuliantoro	Magister degree	Researcher Candidate, MFRI, FORDA	Member of research team on institutional watershed research activity	Project secretary

1.Key expert 1 :

Full Name	Kristian Mairi, S.Hut, M.Sc
Sex	Male
Place/Date of birth	Tana Toraja/ May 04,1973
Nationality	Indonesia
Religion	Christian
Marital Status	Married
Current Job (Title)	Researcher of Forestry Sociology (Coordinator of Researcher Group of Forestry Socio economic)
Office	Forestry Research Institution in Manado, North Sulawesi
Office address	Jl. Raya Adipura, Kelurahan Kima Atas, Kecamatan Mapanget, Kota Manado, Provinsi Sulawesi Utara, Indonesia. Telp. 0431-36666683 Fax.
Home address	Perumahan Griya Tugu Manado Blok B No. 2 Paniki, Manado, North Sulawesi E-mail : mairi_kw@yahoo.co.id HP : 0811463371
Educational Background	<ul style="list-style-type: none"> - Graduated of Forestry Management (1998), Forestry and Agriculture Faculty, Hasanuddin University, Makassar. - Post Graduate of Forestry Management (2008), Forestry Faculty, Gadjah Mada University, Yogyakarta.
Courses/Workshop	<ul style="list-style-type: none"> - Participatory Rural Appraisal Course (2003); held by Forestry Education and Training Institution, Makassar, Sulawesi Selatan. - Social Forestry Fasilitator Training (2004)); held by Forestry Education and Training Institution, Makassar, Sulawesi Selatan. - Methodology Research Course (2004); held by Center for Social and Economic Research and Development on Forestry. Bogor - Fasilitasi teknik penyusunan proposal ITTO dalam kerangka kerjasama luar negeri (2010). Diselenggarakan oleh Sekretariat Badan Litbang Kehutanan di Jakarta.
English Language Proficiency	Very Good

Work Experience	<ul style="list-style-type: none"> - Forestry Sociology Researcher in Teknologi watershed Management Institution in Eastern of Indonesia in Makassar, South Sulawesi (2000 – 2007) - Forestry Sociology Researcher in Forestry Research Institution in Manado (2007 – up to now) - Researcher Coordinator of Socio Economic Researcher Group (July 2006 –up 2008)
Research Experience	<ul style="list-style-type: none"> - Technology and Institution Arrangement of Degraded Land Rehabilitation in High Land Farming : 2002-2004 - The Study of Biophysical and Socio-economical Factor of Watershed Management :1996-2003 - Raising community welfare and Sustaining Forest Function with Micro-hydro Electric : 2004 – 2006 in South Sulawesi - Technology and Institution of Social Forestry in Private Forest : 2005 – 2006 - Raising community welfare and Sustaining Forest Function with Micro-hydro Electric : 2007 – up to now in North Sulawesi -
National/International Publication	<ul style="list-style-type: none"> - Empowerment Strategy for Community Institutions to Conserve Tondano Lake. Socio Economic Journal. Center for Social and Economic Research and Development on Forestry. Bogor, 2003. - Study of Toraja Custom Society in Relation With The Sustainability of Forest Resources. Socio Economic Journal. Center for Social and Economic Research and Development on Forestry. Bogor, 2005. - Raising community welfare and Sustaining Forest Function with Micro-hydro Electric : Majalah Kehutanan Indonesia, 2005. - Development of Mikro-Hydro Electric By Using Water Yield From The Watershed in North Sulawesi, Jakarta 2010 - Comparison Analysis on Incentive System and Mikro Watershed Model in The Activities of Land and Forest Rehabilitation (A Case Study in Tana Toraja District, South Sulawesi). Bogor, 2010
Social Organization	<ul style="list-style-type: none"> - Member of Committee of Environment and Natural Resources Conservation of South Sulawesi Province (2004 – up to now)

I certify that I have fulfilled my curriculum vitae truthfully.

Manado, 30 May 2011

(Kristian Mairi)

2. Key expert 2 :

Name	:	Julianus Kinho, S.Hut
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Sex	:	Male
Nationality	:	Indonesia
Office	:	Forestry Research Institute of Manado
Speciality	:	Forest Resource Conservation
Riwayat Pekerjaan	:	2005 - 2007 Researcher Candidate of Watershed Management Research Institute of Makassar
	:	Mei-September 2007 Researcher Candidate of Forestry Research Institute of Manado

	:	September 2007-Sekarang	Junior Researcher of Forestry Research Institute of Manado
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English Ability	:	1. TOFEL (2009) with score 417	
Research Experiences	:	<ol style="list-style-type: none"> 1. Development of Degraded Land Rehabilitation Models through Social Forestry Approach in Tanah Toraja (2005-2006) 2. Development of Degraded Land Rehabilitation Models through Social Forestry Approach in Datara Kab. Gowa Sulawesi Selatan (2005-2006) 3. Teknologi and Institutional Social Forestry in Private Forest at Kab. Tanah Toraja (2005-2006) 4. Degraded Land Rehabilitation Technique in DTA Limboto dan Tondano (2007) 5. Biodiversity Exploration, Ketajawe Lolobata National Park in Maluku Utara. (2007) 6. Identification of Potential and Endemic Flora Species at Conservation Area in CA.Gunung Ambang, CA.Tangale dan Kawasan Aketajawe, Aketajawe Lolobata National Park (2008) 7. Biodiversity Assessment on Fauna Species and Their Habitat at Conservation Area in CA.Gunung Ambang, CA.Tangale dan Kawasan Aketajawe, Aketajawe Lolobata National Park (2008) 8. Identification of Potential and Endemic Flora Species at Conservation Area in CA.Gunung Ambang, Bogani Nani Wartabone dan Kawasan Aketajawe, Aketajawe Lolobata National Park (2009) 9. Domestication of Traditional Medicine Plants in North Sulawesi Province (2009) 10. Domestication of Traditional Medicine Plants in North Sulawesi Province (2010) 11. Habitat and Population Assessment of Eboni Species (<i>Diospyros</i> spp.) at Conservation Area in Cagar Alam Tangkoko, Bogani Nani Wartabone National Park and Aketajawe Lolobata National Park (2010) 	
Publication	:		

3. Key expert 3 :

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<u>PENELITIAN</u>		
2005	:	Geographical Informtion System Application and Remote Sensing for Hidrological ANSWERS Model for Erotion and Sedimentation Estimation (Case Study: DTA Cipopokol Sub Das Cisadane Hulu Kabupaten Bogor)
2008	:	Biodiversity Assessment of Flora and Fauna Species at Cagar Alam Tangale, Gorontalo Province and Aketajawe – Lolobata National Park, North Maluku Province
2009	:	Biodiversity Assessment of Fauna at Cagar Alam Gunung Ambang and Bogani Nani Wartabone National Park, North Sulawesi Province and Aketajawe – Lolobata National Park, North Maluku Province
2009	:	Domestication of Traditional Medicine Plants in North Sulawesi Province (2009)
2010	:	Population and Habitat of Anoa (<i>Bubalus</i> spp.) at Conservation Area in North Sulawesi and Gorontalo Provinces
2010	:	Domestication of Traditional Medicine Plants in North Sulawesi Province (2009)
2011	:	Population and Habitat of Anoa (<i>Bubalus</i> spp.) in Bogani Nani Wartabone National Park, North Sulawesi Province
<u>PUBLICATION:</u>		
1.	Geographical Information System Application and Remote Sensing for Hidrological ANSWERS Model for Erotion and Sedimentation Estimation (Case Study: DTA Cipopokol Sub Das Cisadane Hulu Kabupaten Bogor) Published in Journal of Conservation Media in 2007	
2.	Cagar Alam Tangkoko Batu Angus as Home of Sulawesi Monkey (<i>Macaca nigra</i>) Published in Silvika Magazine Edition 62/3/2010	
3.	Taman Margasatwa Tandurusa Wahana as Satwa Wallacea Sanctuary in Nothern Part of Sulawesi published in Silvika Magazine Edition 64/9/2010	
4.	Potrait of Cagar Alam Tangale "Little and Neglected" published in Silvika Magazine Edition 64/9/2010	
5.	Indigenous Knowledge of Suku Polahi at Belantara Nantu Impression published in Silvika Magazine Edition 65/12/2010	
6.	Pinabetengan Tradition Agenda " A Symbole for Cultural and Environment Conservation" in North Sulawesi Pubished in Indonesia Forestry Magazine Edition 1/2011	

4. Key expert 4

Full Name	Isdomo Yuliantoro, S.Sos, M.Si
Sex	Male
Place/Date of birth	Bantul/ July 02,1978
Nationality	Indonesia
Religion	Islam
Marital Status	Married
Current Job (Title)	Researcher Candidate of Forestry Sociology
Office	Balai Penelitian Kehutanan Manado, Departemen Kehutanan Research Institution of Forestry Manado , Department of Forestry
Office address	Jl. Raya Adipura Kel. Kima Atas Kec. Mapanget Manado phone. 0431- 3666683
Home address	Jl. Raya Adipura Kel. Kima Atas Kec. Mapanget Manado E-mail : Joliant_787@yahoo.com HP : 08135528578
Educational Background	<ul style="list-style-type: none"> - Graduate of Sociology, Faculty of Social and Politic, Sebelas Maret University, Surakarta (2002) - Post Graduate Study of Management Planning, Hasanuddin University (2012)
Courses/Workshop	- Metodologi Research Course (2007); held by Center for Social and Economic Research and Development on Forestry. Bogor
English Language Proficiency	TOEFL Score : 470 (TOEFL 2010)
Work Experience	<ul style="list-style-type: none"> - Forestry Socioligy Researcher in BPPTPDAS IBT (2005 –2007) - Forestry Socioligy Researcher in BPK Manado (2007 – up to now)
Research Experience	<ul style="list-style-type: none"> - Institutions Of Locally, Regionally And Nationally Watershed Management In South Sulawesi (2006) - Management Of Sub-Watershed Experiment in Mamasa South Sulawesi (2006) - The Experiment Management Techniques Micro Watershed In North Sulawesi And Gorontalo (2007-2009) - Subtitution Type of Wood as Raw Material For The Stage Knock Down of Woloan In North Sulawesi (2009)

Annex 3 . TORs of key personnel and consultants to be funded by ITTO

Position	Main tasks
Project Coordinator	<ul style="list-style-type: none"> To coordinate and supervise all activities and ensuring that the overall objectives are achieved To manage project operations on a day-to-day basis To prepare plans of operation, monitoring and evaluation To prepare and submit documents and reports to EA and ITTO in accordance with the project agreement To select consultants and other professionals to assist in project implementation To organize meetings of PSC and PTC on progress in implementation
Project Secretary	<ul style="list-style-type: none"> To assist PC in managing project operations To communicate project activities and internal office administrative affairs To manage project office, maintain office facilities To organize meetings and travels To do other tasks as requested by PC
Accountant	<ul style="list-style-type: none"> To assist PC in financial management To undertake book keeping and banking works To assist in the selection of auditor and in conduct of financial auditing
IT Operator	<ul style="list-style-type: none"> To input data on information system To provide data and information for PC and Consultants as requested
Field Supervisor	<ul style="list-style-type: none"> To assist in developing operational plans To supervise implementation of activities To report on progress in field operations
National Expert for Activity 1.1	<ul style="list-style-type: none"> To conduct field survey and exploration of cempaka parent tree To develop cempaka growing stock inventory technique To determine size and distribution of samples To analyze field data and develop map To prepare relevant technical report
National Expert for Activity 1.2	<ul style="list-style-type: none"> To define experiments on appropriate treatment of cempaka seed. To conduct search, collect and collate data on seed storage and germination of cempaka To conduct research seed storage and germination of cempaka To determine technique and procedure on seed storage and germination of cempaka To produce relevant technical report
NGO for Activity 1.3 (Sub-contract 1)	<ul style="list-style-type: none"> To select the appropriate location of small scale-nursery at six site in communities land. To determine how many people will be involved to build small scale-nursery at each site. To built model small-scale nursery at six site To report on progress activities of establishment model small-scale nursery at six site
National Consultant for Activity 1.4	<ul style="list-style-type: none"> To search, collect and collate data and information of cempaka's silvikultur technique To make technical guidelines of cempaka's silvikultur technique To develop technical manual for cempaka's silvikultur technique To produce relevant technical report
DFA and NGO for Activity 1.5 (Sub-contract 2)	<ul style="list-style-type: none"> To identify 30 Ha of state forest lands for development of CPD in 3 districts To select the appropriate location in order to build demonstration plantation at 3 districts. To establish demonstration plantation with different treatments To develop technical manual for plantation establishment To produce a technical report of establishment demonstration plantation at 3 districts
NGO for Activities 2.2 & 2.3	<ul style="list-style-type: none"> To develop training program and modules on nursery and plantation development To develop training time schedule To conduct trainings for local communities To report the results of each training session

Position	Main tasks
NC for Activities 2.4 & 2.6	<ul style="list-style-type: none"> • To identify appropriate forms of incentives in collaboration with local communities. • To pilot-test identified incentives • To produce relevant technical report
NE for Activity 2.5	<ul style="list-style-type: none"> • To review existing program • To hold stakeholders consultation on the extension program prior to its adoption • To conduct discussion, meeting and consultation with stakeholders. • To produce a relevant technical report
National Consultant For Activity 3.1	<ul style="list-style-type: none"> • To review research status of growing stock and distribution of cempaka species. • To set up demonstration plots for long-term research about growing stock and distribution of cempaka. • To collect data and information of growing stock and distribution of cempaka • To analyze data and information • To produce research final report
IC for Activity 3.2	<ul style="list-style-type: none"> • To search, collect and collate data on market demand for cempaka products and processing technologies • To conduct study on economics of cempaka wood processing • To make estimate of cempaka stumpage value as the basis for assessing wood charges • To assess efficiency level of existing cempaka wood processing techniques • To assess on a fair rate of charge to be assessed on cempaka wood
National Consultant for Activity 3.3	<ul style="list-style-type: none"> • To compile and develop the result of activities 3.1 & 3.2 • To conduct inventory of cempaka in communities forest • To analyze field data and develop map • To determine sustainable level of AAC of cempaka • To produce a relevant technical report
National Expert for Activity 3.4 & 3.5	<ul style="list-style-type: none"> • To review existing policies • To finalize SOP and procure equipment & facilities for monitoring of forest operations and timber legality • To implement the application of SOP, equipment and facilities in one forest sub-district • To produce a relevant technical report
National Consultant for Activity 3.6	<ul style="list-style-type: none"> • To develop meeting program and modules • To develop meeting time schedules • To conduct meeting with stakeholders • To make result meeting report
Contractor for Activity 3.7 (Sub-contract 4)	<ul style="list-style-type: none"> • To develop workshop program and modules • To organize workshop • To develop workshop time schedules • To conduct a workshop at provincial level • To make result workshop report

Annex 4. The recommendations of the 43rd Expert Panel and the respective modifications in tabular form

"Initiating the Conservation of Cempaka Tree Species (*Elmerrillia ovalis* (Miq.) Dandy) Through Plantation Development with Local Community Participation in Northern Sulawesi, Indonesia"
Based on the 43rd Expert Panel Evaluation on February 6-10, 2012, Yokohama, Japan.

No	Recommendation	Revised in the Page of	Revised Statement is bold and underline text
A.	Overall Assessment The Panel recognized that the project aimed at promoting the conservation and management of cempaka tree species through community-based plantation development in North Sulawesi, Indonesia as a follow-up to the recommendations of a series of consultation meetings on cempaka plantation development. It also noted that cempaka wood has been used as an important raw material for traditional wooden housing. However, the Panel questioned whether limited silviculture techniques of cempaka tree species, which are one of the main constraints in the sustainability of cempaka-related sector, have been adequately addressed in project activities. The Panel felt that this subject should be clearly presented in the proposal and the project should clearly explain how 100 ha of cempaka plantations will be established. The Panel further noted that the proposal presented several weaknesses. These include: insufficient elaboration on country's policies; unclear role of FORDA; incomprehensive stakeholder analysis by missing Manado Forestry Research Institute (MFRI) and tertiary stakeholders; inconsistency between the third element of the problem tree and the presentation of Output 3; unclear Identification of the second indicator for Output 2; weak presentation of the implementation approach and methods and the work plan; and too optimistic sustainability of the project without sufficiently describing institutional arrangements to ensure any further development of the activities initiated by the project.		Upon re-examining the activities identified in the original version of the proposal, it was found that several activities were not consistent with the problem tree and objective tree and other relevant activities were also missing. Fearing that defined activities will not be able to deliver defined outputs because they do not correspond to the sub-causes identified, some modifications of the activities have been made as presented below. The modifications are closely related to the recommendations of the Expert Panel #6 (improve the logical framework). #7 (refine the presentation of Output 3), #8 (enhance institutional framework in connection with project activities), #9 (refine the workplan), and #10 (clarify budget provision to carry out research work and to build 45 Ha of demonstration plots). In essence, it is indispensable to redefine the activities to ensure that proposed project interventions are relevant to solving the problem (sub-causes) identified in the problem analysis as summarized in the problem tree. Consequently, the logical framework, the implementation approach and method, the workplan and budget of the project have been based on the re-defined or modified activities.
B.	Specific Recommendations		
1.	Provide more background information on the country's policy (Minister Decree No.P. 70/Menhut-11/2009) in connection with the proposed project work;	10-11	Forestry Minister Decree No. P.70/Menhut-II/2009 has been amended to Forestry Minister Decree No. P.10/Menhut-II/2011
2.	Further improve the stakeholder analysis by refining the roles of Forestry Research and Development Agency (FORDA) in the involvement of the project. Include the Executing Agency in the stakeholder analysis table;	17	Please see in the text
3.	Refine the problem analysis by deleting a repetitive sentence from Para 3 on Page 19 (Forest plantations cempaka,...) until the end of Page 20;	18-19	Has been delete
4.	Review the feasibility of Increasing plantations of cempaka outside forests;	20	Please see in the text

5.	Provide background information on the potential of utilizing cempaka apart from the construction of wooden houses	18	Please see in the text
6.	Improve the logical framework matrix by identifying an appropriate indicator to assess the achievement of Output 2 (Participatory planting In community increased). For instance, a number of communities and people who will participate in training programs on cempaka plantations. It is suggested that the current indicator "Stakeholder forum established in North Sulawesi" for Output 2 be moved for Output 3 (Conducive policy on cempaka conservation and utilization formulated);	23-24	Please see in the text
7.	Refine the presentation of Output 3 in connection with the third cause of the problem tree	21; 22; 24 & 27	Please see in the text
8.	Further improve Section 3.2 (Implementation Approach and Methods) by elaborating how the institutional framework will be enhanced in connection with project activities;	29	Please see in the text
9.	Refine the work plan by reviewing the work load for Outputs 1 and 2 as none of their activities are allocated in Quarters 1 and 2 in Year 1:	32-33	Please see in the text
10.	Clarify the budget provision to carry out research work and to build 100 ha of a demonstration plot for Cempaka plantations	39; 40 & 42	The area of demonstration plots for cempaka plantation has been reduced to 45 Ha only at 3 sites in 3 district in order to reduce cost whose primary component is payment for laborers. The establishment cost is proposed to be shared by both ITTO and Gol. The main purposes of the plots are for long-term research on growth and development of cempaka, training for local communities on appropriate planting technique; therefore, establishment of such plots is inevitable for delivery of output 1.
11.	Improve the risk assessment by identifying more effective mitigation measures;	43	Please see in the text
12.	Improve the sustainability of the project by specifying institutional arrangements to ensure the continuation and/or further development of the activities initiated by the project	44	Please see in the text
13.	Improve Section 4.1.1 (Executing agency and partners) by describing the capabilities of the Executing Agency in connection with the proposed work and its relationship with target groups and partners;	45	Please see in the text
14.	Improve Section 4.1.4 (Stakeholder involvement mechanisms) by considering establishing a consultative committee to provide a platform for stakeholders to provide inputs into the project;	46	Please see in the text
15.	Improve Section 4.3.2 (Mainstreaming project learning) by describing how project results will be mainstreamed into national policies and plans;	48	Please see in the text

Annex 5. Response to the recommendations of the Forty-fourth Expert Panel

Recommendation	Response
1. Further improve the stakeholder analysis by refining the problem, needs and interests of local communities as well as their involvement in project implementation. Further describe how the project will obtain the full and effective participation of local communities in cempaka plantation and demonstration to ensure the sustainability of the project	The stakeholder analysis has been refined as shown in Table 2.1. The strategy to obtain the full and effective participation of local communities is elucidated in Section 2.1.2, pages 16-17
2. Further improve the problem analysis by fully describing sub-cause relating to the lack of participation of local communities; make a consistent presentation of the intended areas for cempaka plantation and demonstration	The problem analysis has been improved by fully describing the sub-causes relating to the lack of participation of local communities as shown in Section 2.1.3. Likewise, the intended areas for cempaka plantation and demonstration is clarified in the same Section, pages 21-22
3. Improve the logical framework matrix by refining the development and specific objectives with definite and stronger terms. The impact indicators should be reformulated, taking into account the statement of the expected outcome at project completion (Section 1.4). Improve the key assumptions by identifying key potential obstacles in connection with the assumption and risk assessment (Section 3.5.1)	The logical framework has been improved in light of the refined problem analysis and expected outcomes presented in Section 1.4. The impact and outcome indicators have been incorporated in the matrix (Table 2.1.4) and also presented in Sections 2.2.1 and 2.2.2. The key assumptions have been improved by taking into account the risk assessment presented in Section 3.5.1
4. Improve the statements of Outputs by clearly outlining the finished or completed results in qualitative and quantitative terms	The Outputs have been clearly and concisely redefined; results of the outputs in qualitative and quantitative terms have been incorporated in the logical framework matrix
5. Justify the engagement of an international consultant with detailed terms of reference	Detailed terms of reference of the International Consultant are presented in Annex 4
6. Substantially reduce the ITTO budget allocated under Sub-contracts and provide justification for each of Budget Items 21-24 based on the reduced budget	The project budget has been reduced as appropriate. Notes on budget items 21-24 appear on page 43. The contribution of ITTO has been reduced from US\$ 479,001.60 to US\$ 441,763.20

Notes:

To ease tracking of the revisions that have been made so far by the reviewers, the response to the recommendations of the forty-third Expert Panel has been deliberately preserved on the text. All bolded and underlined texts will be removed or normalized during the final revision.

Annex 6. Response to the recommendations of the Forty-fifth Expert Panel

Recommendation	Response
<p>1. Further improve the logical framework matrix in the following way:</p> <ul style="list-style-type: none"> • Refine the statement of the specific objective in a more specific way. For instance, it could be presented as "To develop the conservation and plantations of Cempaka with the involvement of local communities in North Sulawesi; • Refine the impact, outcome and output indicators with more concrete ones to measure the achievement of the project. The impact indicators should be long-term ones closely linked to which the project is intended to contribute while the outcome indicators should be more specific to the achievement of the specific objective. Output indicators should be refined in a more realistic and meaningful way to measure the achievement of Outputs; • Refine the statement of Output 3; • Refine the key assumption of Output 2 in a consistent way with the risk assessment. 	<ul style="list-style-type: none"> • Statement of the specific objective has been refined and now reads "To develop the conservation and plantations of Cempaka with the involvement of local communities in North Sulawesi. See Table 2.1.4 and Section 2.2.2 • The impact indicators have been refined and reflected the long-term objective of the project and presented in Table 2.1.4 and Section 2.2.1 • The outcome indicators have been refined and presented in Table 2.1.4 and Section 2.2.2 • Indicators of the outputs have been refined and presented in Table 2.1.4 • Statement of Output 3 has been refined as appears in Table 2.1.4 and Section 3.1.1 • The key assumption of Output 2 has been refined in a consistent way with the risk assessment (Risks # 2 and 3) as presented in Table 2.1.4
<p>2. Clarify the role of local communities in the implementation of sub-contracting activities to ensure the full and effective participation of local communities in the establishment of Cempaka nurseries and plantations</p>	<p>The role of local communities in the implementation of sub-contracting activities (Activities 1.3; 1.5 and 3.1) is clarified in Section 3.1.2 (p. 27)</p>
<p>3. Revised the project budget in the following way:</p> <ul style="list-style-type: none"> • Justify the provision of the sub-contractors and scale down this budget component in a cost-effective way while increasing the Executing Agency's contribution; • Recalculate the ITTO Programme Support Costs (Sub-component 83) specified in the budget so as to conform with the new standard of 12% of the total ITTO project costs in accordance with the decision of the 48th Session of the ITTC. 	<ul style="list-style-type: none"> • The activities planned for sub-contracts are 1.3; 1.5; 3.1 and 3.7; provision for these sub-contracts is justified in Section 3.2 (p. 28) • ITTO budget for the sub-contracts has been reduced from US \$ 81,920 to US \$ 61,440 or a total reduction of US\$ 240,480 (See Table 3.4.3) • Contribution of the Executing Agency has been increased accordingly by US\$ 20,480 (See Table 3.4.4) • Programme Support Cost has been recalculated at 12% of the total ITTO project costs (See Item 95 of Table 3.4.3); an increase by US \$ 13,904.
<p>4. Further improve the project sustainability (Section 3.5.2) by describing mechanisms on how the Cempaka nurseries and plantations to be established by the project will be continuously managed or expanded.</p>	<p>The section on project sustainability has been improved by describing mechanisms on how the nurseries and plantations will be continuously managed or expanded (See p.40, Section 3.5.2)</p>

Please note that the marks (bold and underline texts) of responses to the previous recommendations of the Expert Panel (43rd and 44th Meetings) including striked or crossed sentences have been removed from the texts; only the responses to the 45th recommendations are now bolded and underlined in the document for purpose of clarity and cleanliness.