



## AGREEMENT

between

**THE GOVERNMENT OF THE REPUBLIC OF ANGOLA**

and

**THE FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS**

**CONCERNING TECHNICAL ASSISTANCE SERVICES**

**Date: July 2008**

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## I. ABBREVIATIONS

CFI:	Continuous Forest Inventory
DF:	Forestry Department
DNAPF:	Direcção Nacional de Agricultura, Pecuária e Florestas
DNRN:	Direcção Nacional dos Recursos Naturais
DSP:	Department of Studies and Planning
GPS:	Global Positioning system
IDF:	Instituto de Desenvolvimento Florestal
IDR :	Instituto de Desenvolvimento Rural
IGCA:	Instituto de Geografia e Cartografia de Angola
INOT:	Instituto Nacional de Ordenamento do Territorio
MINADER:	Ministrio de Agricultura e Desenvolvimento Rural
MINUA:	Ministrio de Urbanismo e Meio Ambiente
NC:	National Consultant
NFA:	National Forest Assessment
NFAU:	National Forest Assessment Unit
NFP:	National Forest Programme
NGO:	Non-governmental Organization
NPC:	National Project Coordinator
NSFS:	National Strategy for Food Security
PIB:	Produit Intérieur Brut
SC:	Steering Committee
TCDC:	Technical Cooperation between Developing Countries
TCP:	Technical cooperation Programme of FAO
UTF:	Unilateral Trust Fund

## II. EXECUTIVE SUMMARY

Data on the forestry resources is almost inexistent and obsolete and constrained by the lack of capacity and the four decades long civil wars. Besides, being a public good activity, the Instituto de Desenvolvimento Florestal (IDF) is finding national forest inventory critical to support the national policy processes and highly specialised expertise demanding exercise to plan and run this public good component of data collection, analysis and dissemination. And yet, users of data and information on the forestry sub-sector are continuously demanding for supply of data and information on the state of the forestry resources in Angola which for different reasons (wars, low technical capacity, etc) IDF could not respond timely.

This project on National Forestry Resources Assessment (NFA) is not only to seek for technical assistance, but also to help IDF to set up within it a specialised structure and introduce policy relevant and cost effective integrated approach for forestry resources assessment that takes into account the domestic needs of information as well as the international reporting requirements, thereby be able to provide data and information on the sub-sector to users (both local and international) on timely and regular basis.

### Justification of the project

- Sustainable management of the forest resources need up-to-date and reliable data on the social, economic and environmental benefits of forests and trees outside forests.
- Existing information is obsolete and does not reflect the reality on the ground. National forest inventory has never been carried out in Angola. The existing data can be considered simple speculation.
- IDF is incapable to respond to the growing need of information in the country.
- Angola is rebuilding itself and NFA is an efficient tool to contribute and guide the rebuilding of the country in the area of forestry and environment.
- It links well to the recently publicly debated and developed policy orientations and also to the 7<sup>th</sup> goal of the Millennium Development Goal.
- NFA idea is an old request – since Independence - of the forestry administration. The present project is originated from the national policy process. So, it is very policy demand driven project and policy relevant set of activities of IDF.
- NFA will set up a specialised structure within IDF for data collection, updating of information, training of new assigned inventory personnel, develop norms and methods of inventories and assessments, help define government policy in the area of knowledge generation and dissemination to different users, etc
- It will create a new baseline information complete in scope of information point of view and harmonised with existing information with the international reporting requirements

### Project Development Objective

The project aims at (i) strengthening the institutional capacity of IDF at all levels for long-term forestry resources monitoring and assessments; (ii) producing forest/land use maps based on harmonized national information framework; (iii) planning and undertaking a nationwide survey of the forest and trees resources based on systematic field sampling; and (iv) defining a long-term monitoring programme of forest resources and updating strategy

### Immediate Objectives:

- Establish broad consensus at the national level on the stable approach to NFA in Angola

- Set up a National Forest Assessment Unit (NFAU) and strengthen IDF ability to collect and analyse data on the forestry resources both in and outside the forests
- Harmonize the land use classification system for land cover mapping
- Undertake a national forestry resource assessment and mapping
- Carry out policy review and find out where adjustments need to be introduced.

**Outputs:**

- A national Consensus on approach and methodology for NFA in Angola at least cost established.
- NFAU set up and capacity of IDF for NFA built and consolidated
- Land use classification system harmonized and new map produced based on remote sensing data.
- Latest data and information for a wide range of users both local and international generated and disseminated
- Policies on forestry sector reviewed using the latest information on the forestry resource.

**Project budget and duration**

The total budget of the project is defined at USD 963,370. It is implemented by FAO which has already approved a TCP for a budget of USD 394 000 to support the UTF project with the technical assistance and specialised equipment. The project duration is defined at 24 Months.

## **I. BACKGROUND AND JUSTIFICATION**

Angola has total land area of about 1.247 million km<sup>2</sup>. It is bordered by the Republic of the Congo and the Democratic Republic of the Congo in the north, Zambia in the east, Namibia in the south and the Atlantic Ocean in the west. It is divided into 18 provinces. The population of Angola was estimated in the region of 13 to 15 million inhabitants. FAOSTAT's estimate is 13 134 000 people in 2000. About 60 percent of the population lives in rural areas. Large segment of it face poverty and food insecurity as the nation rebuilds.

### **Political and Economic developments**

Political – Angola has experienced a long period of war. First for the liberation of the country from the Portuguese from early 1960s to 1974 and civil war which broke immediately after the country gained independence. The civil war lasted about 25 years. About half a century of wars had a mixed consequence on the forestry subsector. Spatially, the forest resources were well conserved in some areas. In others, the degradation reached points of non-return. In terms of resources, there are resources which are affected more than others. Some wildlife species were reported as totally depleted in some parts of the country.

Economic – The long wars had deeply hurt the social conditions and profoundly damaged the economy of the country. But after the hostilities, Angola recorded the fastest growing economy in Africa. The purchasing power of the average Angolan was estimated in 2006 at about USD2 900. In terms of quality of life of the majority of the population, Angola is unfortunately far behind many countries with comparable high potential in its natural resources and people. 70 percent of the population is below the poverty line<sup>1</sup>.

### **Forestry sector**

Institution – The forestry administration is composed of a set of institutions namely the “Instituto de Desenvolvimento Florestal (IDF)” and the “Direcção Nacional de Agricultura, Pecuária e Florestas (DNAPF)” both of the “Ministério de Agricultura e Desenvolvimento Rural (MINADER)”, the “Direcção Nacional de Recursos Naturais (DNRN)” under the “Ministério do Urbanismo e Ambiente (MINUA)” in charge of the protected areas. Theoretically, DNAPF is responsible for defining policies and IDF as executing agency of the policy. IDF is the major player in the decision making on policy issues and in the development of such policy. IDF is severely under-resourced. The existing staffs is comprised of 11 professional foresters, 180 forestry technicians and 520 forest guards poorly trained and equipped. This level of staffing is insufficient to carry out their responsibilities adequately. DNAPF is even less powered by human resources in the forestry area. The situation with DNRN that takes care of protected areas is even more serious than with IDF.

The executive structures of IDF consist, at central level, of: (a) Office of Studies and Planning; (b) Forestry Department; (c) Wildlife Department; (d) Department of Law Enforcement (Fiscalização); (e) Department of Administration, Management and Budget; (f) Human Resources Sector. At local level, the executive structures of IDF consist of: (a) Regional Centres; and (b) provincial directorates.

IDF is very aware of serious shortage of specialized personnel. In order to improve the situation of the low staffing in the forestry subsector, IDF is leading discussions with the Ministry of Education

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<sup>1</sup> Source: Millennium Development Goals: Angola Progress Report 2005.

to create forestry curriculum at the Agronomic Faculty of the Agostinho Neto University. Similar discussions are going on to open two forestry schools for technician levels. There are two major constraints for these initiatives: the lack of funds to create the conditions for these teaching institutions and the scarcity of teaching capacity. There is also an initiative to send student for training at the Eduardo Mondlane University in Maputo. Despite the positive response from the Mozambican side, this initiative did not move for lack of funds to support the students during their studies.

**Budget** – The national public spending in Angola was given at about USD23 510 million (I Série – No 119 – of 2 October 2006). The share of the agriculture, fisheries and environment sector is USD604 million or 2.6 percent of the national spending. The forestry budget is just USD375 000 or 0.06 percent of the spending of the agriculture, fisheries and environment sector. With the new developments in the forestry and wildlife subsector – new policy, new strategy, new action plan, initiative for national forest inventory – it is expected that the forestry part of the national budget will increase substantially, to implement the policy orientations, enforce the new law and carry out the national forest inventory, but also to have a new start of the subsector development after the national forest inventory will be completed and the extent, quality and importance of the resources will be known.

**Developments** – Now, Angola is rebuilding itself after 28 years of civil war and more than a decade of liberation war. The battle for the country reconstruction is now at all the fronts affecting all the sectors. The forestry subsector is benefiting from the high level of commitment to sustainable forest management based on clear policy orientations and strategies towards accomplishing the national objectives on forests. A new dynamic is being created at the national level to put the subsector on foot. It is a result of the recognition of the role that forests play in the economy of the country, in the livelihoods of the rural people who largely depend on them, and as an environmental asset that contributes to stabilizing climate change, conserving soil and water and protecting biodiversity. The main initiatives are:

- a. The new policy of the forests, wildlife and protected areas which was formulated following a wide public participation of all concerned public and non-public stakeholders at the national and local levels. The new policy is expected to boost the forestry subsector and give it an impetus for its sustainable development.
- b. A new legislation is being developed following a similar process of public participation. The finalization of the legislation is well advanced. The legislation will complement the development policy and will constitute the legal tool to guide and coordinate the interventions of the different actors. Together, with the policy, the legislation will be the overarching framework for sustainable forest management in Angola and will draw attention on the importance of the forests in the broader development agenda of the country.
- c. An assessment of the state of forests, woodlands and fragile ecosystems in Angola was commissioned by the IDF. The project's main objective is to map the forestry vegetation based on the vegetation types developed by Barbosa in 1970 and to identify the areas changed and which require urgent action as well as fragile ecosystems. Although this work is essentially mapping with limited scope of information, it constitutes a basis for future actions. The scope of information generated from this work is limited and will have limited impact on the decision-making process.

### **State of the forestry resources**

The country possesses abundant and extensive forestry resources and biodiversity with considerable economic potential. According to the official statistics, Angola has approximately 53 million

hectares corresponding to the 43.3 percent of the total land area of the country (Policy, IDF, 2006). There other statistics that give only 23 million hectares (18.5 percent of the country) are covered by forests (Angola Alliance - DHP, 2005). The real size of the forest is not known as the country has never carried out a national forest inventory.

The forestry vegetation is varied. It includes from north to south: (i) the tropical moist forest of high productivity (2 percent of the total forest area) and biodiversity in the North, mostly located in the provinces of Cabinda, Zaire, Bengo e Kwanza-Norte; (ii) open dry forests and Savannah or Miombo woodlands occupy about 80 percent of the forest estate. This formation is considered of medium productivity but valuable resource from the social point of view, owing to the various products (e.g. fuelwood, building material, fodder, food, medicinal plants, etc.) and services they provide to the local population. It is located in the plateaux in the central and eastern parts of the country. The remaining forestry vegetation is found towards the south and is characterized by lower productivity. It is composed by very open tree cover, shrubs and grass but mainly wetlands, prairies, steppes, semi-deserts and deserts.

Mangroves cover an estimated area of 1.25 million hectares. They harbour an important reservoir of marine biodiversity.

The remaining forestry vegetation is composed of isolated or compact tree clusters in urban and peri-urban areas and trees used as windbreaks.

Angola's biological diversity is quite rich. The estimations indicate that there are from 5 000 to 8 000 plant species of which 1 260 are endemic.

The forestry resources are considered a natural capital, available at low-cost investment that can generate economic, social, and environmental benefits to the state and to the people through its exploitation and utilisation on a sustainable manner.

## **II. RATIONALE**

### **Weaknesses and Threats**

The successive wars in Angola left the forestry subsector in almost total disarray, despite the efforts of the government to maintain the resources under control. When the country surfaced from the civil war, the forestry subsector emerged with loads of problems:

- The knowledge of the state and changes of the forest and tree resources is not sufficient if not totally lacking as no inventory has been done over the last 30 years. Even logging companies did seem to undertake inventory before timber exploitation. There are no records in this area. The guess about the state of the forestry resources in country in the size of Angola is nonsense. It is difficult to give an acceptable appreciation of how much forest exists and what had happened over the last decades. Even the commissioned study for the evaluation of forest transformation and fragile ecosystems is biased towards area variables;
- The lack of proper information about what, when and where went wrong or went well with the forestry resources over the years impedes taking right measures at the right time and in the right location in order to reach the best results. Experiences showed that in war time, forests are subjected to different level of stress depending on where the forests are located in relation to warring activities. Often some forests undergo profound degradation due to the reigning security. In other areas, forests may be kept untouched due to inaccessibility for insecurity or for physical reasons (distance, mountain, etc.). This is to be proven in Angola;
- The socio-economic dimensions of the forests, such as the uses and consumption of tree products e.g. medicines, fruits, and other products, are almost totally unknown;

- Beside the lack of information, the IDF lacks the capacity to generate, manage, update and use the information. The existing capacity is very low. The IDF needs external assistance to provide the proper training to a core team of foresters in the forest inventory related activities;
- The IDF is under-resourced by forestry staff. The existing personnel is comprised of 17 professional foresters, 12 professionals non-foresters, 67 forestry technicians, 44 other technicians non-foresters and 520 forest guards poorly equipped and trained. It is insufficient to carry out their responsibilities adequately. The situation with DNRN that takes care of protected areas is even more serious than with IDF;
- A system for information management does not exist. The information being used over the last 30 years is scattered and inconsistent. Various figures are being used at the same time to describe the same situation e.g. a forest area reported as 53 million hectares is reported in other documents as 23 millions hectares;
- At the start of peace, the refugees have returned or are expected to return to their areas of origin. This will boost the conversion of the forest land into crop fields and will apply new pressure on the forests for their subsistence or for sale. Where refugees have returned to and how they are relating with the forestry resources is something to know to avoid unwanted situations and to take proper corrective actions on time.
- Other problems like:
  - Harvesting without management plans. Timber and other products exploitation is based on an annual licence system for a given quantity of given species in a given area. This system is easy to implement system but very harmful to the resources. Exploiting under licence system tends to target and apply pressure on few market-demanded species. It was seen that, in other countries in similar conditions, exploitation under licence exhausted species and led to their extinction from some areas. This needs to be verified in Angola. But the foresters confirm that along the cost some known species have ceased to exist;
  - Excessive consumption of fuelwood and charcoal in the urban centres – collection of firewood without management plans has led to indiscriminate and total destruction of the forest cover. Even valuable commercial species like *Chlophora excelsa*, *Acacia welwitshii*, *Pterocarpus Angolensis*, *Dalbergia sp.*, *Erythrophleum africanum*, *Uapaca sp.*, *Afezelia cuanzensis*, etc. in the tropical and humid forest and Miombo woodlands were cut as firewood or transformed into charcoal. There is no reliable information on the extent of damage due to firewood collection and the speed of encroachment in the forest. When the national foresters were asked on how the forest frontier shifted over time around Luanda, the response was given without hesitation: at present the nearest forest in the direction Huige is at about 120 km from Luanda. Thirty years ago, it was much closer to the capital, say 60 to 70 km. The once flossed forest is now bare land with shrubs here and there. It does not produce even firewood. All tree species, commercial or not, have been brushed away from the area for use as fuelwood. The situation is similar all over the cost;
  - The type technology used in tree cutting for fuelwood determines the extent of damage to the forest cover in general and to the forest composition in particular. In Angola, where chainsaws are not usually used by firewood collectors for cost reasons, cutting of trees is done with simple means like axes and slashers. With these means, firewood collectors do not cut trees with diameters larger than 30cm. They opt for selective cutting of every tree with small diameter and high energetic value including those which produce high quality timber. The damage to the regeneration of the forests is considerable;

- Bushfires and itinerant agriculture are real threat to the forest cover. On these two threats, there is no information that shows how the extent of forest fires and the damage they cause to natural vegetation. The shifting agriculture is also not well known as to how it advances in forests.
- There are also problems in the area of wildlife and protected areas;
  - As far as wildlife is concerned, Angola was reported the richest country in the continent with 275 species of mammals and 900 species of birds. There are reports stating that the wildlife population are overexploited to the point of depletion in some cases and wildlife poaching has reached alarming proportions during the war time and exacerbated after the war (Eduardo Mansur and Rodrigues Nanga, 2004). There is no clear statement on how much damage was caused on the wildlife population;
  - The protected areas alike are under dire conditions. Besides, they are near total abandon, all the protected areas were invaded by the local population who came from the surrounding areas to establish their homesteads.
- Contribution of the forestry subsector in the national economy is lower than in the 1970s. Timber exploitation dropped drastically. This is due partially to low fees and royalties. Removal of other benefits in terms of non-timber forest products is not assessed to estimate the real contribution of the forestry subsector. Though important, the indirect contributions in terms of services provided are not easy to measure, i.e. soil and water conservation, water quality, biodiversity conservation, etc. With the stabilization of political and economic situations, the share of the forestry subsector is expected to improve. It may reach the level of 4 percent of the PIB.

### **Strengths and Opportunities**

Despite the above indicated weaknesses and problems, the forestry sector in Angola has a number of strengths and opportunities summarised hereunder:

- The extent of reconstruction in Angola has taken large proportions since the country had turned the page of the civil war. Such reconstruction is of crucial importance for all the sectors and for the national economy as whole. If the reconstruction will continue steadily at this pace it will bring welfare and prosperity to the Angolan nation and will largely improve the wellbeing of the poor segment of the population.
- Within the dynamic of the nation rebuilding, the IDF is called to bring solutions to the numerous problems of the sector. Assistance from outside is highly needed especially in areas where the country lacks the capacity and also as the staffing of the sub-sector is very low compared to other countries with similar conditions.
- The political will and the commitment to develop the forestry sub-sector are confirmed by the different actions and initiatives that have been taken since the end of hostilities. These actions and initiatives embrace the formulation of a new policy for the sub-sector; updating the forestry legislation; strengthening the forestry administration including planning and carrying out a national forest assessment and developing an information system.
- The sector has at last a new policy of forests, wildlife, and protected areas that is due to be adopted by the parliament. The formulation of the policy was conducted along the participatory approach. The stakeholders in the local, regional and national levels have extensively participated in the definition of the scope and orientations of the policy. As it is a consensual

policy, it is expected that it will meet general acceptance of, and will be supported by, all actors in the sub-sector.

- The IDF is in the process of updating the forestry legislation following the participatory approach. The finalisation of the legislation is already well advanced. Together with the policy, it will be the overarching framework for the sustainable forest management in Angola and will draw attention on the importance of the forests in the broader development agenda of the country. It will constitute an efficient tool to guide and coordinate the interventions of the different actors.
- The IDF is undertaking activities which are intended (i) to enhance the understanding of the environmental, economic and social importance of the forests for the sustainable development of the country; (ii) build the analytical capacity in MINADER to enable incorporating the contributions of forests, wildlife, trees outside forests and protected areas to the various development policies and; (iii) ensure proper harmonization of the new Policy and Legislation with the strategic planning exercises in Angola, e.g. the country's Poverty Reduction Strategy.
- The IDF is actively acting to strengthen its capacity at national and provincial levels to promote sustainable use and conservation of forests and wildlife resources.
- The IDF has commissioned a study for the assessment of the state of forests, woodlands and fragile ecosystems in Angola. The study is implemented by Angola Alliance and partnership with the South African firm Project and Strategy Management with the objective to map the forestry vegetation based on the vegetation types developed by Barbosa in 1970 and to identify the areas changed and which require urgent actions as well as the fragile ecosystems. The study will not bridge the huge information gap at this point of time, but an import start towards building baseline information.
- The Government of Angola has requested and received financial and technical support from FAO through a TCP. The TCP, approved for an amount of USD394,000, was designed to give IDF the needed technical assistance for the implementation of the National Forestry Resources Assessment as well as a financial support for the training and procurement of specialised equipments.

### **National Medium Term Priority Framework and UNDAF**

After 5 years of the Luena MOU that led to ongoing process of peace and national reconciliation, the country has scored encouraging achievements in its rapid transition from an emergency to a development situation. The post-conflict phase (focusing on national reconciliation & peace-building) is widely regarded as over, and strategies for support and technical assistance shall now be adapted to the very specific development momentum faced by Angola. The population has resumed moving across the country with a level of freedom not seen since the independence in 1975. Access to education has dramatically improved with the number of children enrolling for primary education increasing from 1.3 million in 2000 to 4.9 million in 2005. Access to health care as measured by some indicators also is widely expected to have improved. In the economic front, a hyperinflation at 105% in 2002 has steadily decreased to 12% in 2006 while the economy seems to have started growing beyond the oil/diamonds sector with GDP real growth in the non-oil/diamond sectors averaging 17% in 2005<sup>2</sup>.

There are a number of challenges in different aspects of the country's situation, chiefly in

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<sup>2</sup> GoA's Programa Geral do Governo, 2005-2006, 2007-2008.

- *Limited National Capacity to Produce Statistics and Evidence-based Research:* The National Statistical System (SEN) capacity to produce nationally representative data, on a regular and systematic manner remained very limited during the post-CCA period and needs to be strengthened with the earnest priority, especially at sub-national level. No major data collection operation has been carried out in forestry for decades. This requires carrying out a comprehensive nation-wide assessment of the forestry resources which is expected to influence planning of future development interventions.
- *Strengthening Alignment of UNDAF with National Priorities as a Window of Opportunity for Capacity Development:* The – draft - ECP also identified national development challenges quite broadly with a few definitions of expected results. This raised the need to scale up support towards strengthening the national planning functions through Capacity Development. Some activities are being planned or advocated for in this regard (namely the MDG-based planning including the MDG needs assessment). This needs to be addressed on a more strategic fashion, with the involvement of all UN agencies;

### **III. NATIONAL FOREST ASSESSMENT**

The forestry sub-sector must be looked at from an integrated and global perspective requiring holistic programmes and strategies addressing the problems in systematic way but along a carefully reflected priority order depending on the relation these problems have with each other. But, the absence of reliable information of the state, extent, location and quality of the resources, their management, uses and users as well as on the relations of the forestry resources with the other economic sectors hampers taking the right decisions.

The need for a national forest assessment (NFA) was felt since the country accessed to Independence in the mid-seventies. It was brought up in all reports of consultants who assisted the IDF in different activities relating to the forestry sub-sector. Recently, during the national debate on the forestry policy, the question of NFA emerged as the highest priority of the country. From the point of view of the participating stakeholders in the policy discussions, the national forest assessment is a prerequisite to the success of the implementation of the policy and legislation. It is also the tool to develop the necessary knowledge to contribute for the country rebuilding and the sustainable management of the forestry resources.

In the rural development, the forestry sub-sector can be considered an important alternative for the support to the National Strategy for Food Security (NSFS) and to the socio-economic development of the country in general including employment and supply of goods and services. The NFA should be designed and implemented with the understanding that the forests and trees are elements of the land use systems and should be treated as such.

In order to maximise the benefits, the NFA should be integrated into the national policy processes, in the forestry sub-sector sector, but also beyond. A closer linkage with the national forest programme (NFP) is seen as an efficient strategy since both activities are mutually supportive as is the case of the policy and NFA. They are mutually supporting during the planning and implementation but also to improve and sustain the outcomes.

With respect to capacity building, the NFA focus should not only be on the traditional technical aspects like inventory design, but also very much on the general role that information plays in decision processes, in policy processes in general and in communication.

The Government is submitting this project to FAO as UTF to supplement the existing TCP in assisting IDF create the enabling conditions for NFA and support its implementation. The forestry

sub-sector and the country in general lack the technical capacity for this highly specialised area. Together with the approved TCP, this UTF project will ensure that the funds are made available to carry out the mapping activities and field survey and the database development. To meet the cost of the project, the funds are provided by the Government of Angola. Because the project activities require external technical assistance and other the FAO assistance is highly needed for the transfer of technology, capacity building, etc. Together with the TCP, the UTF project will therefore lay the foundations for a lasting national forest monitoring and assessment programme of Angola.

The project is in line with the overall policy orientations of the Government. In the medium to long term, it will contribute to sustainable forestry resources management and utilisation through improved, efficient and cost effective forestry activities and to the sustainable development of the country and improved productivity of the rural livelihood, while at the same time to the alleviation of poverty and involvement of women. It will also lead to translating international processes and principles into an innovative national forest inventory approach following the participatory process.

#### IV. SCOPE OF THE PROJECT

Over the last three decades, it was repeatedly underscored in Angola that there was no reliable data and information for planning and sustainable management and use of the forest and tree resources. Policy makers recognize the paucity of information and the need to develop adequate knowledge and build the capacity to generate it. For this reason, the Government of the Republic of Angola officially presented this project to FAO through which FAO the technical support for the implementation a national forest assessment and assessment. Through this project, Angola will be able to produce the most ever comprehensive and reliable information on the environmental, social and economic functions of the forest and tree outside forest resources and will support properly the processes on decision making for the sustainable forest management and for the socio-economy development of the country. Building on the TCP project, this UTF project will focus on:

1. Setting up a National Forest Assessment Unit (NFAU) in IDF, properly equipped and staffed. **The NFAU will be organically integrated into IDF and institutionalized.** It will derive its mission from the demands expressed by both this institution and the users from outside IDF.
2. Strengthening the capacity of NFAU in national forest assessments and also having a continued NFA system well into the future while of course maintaining timely flow of quality data and information.
3. Contributing to reaching a national consensus on the NFA approach which must stable over time and cost effective. It should enable to critically assess the national information needs by covering wide range of bio-physical and socio-economic variables to meet all national users' needs. The approach will be built on the NFA approach developed by FAO and applied in other countries like Cameroon, Congo, Kenya, Zambia, etc.
4. Contributing for the harmonization of the information framework including the land use classification system nationally and with the international reporting requirements.
5. Mapping the forestry resources on the basis of the developed land use classification system.
6. Undertaking countrywide forest and trees outside forest inventory based on systematic field sampling.
7. Developing a national database to store and process the information from the field inventory and mapping.
8. Setting up a monitoring system of the forest and tree resources based on permanent sample network to be materialized during the field forest inventory.

## V. FAO'S COMPARATIVE ADVANTAGE

FAO has responded positively to the request from the Government of Angola for technical assistance to plan and implement the NFA. FAO has sufficient knowledge, of more than 60 years of experience, global leadership, and institutional networks to provide support to countries to strengthen their capacity and improve their forest resource management (FAO, 1947 and COFO 2007). Further more, countries through their recommendations in various sessions of the Committee on Forestry (COFO) and FAO Council, continue to mandate FAO to do so. For example, the last COFO (2007) requested FAO, in collaboration with Members and partner organizations, to continue to support national monitoring, assessment and reporting on forests, including their social, economic and environmental benefits. The Committee urged Members, FAO and other partners to enhance international collaboration in this field, taking into account national specificities. This would help to bridge the gap between knowledge and policy and would improve sustainable forest management. It would also help to achieve the four Global Objectives on Forests agreed by the United Nations Forum on Forests (UNFF) at its Sixth Session, and to mainstream forestry within efforts to eradicate extreme poverty and hunger, achieve sustainable water and land use, mitigate climate change and to achieve the Millennium Development Goals.

In order to respond to the growing needs of information about forests and trees issues at country and global levels, FAO has developed a programme within the Forestry Department, which provides support to memberships to build their capacity, monitor and assess forestry resources, manage forest related information and link knowledge with national decision making processes. The programme relies on a holistic and cost effective approach to NFAs, which is a result of wide international consultations.

Further to that, FAO continues its support to the development, implementation and monitoring of national forest programmes in partnership with the NFP and makes available updated information and knowledge support for better forest resource management.

## VI. OBJECTIVES OF THE ASSISTANCE

The project aims at (i) strengthening the institutional capacity of IDF at all levels for long-term forestry resources monitoring and assessments; (ii) producing forest/land use maps based on harmonized national information framework; (iii) planning and undertaking a nationwide survey of the forest and trees resources based on systematic field sampling; and (iv) defining a long-term monitoring programme of forest resources and updating strategy.

## VII. EXPECTED OUTPUTS

<b>Outputs</b>	<b>Indicators</b>
1. Participation of stakeholders, partners and major users of forestry information under NFA process reinforced	<ul style="list-style-type: none"> <li>- Around 30 participants will be involved from stakeholders e.g. line ministries, research and teaching institutions, NGOs, private sector, communities, etc.</li> <li>- National seminar.</li> <li>- Seminar report.</li> </ul>
2. National consensus on approach and methods to NFA and long-term monitoring of resources established	<ul style="list-style-type: none"> <li>- 40 professionals, scientists representing all stakeholders.</li> <li>- 3 workshops</li> <li>- Reports of NFA methodology, harmonised land use classification and list of forest and tree variables</li> </ul>

3. Set up a National Forest Assessment Unit attached the Planning Department of IDF	- NFAU organised, mandated, manned, institutionalised, equipped and operating within IDF.
4. Capacity of IDF at national and province levels to implement the NFA assessed	- Review, analysis and assessment of existing capacity of IDF dealing with knowledge generation, management and information dissemination.
5. Equipment procured and installed.	- Equipment in Annex 1 procured and assigned
6. National expertise of IDF for NFA reinforced and consolidated.	- 50 professionals and technicians will be trained at central and local levels in field data collection, mapping, data processing and database management.
7. Forest type and land use classification system developed and harmonized.	- Forest/land use classification accepted by all stakeholders. - Report describing classification system designed, terms used and forest/land use related definitions harmonized.
8. Map produced at different scales and for different administrative levels and endorsed by stakeholders, partners and users.	- Set of 68 satellite images procured. - 8 professionals and technicians trained in mapping. - Manual for interpretation of satellite images. - Maps of forest and land use at different scales. - Map digitised in GIS.
9. National information scope defined to enable meeting all users' needs.	- Around 30 representatives of stakeholders involved in scoping NFA information needs. - National list of biophysical and socio-economic variables in working paper.
10. Field survey for data collection planned and carried out and a network of permanent sample sites materialised on the ground.	- Manual for field forest inventory. - 10 professionals from central and local levels trained. - 30 technicians from local levels trained. - Database. - Network of permanent field sample sites materialised. - Report of NFA results.
11. Monitoring plan of forestry resources defined in conjunction with partners and stakeholders and supported by the national authorities.	- National strategy of long term monitoring and assessment of forest and tree resources. - Work plan with priority actions for follow up by NFAU defined with representatives of stakeholders.
12. Policies and strategies of the forestry sector reviewed and priorities redefined.	- Diagnosis of the forestry sector and analysis of sectoral policy and strategies. - Priorities of the forestry sector.

## VIII. PROJECT ACTIVITIES AND WORK PLAN

For Output	Activities
<b>1. Participation of partners and major users of forestry information under NFA process reinforced</b>	<p>1.1 Identify partners and allies to participate in overseeing implementation of the project activities.</p> <p>1.2 Set up an inter-sectoral Steering Committee (SC) to oversee and provide guidance to the project team.</p> <p>1.3 Prepare a work plan for the project integrating most modern concepts of forest and trees outside forest resources inventory.</p> <p>1.4 Convene a national seminar involving partners and stakeholders to inform about project objectives and expected outputs and collect ideas on ways to implement it in order to meet the expectations of all concerned parties.</p>

<p><b>2. National consensus on approach and method to NFA and long-term monitoring of resources established.</b></p>	<p>2.1 Building on the FAO NFA method, prepare a proposal for the sampling design to be followed by the project.</p> <p>2.2 Define a general approach to the NFA project of Angola on the basis of the FAO approach of support to NFAs, which covers forest inventory, long-term monitoring, capacity building, mapping, information system development, data processing and information management and dissemination. It should also be cost effective and capable of generating information for national decision-making on forestry issues covering all benefits from all forest types, other wooded lands and other lands.</p> <p>2.4 Prepare a field manual for the field teams based on adapted approach to NFA according to the contributions by national and international experts.</p> <p>2.5 Define and discuss with partners a suitable system for quality control of the field data.</p> <p>2.6 Assist IDF in harmonizing the forest-related terms and definition taking into account of the globally agreed definitions.</p> <p>2.7 Convene a national workshop involving professionals and scientists from the sector to review and finalize the approach.</p>
<p><b>3. Set up a National Forest Assessment Unit within the Planning Department of IDF.</b></p>	<p>3.1 Set up a National Forest Assessment Unit (NFAU) with defined structure, mandate (updating information, initiating NFAs, disseminating information to users, training national staff, defining inventory norms and methods, helping in defining government policy in information generation, resources monitoring, knowledge management, etc.) and the needed personnel in the required skills.</p> <p>3.2 Work with IDF authority to organically institutionalize NFAU.</p> <p>3.3 Define NFAU plan of action and needed financial resources for its normal functioning beyond the project .</p>
<p><b>4. Capacity of IDF at national and province levels to implement NFA assessed.</b></p>	<p>4.1 Assess national experiences in forest inventory and information management e.g. trained personnel, IDF organization for national forest inventory projects, partnerships and alliances for NFA, etc.</p> <p>4.2 Define the required personnel for the office and fieldwork activities of the project.</p> <p>4.3 Define the needs of training and capacity building in mapping, field data collection, processing/ analysis, and information management.</p> <p>4.4 Recruit the national and international consultants/experts according to the final work plan and schedule of interventions.</p>
<p><b>5: Equipment specified and procured.</b></p>	<p>5.1 Define the needs of equipment for the field and office activities of the project including for the database and information system.</p> <p>5.2 Procure the needed equipment for the field survey and, data entry, storage and processing. This includes procuring a set of recent satellite images for the mapping work of the project.</p>
<p><b>6. National expertise of IDF for NFA reinforced and consolidated</b></p>	<p>6.1 Plan and carry out training of the national personnel in mapping using remote sensing techniques based on the harmonised land cover and land use classification system.</p> <p>6.2 Plan and carry out in-service training to the national team in field data collection.</p> <p>6.3 Plan and carry out training of the national team in data processing</p>

	and analysis, information management and dissemination.
<b>7: Forest type and land use classification system developed and harmonized.</b>	<p>7.1 Harmonize the classification system of the forestry vegetation and land uses. In developing this, consideration must be taken of the classification systems existing in the country and at the international level such as the one used by FAO for global FRA, etc.</p> <p>7.2 Ensure wide dissemination and review of harmonized classification system by professionals, scientists and the SC members.</p> <p>7.3 Finalize the national classification system on the basis of received comments and inputs.</p>
<b>8. Map produced at different scales and for different administrative levels and endorsed by partners.</b>	<p>8.1 Prepare a manual for the interpretation of the satellite images and production of the maps.</p> <p>8.2 Support in the design of the national forest/land use map based on the harmonized legend.</p> <p>8.3 Carry out digital interpretation of satellite images and prepare the final maps based on field reconnaissance and validation from the air.</p>
<b>9. National information scope defined to enable meeting all users' needs.</b>	<p>9.1 Carry out a review of the scope of the information needs and prepare a list of biophysical and socio-economic variables of the resources and their corresponding codes and definitions. The list should include the products &amp; services of forest and trees outside forests.</p> <p>9.2: Convene a national workshop involving representatives from partners and stakeholders to present, discuss and finalise the national list of variables.</p>
<b>10. Field survey for data collection planned and carried out and a network of permanent sample sites materialised on the ground.</b>	<p>10.1 Prepare manual to field teams describing approach and techniques of data collection and the lay out of the sample plots in the field.</p> <p>10.2 Design the field forms for data collection from measurements, observations and interviews. The field forms should be based on those developed by NFA programme of FAO.</p> <p>10.3 Plan and carry out representative field sampling throughout the country to collect data as defined in the national list of variables.</p> <p>10.4 Set up the monitoring system including registering the permanently established sample sites for periodic data collection on resources.</p> <p>10.5 Assist in encoding and processing collected field data, link it to the mapping data and ensure its compatibility with historical data.</p> <p>10.6 Convene national workshop for forestry professionals, scientists and representatives of partners and stakeholders to review and assess the project results. This workshop is combined with the workshops on the programme of long-term monitoring and the one on policy review (activities 11.2 and 12.4)</p> <p>10.7 Define and put in place a system to disseminate information to all users using all possible media.</p>
<b>11: Programme for long-term monitoring of the forestry resources and follow up actions defined in conjunction with partners and stakeholders and supported by the national authorities</b>	<p>11.1 Define a concerted long-term monitoring programme of the forestry resources that foresees stable institutional framework and skills and continuous government financial commitment.</p> <p>11.2 Convene a national workshop involving wide range of professionals to review, discuss and finalize the proposed monitoring programme (activity 10.6).</p>
<b>12: Policies and strategies</b>	12.1 Based on project findings, undertake SWOT (strengths,

<p><b>of the forestry sector reviewed and priorities redefined</b></p>	<p>weaknesses, opportunities and threats) analysis of the forestry subsector in relation with other economic sectors, the state of the resources and their role in the socio-economic development and food security.</p> <p>12.2 Prepare recommendations to improve policies, strategies, and programmes in connection with the forestry subsector, environment and family sector development in the rural areas.</p> <p>12.3 In view of the project findings, identify the priorities of the forestry subsector for: (i) sustainable management of the resources; (ii) protection of environment; (iii) effective participation of local populations in resources management and conservation; (iv) improved contribution of the forestry subsector in the national economy; etc.</p> <p>12.4 Convene a national workshop for professionals from the forestry sector, scientists and representatives of partners and stakeholders to review and validate the SWOT analysis and the defined priorities of the sector (see Activity 10.6).</p>
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## **IX. SUSTAINABILITY**

The project focuses on assisting the GoA to generate on periodic basis the knowledge necessary for its decisions taking process on national issues in connection with forestry resources management, national poverty reduction strategies and meeting the MDGs. It promises therefore to improve lastingly the capacity in Angola in generating, updating and using knowledge about forestry resources. The Government of Angola has committed to acting on the NFA and linking it to the national policy processes. The project is designed to provide critical baseline data and will develop environmental capacity in Angola through training in essential skills as well as supporting stakeholders.

In order to ensure the sustainability of the project results in the future, IDF, in accordance with its mission, will work to develop, consolidate and expand its programme of forest monitoring and assessment to include the trees outside forest resources and to cover all benefits to all users of forests and trees. Under this project, IDF will work to develop an innovative approach for resources monitoring and assessment and to introduce new concepts and technologies. IDF will work to set up a permanent specialised unit and lasting programme of resources monitoring and information management on the basis of the nationally accepted approach and the developed capacity. IDF will ensure that the trained personnel will remain under the programme and will continue to receive the necessary technical and financial support from the Government.

Through its specialised unit, the IDF will also work with partners and stakeholders to develop and update norms and guidelines for different types of forest and tree inventories whether they are for strategic decision making (strategic inventories) or for operation and management (operational and management oriented inventories). IDF will act to ensure that all actors are aware of the national norms and guidelines for forest inventory and are voluntarily following these norms and guidelines.

## **X. ASSUMPTIONS AND RISKS**

Government of Angola and FAO have worked together to develop and formulate this project starting with the expressed national need for NFA information. The project was designed under the assumptions that:

- The Government remains committed to support financially and technically to the project.
- GoA remains committed to creating all the necessary conditions for the implementation of the NFA project and its sustainability in the long term. In particular GoA works to:
  - link the project to the national policy processes (NFP, PRS, sectoral policy, etc).
  - build legitimacy (partners and stakeholders acceptance) for NFA, through wide participation during the planning and implementation of the project.
  - create synergies between the project and other related ongoing initiatives.
  - ensure that NFA is institutionalised and be part of the annual work and budget plan of the Government during and beyond the end of the project.
  - engage intersectoral policy dialogue.
- Government and national stakeholders can develop a common ‘frame of reference’ to legitimise NFA programme
- National stakeholders are engaged in the harmonization of the forest/land use classification and forest related information framework
- IDF coordinates and supervises project activities. Particularly IDF works to ensure timely inputs from all partners and stakeholders, and cost-effectiveness of the project activities.
- Consensus is reached on a national list of forest and tree variables, assessment approach and methods that will help generate the needed information to all users.

There are many risks that the project team should be aware of and act to minimise them. Among the major risks identified, the following are put in a matrix:

<b>Risk</b>	<b>Impact</b>	<b>Probability</b>	<b>Mitigation</b>
1. GoA’s commitment to the project fades away	Sustainability of the project is not guaranteed	Medium	GoA to clearly express its commitment for NFA beyond project cycle
2. The project is not implemented following the participatory approach.	Benefits of the project are not maximised and generalised. Different initiatives are not synergised	Low	Foresee mechanisms for stakeholders and partners involvement
3. IDF provides more or less than optimal support for all or any of the key elements	Project activities are not synergised over space and time	Low	Use additional Government budget to mitigate this risk
4. Stakeholders require more than what the project can deliver.	Project enters into phase of turbulence due to unnecessary argument between stakeholders and project team	Medium	Hold informative meetings from the onset to inform about scope, possibilities and limits of the project
5. National administrative procedures hinder timely implementation of the project work plan	Delivery of the outputs may be delayed and cost of the project be increased	Medium	Assign full time personnel to the project and ensure that all levels of decision makers on project budget and other issues are aware of the project requirements

## **XI. MAJOR COMPONENTS OF THE PROJECT**

### **Implementation Strategy**

Future forest and tree assessment works must strive for a harmonisation of methods. This will benefit future updating and monitoring and will facilitate the sharing of information among national information users as well as with the international processes. This applies to vegetation/land use mapping as well as to forest and tree assessment methodologies, fieldwork and data processing and analysis. Building the national capacity, developing these harmonised methods and approaches and preparing all necessary manuals should be a high priority of the project.

The project will aim at streamlining the forest inventory/assessment activities and strengthening the IDF. The strengthened national institution will play a key role in future updating, promote modern techniques and integrated approaches, promote exchange and sharing of information, expertise and technology transfer, provide training to national personnel for forest assessment, monitor forest inventory/assessment activities in the country.

In order to meet the national requirements, the implementation of the project will follow the international standards using the appropriate technologies. The focus by the project will be on forging national collaboration and partnerships and reinforcing cooperation with international partners aiming at establishing a consensual basis for: i. developing the needed knowledge on land use systems including forests and trees; ii. harmonising approaches and techniques to NFA; iii. building institutional capacity and; iv. managing information. Involvement of the national stakeholders will be secured for coordinated and participatory processes to define the national norms and approach to resources assessments and monitoring, identify user's needs and put in place mechanisms for information management and sharing.

Institutionally, IDF will be strengthened at central level to: (i) develop harmonised methods and approaches to forest and tree assessments; ii. prepare all necessary manuals; (iii) train the national personnel; (iv) plan assessment activities for future updating and monitoring; (v) oversee assessment projects; (vi) compile national statistics from the regional information; (vii) manage the national database; (viii) facilitate the sharing of information among the national users and with the international processes and; (ix) feed the policy processes with relevant information. In the provinces, field teams will be created to have the responsibility for data collection, maintenance of the permanent sample sites and data entry in the main data base.

In order to build the national capacity at the central and provincial levels, the project strategy should emphasise the maximum reliance on national personnel, supplemented by the required international technical assistance for adequate technology transfer. A coherent training programme for all levels of personnel will be developed as an essential input into the field activities. During the initial phase, the training will cover introduction to satellite images interpretation and GIS, forest/land use mapping following remote sensing techniques, statistical design for field survey, database construction and data entry and storage, field data processing and analysis, information management and dissemination. The training at all levels will be assured by a team of international experts during the project cycle. This training will be achieved through workshops, seminars and practical training courses to the local staff assigned to the project. The on the job training will have positive impact on the design and timing of activities and on the sustainability of the project results.

Full set of recent satellite images covering the entire country will be procured and used as input to the NFA. IDF will put in place a team to interpret these images and produce a national forest/land use map. The legend of the map will be produced from a wide consultation among the national institutions that deal with thematic mapping. It will be harmonized with the existing vegetation/land use classifications in the country as well as with that used by FAO for the global Forest Resources

Assessment (FRA). The harmonized classification will enable producing results comparable with the country historical information base and will help redefine and nationally agree on the permanent forest estate. It will also facilitate reporting to the international processes. The map will improve the precision of area estimates of the different land use classes and be used as strong support to the fieldwork for assessment of the multiple benefits obtained from the natural resources. It will also be a sound base for cost-effective monitoring overtime of changes in the land use systems.

The project will help conceptualise the national data collection model based on systematic, permanently located sample plots to be established in the field across the country. The permanent sample sites will be visited to collect the wanted information on biophysical and socioeconomic variables on forest and trees as well as on influences on/by surrounding land use systems and people. The model of data collection will serve for the construction of the national database. The field data will be collected through interviews with a statistically representative sample of key informants (owners, managers, users of resources, and workers) and will cover all environmental, social and economic functions of forests and trees outside forests. Such data will include variables on management, uses and users of the resources. Users of information will participate in defining what to be collected and assembled by the project to achieve the outputs. It is important that the list of variables is produced before hand through a wide consultation among information users taking into account the necessity to harmonise the nomenclature, classification system and definitions with the national and international reporting requirements. The methodology for the National Forest Assessment in Angola will be designed on the basis of the approach and the corresponding list of variables prepared by FAO.

One major output of the project will be a national database that will be established to host the field and mapping data, to process the data and to store the results for future updating and dissemination. The project will work to assure that the national database on the forestry resources is compatible with other existing databases and is accessible to all users and is designed to respond to different users needs. In reaching this objective, tasks will be built on experiences developed in other countries with FAO support. A system of information dissemination to all users will be put in place using all possible media. The structure of the national database will be the product of a wide consultation and national institutions and specialists.

### **Fieldwork activities**

IDF will use the personnel in the Provinces to carry out data collection in the field and take care of the maintenance of the network of the permanent plots. This fieldwork will be assigned to the Provinces where the field data collection personnel will be adequately trained and supervised in their activities by the international and national experts. 18 field crews will be created to work for a period of 10 months and visit an average of 600 sampling units (tracts with cluster of four plots). The existing experiences show that survey (interviews, plot lay out, and data collection) of one sampling unit takes an average one week to complete. Each team will be composed by one senior technician as team leader, one technician assistant and two workers locally recruited. The cost will cover the salaries to be supported entirely by the Government as part of its in-kind contribution. The project will provide the daily subsistence allowance (perdiem) tot the field teams and will cover the travel cost of the supervision personnel (national and international consultants/experts).

The fieldwork cost will also include the expenses to cover the operation of the 18 four-wheel-drive vehicles during ten months' field activities and the supporting transport cost for the supervision as well as other incidental costs.

## Mapping

Mapping is to be done within the National Forest Assessment Unit created by the project and by its personnel. A national consultant in mapping will be provided to: (i) assist in defining the specifications of the satellite images and help procure them; (ii) participate in defining the harmonized land use classification; (iii) plan and organize satellite image interpretation including its field checking and validation; (iv) supervise the entire image interpretation activities including finalization and production of maps in digital format and hard copy.

For the purpose of mapping, the project may use the Landsat 7 data of 180 km x 180 km scenes or ASTER of 60 km x 60 km. Preference is for ASTER, but in the beginning of the project, the project team will make the necessary consultations with the FAO LTU to find out what information is available and at what cost.

The interpretation will be preceded by a field reconnaissance to prepare an interpretation manual and develop an interpretation key using photographs and description of the vegetations and land uses according to the developed classification system in selected sites on the ground. The interpretation is to be followed by an interpretation checking by air following selected transects all over the country.

The Instituto de Geografia e Cartografia (IGC) will participate actively in the project steering committee and will make sure that the mapping component is implemented to benefit best all map users from the forestry and other sectors dealing with the land use systems.

## XII. GUIDING PRINCIPLES OF FAO-SUPPORTED NFA PROJECT

The NFA project will be implemented based on the following principles:

- **APPROACH:** The project is designed to cover the entire country and make distinction of the major national ecological zones e.g.: tropical moist forest; miombo woodlands (dry forest ecosystems); steppes; semi-deserts and deserts.
- **PROJECT DURATION:** The project will be implemented over a period of 24 months, divided into three phases. Phase 1 will focus on planning, training, setting up the organization of the project, review and adjustment of the NFA approach, identification of information needs and general other project related preparatory activities including setting up a database and mapping. Phase 2 includes setting up the project organization in the field and implementation of the field activities of data collection. Phase 3 includes continuing developing database, data processing/analysis, policy analysis and reporting.
- **PROJECT FOCUS:** the project focuses on developing the means and tools that will enable IDF in Angola to finalize the NFA approach. The NFA must produce the knowledge that will help formulate the adequate policies, design focused national forest programmes and ultimately help achieve sustainable management of all types of forest and trees outside forest.
- **NATIONAL EXECUTION:** The project will be implemented by IDF. The regional services of IDF in the provinces will participate by providing the personnel for the field data collection.
- **PARTICIPATORY APPROACH:** Stakeholders and partners will be kept involved in the process during the entire period of project to: (i) establish basis for consensus on the approach to resources inventory and monitoring; (ii) help identify the information needs and reporting

formats; (iii) harmonize the vegetation classification systems and related terms and definitions. Participation will include all concerned national institutions, NGOs, research institutions and universities. To maximize the benefits, the NFA implementation should take advantage of the experiences gained from the national policy dialogue. The same stakeholders and others will be involved in the project.

### **XIII. DURATION**

The project will last 24 months under the “Instituto de Desenvolvimento Florestal”. as lead agency:

### **XIV. INSTITUTIONAL FRAMEWORK AND COORDINATION**

#### **Role of FAO**

Because of its wide international knowledge and experience in forestry resources assessment and in forest development in general that are directly relevant to the development objective of this project, the Food and Agriculture Organization (FAO) of the United Nations will facilitate the implementation of the project. It will provide the necessary expertise including national and international consultants for capacity building in forest assessment, remote sensing and mapping, information system development and data processing. Each consultant will provide in his/her area the technical inputs, monitor and evaluate the progress towards achieving the project objectives.

FAO will administer the technical assistance; provide operational and technical backstopping services from its offices in Luanda (FAO Representative Office to Angola), Harare (FAO/SFS) and Rome (FAO Headquarters) to ensure timely inputs to the project and smooth implementation at highest technical quality. The technical officers from FAO/HQs will make regular backstopping and oversight missions to the project in the field to ensure that the project implementation is performed at highest technical standards.

FAO will also facilitate the procurement of equipments and implementation of the training programme in collaboration with IDF and in compliance with the FAO procedures.

#### **Role of Government Implementing Agency**

The implementing agency will be the IDF in collaboration with its partners, mainly the DNAPF and the DNRN. It will designate a National Project Coordinator (NPF) who will be fully dedicated to the project, have the overall responsibility for planning, management, coordination and supervision of the project activities. The IDF will also have the responsibility for setting up the NFAU and strengthening it with means and tools to execute its mission, particularly, under this project, planning of the activities; training of the national personnel including the field teams and oversight of project activities.

For the purpose of sustainability of the findings, the project will be hosted by the IDF and attached to the two structures namely the Forestry Department (DF) of IDF for field and mapping activities and to the Department of Studies and Planning (DSP) where the project database will be linked to. The IDF through the DF will lead the planning and implementation of the project activities and coordinate the interventions of the national stakeholders and partners when required. It will work to make available all the needed personnel and the adequate office space and field equipment necessary to implement the project and guarantee the sustainability of results for the long-term monitoring of the resources.

Under this project and with the help of international assistance from FAO, IDF will work to develop the approach for NFA and monitoring. IDF will work to set up a lasting programme of resources monitoring and information management on the basis of the nationally accepted cost-effective approach and using the developed capacity. The IDF will ensure that the trained core personnel of the NFAU will remain under the programme and will continue to receive the necessary technical and financial support from the Government.

### **Project Steering Committee**

A project Steering Committee (SC) formed under the TCP by IDF to oversee the project implementation and administration will supervise this project. The composition of the SC will be the same as the one of the TCP and will have the same mission of monitoring the implementation of the project. As reminder, the SC will be composed of representatives from the IDF, DNAPF, Instituto de Desenvolvimento Rural (IDR), MINUA, Instituto de Geografia e Cartografia de Angola (IGCA), Instituto Nacional de Ordenamento do Território (INOT), DNRN, Ministry of Finance, funding agencies and the FAO Representative. Under the co-chairmanship of Head of the IDF and the FAO Representative, the SC will meet periodically every three months and more frequently if needed to review the progress of the project, assess the achievements against the planned activities, analyse the work plan for the next periods and recommend actions to take in case of constraints. The meetings of the SC will be called by the Head of the IDF. The meetings will be held at the offices of FAO. The Project Steering Committee may not amend the development or immediate objectives.

### **National Project Coordinator**

A full-time NPC selected and nominated for the TCO will manage this project, including the project office. The IDF has already nominated a qualified and experienced forester for the position. The NPC is responsible for undertaking all project planning, directing and supervising its implementation, ensuring cooperation among the personnel and involvement of wide range of stakeholders. He is the responsible person for reporting the progress of work to the Project Steering Committee, seeking appropriate assistance when required and promoting liaison and cooperation with other projects.

## **XV. INPUTS TO BE PROVIDED BY THE PROJECT**

The FAO Representative in Angola will be operationally responsible of the project and the Forest Resources Development Service (FOMR) will, through the Programme of Support to National Forest Resources Assessment (NFA), be responsible for coordinating the technical inputs, with other technical units as required, e.g. the Forest Conservation Service (FORC), the Forest Policy and Institutions Service (FONP) and the Forestry Department Group of the Regional Office for Africa (RAFO). The project will be anchored within the Instituto de Desenvolvimento Florestal. The national counterpart in Angola will be the Instituto de Desenvolvimento Florestal of the Ministry of Agriculture and Rural development.

**Personnel Services**<sup>3</sup>

<b>Activities supported</b>		months
Training and Supervision	TCDC-1 Forest Assessment (1 mission)	4
<b>TCDC Consultants</b>		<b>4</b>
<b>Technical Support</b>	(FORM) 2 missions	<b>2</b>

The cost for these interventions is defined at USD 208,000

**Materials, Supplies and Equipment (see Annex 1)**

This budget will cover the procurement of specialized forest assessment and basic equipment, office equipment and supplies to set up the NFAU and create a national functional database on forests and trees within IDF where all the inventory data will be stored and processed. The cost of these items is estimated at USD 18,000.

**Training**

This budget provision of USD 31,500 is made to cover part of the training in-country, workshops and meetings:

- national seminar for partners and stakeholders to inform about the project and exchange ideas on the best ways to implement it in order to meet the expectations of all concerned. At least 40 participants from the forestry and other sectors will participate;
- workshop involving IDF staff, other professionals and scientists from the sector to review and improve the NFA approach including the sampling design, system of field data quality control and harmonized land use classification system and related terms and definitions. At least 40 professionals and scientists from the forestry and other sectors will participate;
- workshop on the information needs on the forests and trees and the required set of biophysical and management/use variables to be covered by the NFA with options of each variable and definitions. At least 40 scientists and professionals will participate;
- workshop on project findings, long-term strategy for resources monitoring and policy review. At least 40 Scientists and professionals from the forestry and other economic sector will participate;
- two courses of one week each to provide theoretical and practical training in forest assessment to the national team from the IDF;
- one-week introductory course to the field crew members focussing on the classification system, terms and definitions used, sampling design and field forms. This training will be assured by the national assessment team from of IDF already trained on the subject with assistance from the international and national consultants;
- two-week practical training course to the field crew members in forest assessment. This training will be assured by the national assessment team from IDF already trained on the subject with assistance from the international and national consultants.

The objectives of this work are: (i) to continue training the national personnel in national forest inventory, data collection with emphasis on understanding the classification system, reporting on land use classes and their biophysical and socio-economic attributes, etc; (ii) to collect data as defined by the users of information at the onset of the project; and (iii) to set up a monitoring system of the forests and trees across the country.

<sup>3</sup> Terms of Reference in Annex 3.

**Mapping**

For this activity the project will allocated an amount of USD28,200 for field reconnaissance prior to image interpretation, equipment and supplies and for the entire satellite image interpretation work by four technicians for a period of 12 months.

**National personnel**

The project allocates:

- USD 45,000 to cover the salary of the national project coordinator.
- USD 14,400 for the secretariat of the project composed of one Secretary and one administrative clerk
- USD 57,000 for the drivers of the project
- USD 267,840 as allowance for the field teams. This includes USD43,200 to cover allowances for the internal staff of the NFIU.

**Transport and travel**

An amount of USD 44,000 is defined to cover the in-country travel of the TCDC and the FAO backstopping missions and non- staff travel for mapping activities as well as for the supervision of the fieldwork.

The fieldwork requires a budget of USD 211,000 for the procurement of 4 four wheel drive vehicles (three in first year and one in second year) and operation of the 18 vehicles of the field teams as well as the vehicles of the supervision personnel in the NFAU.

**General Operating Expenses**

This budget provision of USD 25,000 will cover various expenses for the implementation of the project such as telephone communications, photocopy paper, transport and operating cost of the project, etc.

**Direct Operating Costs (DOC)**

This budget provision of USD 10,000 will cover miscellaneous expenses at FAO headquarters related to the implementation of the project and the cost of operating the project.

**XVI. MONITORING, MANAGEMENT AND REPORTING****Oversight and Reviews**

The progress of the project will be jointly examined by the representatives of FAO and the Government of Angola. Two such reviews are scheduled for this project. The first is a mid-term review will be held at 12 months from the start of the project. Towards the end of the project, a terminal review meeting will examine the project achievements and decide on eventual follow-up. The organization, terms of reference and exact timing and place of the review will be decided in consultation between FAO and IDF. In collaboration with the TCDC, the NPC will prepare and submit a Project Performance Evaluation Report (PPER) to FAO and to IDF at least one month in

advance of each review. Additional PPERs may be requested, if necessary, during project implementation.

### **Monitoring and Knowledge Sharing**

The FAO Representation, the Lead Technical Unit of the project at FAO HQs, in cooperation with IDF shall be the focal point for monitoring project performance and assisting in meeting its implementation requirements.

The Management Support Unit (MSU) of the regional Office of FAO in Accra will continue to monitor expenditure and procurement and assist in contractual services and other needs of the project according to the document entitled 'Special Operational Procedures for the Unilateral Trust Programme in Sudan'.

A multidisciplinary Project Steering Committee will be created for the overall project. The SC meets periodically to review the progress of the project. It will work to insure broad awareness about the project and acts to foster the sharing of the generated knowledge.

The importance of the SC that crosscuts different sectors is indisputable for the project as it makes it known to all relevant institutions and maximises the benefits of the generated information to all users.

The main responsibility of the project relies on the NPC who assures the continuous monitoring of the project and the reporting to the Director General of the IDF and the Project Steering Committee. IDF have the duty to report to its Minister of Agriculture and Rural Development.

FAO will channel its inputs to the project through the IDF. The flow of information and reports on the project progress will go from FAO to the IDF and vice-versa. Furthermore, FAO will ensure the monitoring of the project on yearly basis through visits by its technical backstopping personnel from the Headquarters and the Sub-Regional Office in Harare.

Vis-à-vis the SC, the IDF will be the responsible of direct monitoring of the project and of reporting on its progress, achievements and constraints. The NPC will receive information on the progress of the project from the different national and international experts and consultants serving within the PTU. In monitoring of project and reporting on its progress, the NPC will be assisted by the Project TCDC.

Within the PTU, national and international experts and consultants and the national counterpart personnel will collaborate to implement the project work plan. Each consultant and expert will execute its part of the work plan according to his/her ToRs and report to the NPC and the TCDC.

The project is part of a global effort of FAO to build local capacity, assist in monitoring/assessing the forestry resources and generating/managing information to feed into the national policy processes. Globally, the project will work towards enhancing a culture of knowledge generation and sharing within the countries and developing mechanisms to transfer knowledge to other countries to resolve practical problems based on users expectations and needs. The lessons learned from this project will find its way, through the National Forest Monitoring and Assessment programme of FAO to the networks of key partners around the world to assist in knowledge sharing and to provide guidance in similar projects.

### **Communication and Visibility**

The project will organise one major event. One seminar in Luanda will be organised at the onset of the project to inform all stakeholders about its objectives and expected outputs and the parties involved and their responsibilities. The implementation of the project will be largely participatory

to ensure that all pertinent issues are addressed; the needed information delivered in the suitable format which facilitates its uses in the country and for international reporting and to adopt a nationally accepted approach to meet best the country's needs.

One workshop in Luanda will be held towards the end of the project to present, discuss and validate the results and agree on the way forward to strengthen the sustainability of the actions done and results.

## **Reporting**

The National Project Coordinator will provide FAO and the relevant technical services through the FAO Representative in Angola a Quarterly Project Implementation Report summarizing the activities performed, the progress made and outcomes of the project and a revised work plan for the next period as appropriate.

Each consultant (international and national) will present at the end of each mission a technical report containing the main results, conclusions and recommendations of his/her missions.

The NPC, under the supervision of IDF, will also prepare the draft terminal statement of the project according to the TCP procedures. After finalization by the responsible Lead Technical Unit at FAO headquarters (FOMR), the terminal statement will be submitted to the Government of the Republic of Angola.

The terminal report will include a technical synthesis of the various consultants reports and summarize the main results and conclusions of the project. In addition, it will contain FAO's recommendations to the Government and set indicators for a follow-up impact assessment one year after the project's NTE.

The FAO Lead Technical Unit (FOMR), in coordination with RAFO will be responsible for ensuring that the technical reports of consultants are submitted in a timely manner, are technically sound and will distribute them to other FAO units participating in the project. At the end of every mission, the FAO officers providing supervisory and advisory technical services will prepare a technical report with results, conclusions and recommendations and conduct briefings with other FAO staff as necessary.

## **XVII. OTHER GOVERNMENT CONTRIBUTION AND SUPPORTING ARRANGEMENTS**

The Instituto de Desenvolvimento Florestal will provide all physical facilities (offices for staff and for the forest inventory database, training space, local transportation for the experts/consultants, communication means, etc.) and the needed national counterpart staff at secretariat and professional levels. The IDF will provide to the project the national personnel for data collection in the field, data entry and processing and will identify, when needed, the partners that will provide support personnel for the field activities.

The IDF will have the overall coordinating role of the project, including the training of the national personnel, the design and planning of the project. IDF will act to set up and institutionalize the NFAU and build its capacity for future updating of the NFA and information management.

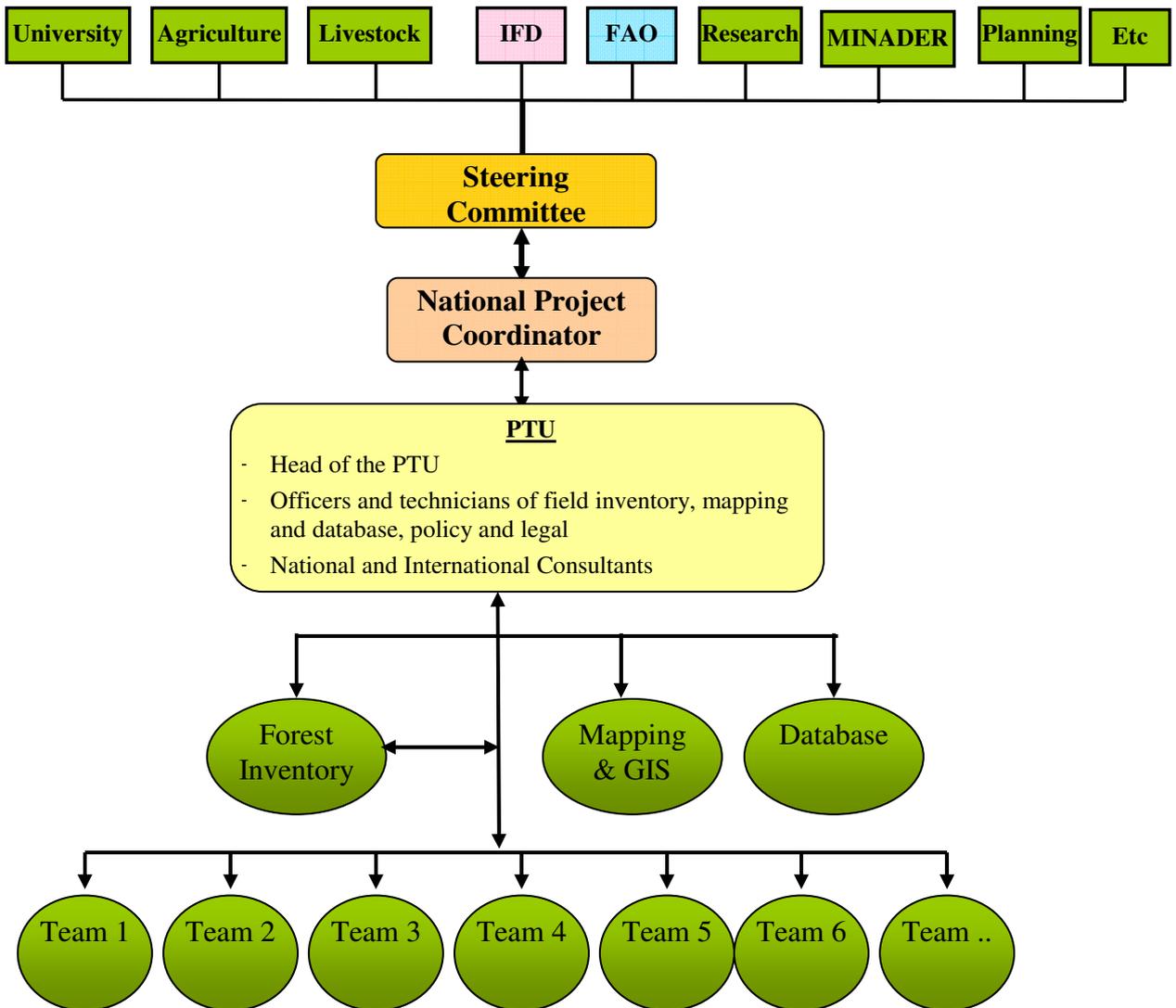
IDF will appoint a National Project Coordinator preferably the same as the for the TCP project and will also arrange for a quick clearance of experts, custom clearance of equipment, tax-free local purchase of project equipment and supplies. The NPC shall:

- i) coordinate interventions of the national institutions and individuals involved in the project;
- ii) plan and facilitate the training of field crew members;

- iii) oversee the fieldwork activities and secure timely deployment of logistical support to the field crews;
- iv) participate in the design and development of the forest database, processing the field data, analysing the findings and reporting of project findings;
- v) ensure smooth implementation of the project activities;
- vi) report to the SC on the progress of the project activities and relay the recommendations of the SC to the project team ; and
- vii) plan the meetings of the SC and serve as its Secretariat.

Under the supervision of the Director General of IDF, the NPC will oversee the work of the international experts and national consultants, follow their progress and performance to ensure timely implementation of the mapping and fieldwork, making use of the services provided by the partners for field data collection.

**Figure 1: Organizational structure of the NFA project in Angola**



**XVIII. PROJECT BUDGET (IN USD)**

The budget of the project is estimated at USD 940,092 as per table below. The Government will transfer the entire amount to FAO in four instalments as follow:

1. First instalment: USD 150,000, immediately according to FAO procedures
2. Second instalment: USD 150,853 in June 2008
3. Third instalment: USD 555,223 in Mars 2009
4. Fourth instalment: USD 84,016 in Mars 2010

**UTF, NATIONAL FOREST ASSESSMENT  
BUDGET (USD)**

Items	Units	Quantity	Unit cost	Total	2008	2009	2010
<b>1. Equipment and Supplies</b>							
* Inventory Equipment	LS						
* Camping Equipment	LS			6 000	6 000		
* Computer equipment	LS			7 000	7 000		
* Consumable	LS			5 000		4 000	1 000
<b>Sub-Total Equipment and supplies</b>				<b>18 000</b>	<b>13 000</b>	<b>4 000</b>	<b>1 000</b>
<b>2. Training of local Staff</b>							
<b>2.1. In-country Training</b>							
* Training courses in NFA	Unit	4	3 000	12 000		12 000	
<b>Sub-Total Training of local Staff</b>				<b>12 000</b>	<b>0</b>	<b>12 000</b>	
<b>2.2 Seminars, Workshops and Meetings</b>							
- Seminars	Unit	1	2 000				
- Workshops	Unit	3	1 000	3 000		2 000	1 000
- Meetings	Unit	11	1 500	16 500	6 000	7 500	3 000
- Study tour	Unit	2	4 000				
<b>Total Seminars, Workshops and Meetings</b>				<b>19 500</b>	<b>6 000</b>	<b>9 500</b>	<b>4 000</b>
<b>3. Mapping</b>							
* Procurement of satellites images	Unit	68	400				
* Field reconnaissance prior to interpretation	LS			5 000	5 000		
* Equipment and supplies	LS			4 000		4 000	
* Interpretation satellite images (4 technicians x 12 months)	MM	48	400	19 200	6 400	12 800	
* air checking of interpretation (30 hours)	Hours	30	500				
* Map production	LS						
<b>Sub-Total mapping</b>				<b>28 200</b>	<b>11 400</b>	<b>16 800</b>	
<b>4. Technical Assistance</b>							
* TCDC Expert	W/M	5	11 000	55 000		55 000	
* Travel TCDC (air tickets)	Unit						
* FAO Backstopping missions	Missions	2	7 000	14 000		14 000	
<b>Sub-Total Technical Assistance</b>				<b>69 000</b>	<b>0</b>	<b>69 000</b>	
<b>5. Local Consultants</b>							
* National Project Coordinator	W/M	24	1 875	45 000	18 750	22 500	3 750
* NFI Consultant	W/M	10	2 000				
* Remote Sensing Consultant	W/M	10	2 000				
* Data processing Consultant (Biometrician)	W/M	5	2 000				
* Policy Analyst	W/M	2	2 000				
<b>Sub-Total Local Consultants</b>				<b>45 000</b>	<b>18 750</b>	<b>22 500</b>	<b>3 750</b>
<b>6. Travel Cost</b>							
* In-country	LS			44 000	10 000	30 000	4 000
<b>Sub-Total Travel Cost</b>				<b>44 000</b>	<b>10,000</b>	<b>30,000</b>	<b>4,000</b>
<b>7. Fieldwork Costs</b>							
<b>* Salaries</b>							
- Senior technicians	W/M	180	400				

- Technicians	W/M	180	380				
- Field workers (2 per team x 10 months x 18 teams)	W/M	360	60				
- Drivers	W/M	228	250	57 000		28 500	28 500
- Administrative Clerk	W/M	24	300	7 200	2 400	3 600	1 200
- Secretary	W/M	24	300	7 200	2 400	3 600	1 200
<b>Sub-Total Fieldwork Cost</b>				<b>71 400</b>	<b>4 800</b>	<b>35 700</b>	<b>30 900</b>
<b>8. Perdiem</b>							
- Senior technicians	W/D	4320	18	77 760	23 328	54 432	
- Technicians	W/D	4320	14	60 480	18 144	42 336	
- Field workers (2 per team x 10 months x 18 teams)	W/D	8640	10	86 400	25 920	60 480	
- Allowances for NFAU personnel (6 national personnel of NFIU)	W/M	144	300	43 200	14 400	21 600	7 200
<b>Sub-Total Contracts</b>				<b>267 840</b>	<b>81 792</b>	<b>178 848</b>	<b>7 200</b>
<b>9. Transport</b>							
- Operation Cost of transport (18 vehicles x 10 months)	Units	180	500	90 000	30 000	60 000	
- Other project related Operating Cost of the NFIU (transport, communications, internet)	LS			28 000	3 000	10 000	15 000
- Procurement of cars	Unit	4	25000	100 000	75 000	25 000	
<b>Sub-Total Transport</b>				<b>218 000</b>	<b>108 000</b>	<b>95 000</b>	<b>15 000</b>
<b>10. General Operating Expenses</b>				<b>25 000</b>	<b>7 000</b>	<b>13 000</b>	<b>5 000</b>
<b>11. Direct Operating Cost</b>	LS			<b>10 000</b>	<b>4 000</b>	<b>4 000</b>	<b>2 000</b>
<b>12. Reporting</b>	LS			<b>4 000</b>	<b>1 500</b>	<b>1 000</b>	<b>1 500</b>
<b>SUB-TOTAL Project</b>				<b>852 540</b>	<b>266 242</b>	<b>506 348</b>	<b>79 950</b>
<b>13. Operational Services Costs</b>				<b>110 830</b>	<b>34 611</b>	<b>65 825</b>	<b>10 394</b>
<b>TOTAL Project</b>				<b>963 370</b>	<b>300 853</b>	<b>570 223</b>	<b>89 516</b>

### BUDGET IN ORACLE

Budget	Account	2008	2009	2010	Total
Staff Costs					
Salaries					
Professional	5300				
General Service	5500	4,800	35,700	30,900	71,400
Total		4,800	35,700	30,900	71,400
Overtime	5660				
Total Staff Costs					
Consultants	5570	25,150	90,300	3,750	119,200
Contracts	5650		15,000		15,000
Travel	5900	96,792	208,848	11,200	316,840
Training	5920	6,000	21,500	4,000	31,500
Equipment					
Expendable	6000	6,000	8,000	1,000	15,000
Non-expendable	6100	82,000	25,000		107,000
Total		88,000	33,000	1,000	122,000
Hospitality	6110				
Technical Support Service	6150		14,000		14,000
General Operating Expenses	6300	45,500	88,000	29,100	162,600
General Overhead Expenses	6400				
Chargebacks	6500				
Totals		266,242	506,348	79,950	852,540
Support Costs	6130	34,611	65,825	10,394	110,830
Total Budget		<b>300,853</b>	<b>572,173</b>	<b>90,344</b>	<b>963,370</b>

**ANNEXES**

**ANNEX 1: LIST OF EQUIPMENT**

**ANNEX 2: WORK PLAN**

**ANNEX 3: TERMS OF REFERENCE**

**ANNEX 4: LOGICAL FRAMEWORK**

**ANNEX 4: ELEMENTS OF NFA APPROACH**

**ANNEX 1: LIST OF EQUIPMENT**

<b>Items</b>	<b>Units</b>	<b>Quantity</b>
<b>1. Equipment and Supplies</b>		<b>USD113 000</b>
* Desktop computer	Unit	2
* Workstation: (Hard disk with big storage capacity(above 150 GB), extra hard disk for back-up with equal capacity, 21" large monitor and CD and DVD writer	Unit	1
* Satellite image interpretation, GIS and Database software	Set	1
<b>2. Forest Inventory Equipment</b>		<b>USD6 000</b>
* Camping equipments (tents, cooking, repellents, illumination, etc)	Set	12
<b>3. Satellite imagery</b>		<b>USD7 000</b>
<b>4. Transport</b>	Unit	4
<b>Vehicles</b>		<b>USD 100,000</b>



### ANNEX 3: TERMS OF REFERENCE

#### **Forest Assessment Consultant (TCDC-1)**

Under the direct supervision of the FAO Representative in Angola as budget holder and guidance provided by the Lead Technical Officer (LTO) at FAO headquarters, the TCDC (Technical Cooperation between Countries in Development) consultant will provide the technical assistance and support to the Instituto de Desenvolvimento Florestal (IDF) within the Ministério de Agricultura e Desenvolvimento Rural (MINADER) in the areas of planning of NFA, capacity building, institutional strengthening and lands use mapping. The main tasks of the consultant will be to:

- work with the national team from IDF and related National Forest Assessment (NFA) institutions to set up the national forest assessment unit for which the mandate, organization and needs and requirements will be defined. The mandate of the National Forest Assessment Unit (NFAU) includes wide range of tasks e.g. updating information, initiating NFAs, disseminating information to users, training national staff, defining inventory norms, and methods, helping in defining government policy in information generation, resources monitoring, knowledge management, etc;
- work with the national team from IDF and related NFA institutions to contribute in the review and adjustment of the inventory methodology, land use classification, and definition of the biophysical and socio-economic variables;
- work closely with mapping national consultant in supervising interpretation of satellite imagery using the harmonized land use classification and the production of the maps;
- prepare, in collaboration with national consultants and FAO experts, training programme for the national personnel involved in the project and assist IDF in implementing it;
- participate in implementing the training programme to the national team in the NFAU;
- participate in implementing the training programme to the field crews, mapping and database personnel through the planned workshops and courses;
- assist IDF to purchase, install and use the equipment and supplies planned for the project;
- in close collaboration with the national consultants, prepare a plan of the project activities and identify timely inputs from the project and the Government;
- provide supervision to the field crews during the survey and provide technical guidance as to homogenize data collection and best interpretation of variables and definitions through frequent visits to all crews during the assignment of the expert;
- work closely with the national inventory national consultant and the backstopping expert from FAO headquarters to develop and set up the project database;
- assist in encoding, validating and storing the field data; prepare functions for data processing and initiate data processing together with the Biometrician;
- assist in data analysis, reporting of findings and elaboration of the project terminal statement.

Duration: four months.

Duty Station: Luanda, Angola with frequent field trips.

Qualifications: The consultant should have a strong background in remote sensing, forest inventory design and planning. The consultant must be competent in forest information system development and information management and have confirmed experience in capacity building and project implementation.

Languages: French and/or English. Portuguese preferred.

**FAO BACKSTOPPING**  
**TERMS OF REFERENCE**

**Two missions for a total of 3 weeks from the Forest Resources Development Service (FOMR)**

Under the supervision and technical direction of the Forest Resources Development Service (FOMR) and in collaboration with the national authorities, the backstopping officers from FOMR will undertake periodic missions to provide support to the project as foreseen in the work plan. The backstopping officers will also provide technical assistance and guidance on aspects of:

- National Forest Assessment methodology adaptation including sampling design, classification system harmonisation and variables;
- land use mapping;
- training of the national personnel in the areas of forest and trees inventory and information management where required;
- field survey for data collection on forest and tree resources;
- data processing, database development and reporting;
- supervise and interact with national and international consultants on the training courses;
- contribute for the finalization of the NFRA approach based on the findings of the project;
- overall technical supervision of project implementation and delivery at the national level;
- technical editing and clearance of project reports including the terminal statement.

Duration: two missions for a total of three weeks.

## ANNEX 4: LOGICAL FRAMEWORK

Project Design	Indicators/Targets	Data Sources	Assumptions
<p><b>Impact:</b> Benefits of sound forest resources management realized and mainstreamed in national economy and policies, facilitating sustainable development of rural livelihoods and meeting the MDG's.</p>	<ol style="list-style-type: none"> <li>1. Angola having planned and carried out NFA integrating land use systems and addressing social, economic and environmental functions.</li> <li>2. Angola updated policies, strategies and legal framework based on NFA results.</li> <li>3. Higher contribution of forestry resources in national and local economies.</li> <li>4. Forests contribute in meeting MDGs.</li> </ol>	<ol style="list-style-type: none"> <li>1. National reports related to the state of the resources, management of related information, indicators of MDGs.</li> <li>2. Records on stakeholders involvement.</li> <li>3. Documents of new policy and strategy and other general management texts prepared in participatory way in the perspective of harmonisation.</li> <li>4. National records on number of people accessing forest goods and services.</li> </ol>	<ol style="list-style-type: none"> <li>1. National authorities committed, reflected by provision of needed legal, institutional and financial support and follow up of implementation of policies and related programmes.</li> </ol>
<p><b>Outcome 1:</b> Capacity of IDF to manage forest resources with a landscape and livelihoods focus strengthened. Policy dialogue at national level, particularly when addressing the broader development agenda, is better informed about forest resources, their management and uses. Mainstreaming of forestry facilitated.</p>	<ol style="list-style-type: none"> <li>1. Number of partners and stakeholders involved in overseeing and conducting the project.</li> <li>2. NFA process defined, set up in consultation with stakeholders and institutionalised.</li> <li>3. Information needs defined by users at national level.</li> <li>4. Number of national personnel trained</li> <li>5. National Forest Assessment Unit integrated within IDF, mandated and adequately equipped.</li> <li>6. Functional database operating.</li> <li>7. Classification system designed and harmonised with existing national classifications, taking account of international reporting requirements.</li> </ol>	<ol style="list-style-type: none"> <li>1. Records of minutes of SC meetings.</li> <li>2. Project reports about training courses, workshops and manuals for data collection, mapping and data processing.</li> <li>3. Project records on number and position of national staff in charge of NFA activities.</li> <li>4. Reports describing NFA process.</li> <li>5. NFA Results (Statistics &amp; maps).</li> <li>6. Reports and registers describing the monitoring system and the permanent sample plots.</li> <li>7. Reports describing mandate and structure of NFAU.</li> <li>8. Diagnosis of the forestry and policy and strategies reviewed.</li> <li>9. Plan of work of NFAU for detailed/specific inventories in priority areas and follow up.</li> </ol>	<ol style="list-style-type: none"> <li>1. IDF works along project requirements and conduct a participatory process to reach a national consensus on NFA approach and attain project objectives.</li> <li>2. IDF assigns the necessary staff on permanent basis to execute NFA and operate the forest and tree database.</li> <li>3. IDF deploys the resources and means to complement the donor funding</li> <li>4. IDF institutionalises NFA and provides it with financial and human resources to continue mission beyond project term.</li> <li>5. IDF committed to continue the inventory work according to set priorities.</li> <li>6. Forestry policy and strategies reviewed for updating</li> </ol>
<p><b>Outputs</b></p>			

<p>1.1 National consensus on approach and method to NFA and long-term monitoring of resources established</p>	<ul style="list-style-type: none"> <li>▪ Number of national workshops and technical meetings on forestry monitoring and assessment process.</li> <li>▪ Number of participants involved from different sectors.</li> <li>▪ Approach to NFA Angola issued in final version as working paper.</li> <li>▪ Frequency of inter-sectoral dialogue integrating NFA in policy harmonisation process.</li> </ul>	<ul style="list-style-type: none"> <li>• Reports and proceedings of workshops and technical meetings.</li> <li>• Document describing NFA approach.</li> </ul>	<ul style="list-style-type: none"> <li>• IDF broaden participation of partners and stakeholders in development of NFA process and reaching stable approach to long term forestry resources monitoring.</li> <li>• Partners and stakeholders work with IDF to reach/develop a consensual approach and process for NFA.</li> <li>• Partners and stakeholders work with IDF to reach/develop a consensual new forestry policy framework.</li> </ul>
<p>1.2 Information needs on forests, trees and forestry ecosystems defined with focus on management, uses and users of resources and their economic, environmental, social and cultural functions.</p>	<ul style="list-style-type: none"> <li>• Number of stakeholders who participated in identifying information needs for social, economic and environmental development programmes, policy harmonisation between sectors and integration of forestry issues in wider decision making processes</li> </ul>	<ul style="list-style-type: none"> <li>• Reports describing nationally agreed list of variables.</li> <li>• Proceedings of meetings and workshops.</li> </ul>	<ul style="list-style-type: none"> <li>• Lead national institution coordinate efforts of all partners and stakeholders to reach a national list of forest and tree variables that will help generate the needed information to all users.</li> </ul>
<p>1.3 National Forest Assessment Unit set up within IDF</p>	<ul style="list-style-type: none"> <li>▪ Number of stakeholders and professionals of the forestry sector endorsing the organizational structure of NFAU</li> <li>▪ Structure and mandate of the NFA unit.</li> <li>▪ Number of trained personnel assigned to NFA on permanent basis.</li> <li>• Government action to institutionalise NFA within IDF.</li> </ul>	<ul style="list-style-type: none"> <li>• Reports describing agreed organization of the NFAU</li> <li>• Project records (reports and meeting minutes)</li> <li>• Government decision institutionalising NFA</li> </ul>	<ul style="list-style-type: none"> <li>• Government recognises the need for a permanent NFA process.</li> <li>• Partners and stakeholders concur with establishing durable NFA process and work for it.</li> <li>• Angola institutionalises the NFA process and provides it with financial and human resources to continue its mission beyond the end of the project.</li> </ul>
<p>1.4 Capacity of IDF at national and province levels to implement NFA assessed; national experiences and skills in forestry resources, assessment and information management reviewed; gaps identified and training plans designed</p>	<ul style="list-style-type: none"> <li>▪ Number of national personnel with skills and experiences in forest resources monitoring, assessment and information management.</li> <li>▪</li> </ul>	<ul style="list-style-type: none"> <li>• Reports describing the status of the forestry personnel and their skills.</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Angola institutionalises the NFA process and provides it with financial and human resources to continue its mission beyond the end of the project</li> </ul>

1.5 National expertise of IDF for NFA reinforced and consolidated	<ul style="list-style-type: none"> <li>▪ Number of training plans designed.</li> <li>▪ Number of trained personnel.</li> </ul>	<ul style="list-style-type: none"> <li>• Report describing training needs for NFA.</li> <li>• Modules of training for the national personnel</li> </ul>	<ul style="list-style-type: none"> <li>• Angola acts to strengthen its capacity to bridge the gaps skills and capacities</li> </ul>
1.6 Forest type and land use classification system developed and designed. National forestry information framework – NFA and results of NFA - including forest related definitions and classifications harmonised with due consideration of relevant international, regional and national definitions and classifications.	<ul style="list-style-type: none"> <li>▪ Number of stakeholders participated in definition of forest/land use classification system</li> <li>▪ Meetings for analysis and development of national forestry information framework.</li> <li>▪ Meetings for conceptualising and developing NFA database.</li> <li>• Meetings and workshops for forest related terms and definitions and land use classification system harmonisation.</li> </ul>	<ul style="list-style-type: none"> <li>• Reports describing the agreed forest/land use classification system</li> <li>• Reports describing database for NFA.</li> <li>• Project records describing harmonised forest related terms and definitions and land use classifications.</li> </ul>	<ul style="list-style-type: none"> <li>• Angola adopts the forest/land use classification system as main base map for land use planning and reporting</li> <li>• IDF acts to involve partners and stakeholders in information framework harmonisation as to generalise the benefit from the project results.</li> <li>• Partners and stakeholders understand and recognise the utility of harmonised information framework.</li> </ul>
1.7 National information scope defined to enable meeting all users' needs	<ul style="list-style-type: none"> <li>▪ Number of stakeholders participated in definition of forest/land use biophysical and socio-economic variables</li> <li>▪ Meetings for definition of biophysical and socio-economic variables.</li> </ul>	<ul style="list-style-type: none"> <li>• Minutes of meetings among stakeholders</li> <li>• Reports describing biophysical and socio-economic variables</li> </ul>	<ul style="list-style-type: none"> <li>• IDF acts to cover all users needs of information and broaden the scope to encompass changing demand of information</li> </ul>
1.8 Functional forestry database integrating geo-referenced field data of all variables following the data collection model designed and set up.	<ul style="list-style-type: none"> <li>▪ Database set up within IDF</li> <li>▪ Number of trained personnel assigned permanently to database management</li> <li>• Field data and maps digitised and stored in the database</li> </ul>	<ul style="list-style-type: none"> <li>• Report describing structure of database</li> <li>• Number of national personnel trained</li> </ul>	<ul style="list-style-type: none"> <li>• IDF prioritises NFA database and recognise it as important tool for easy retrieval and use of information by users and for future updating of the information.</li> </ul>
1.9 Appropriate remote sensing data specified and procured, interpretation carried out and forest/land use map produced at different scales and for different administrative levels and endorsed by partners	<ul style="list-style-type: none"> <li>▪ Manual for interpretation of satellite images.</li> <li>▪ Number of remote sensing scenes procured.</li> <li>▪ Number of national personnel trained in mapping using remote sensing techniques.</li> <li>• Forest and land use map covering the entire country.</li> </ul>	<ul style="list-style-type: none"> <li>• Reports and manuals.</li> <li>• Number of national personnel trained.</li> <li>• Forest and land use maps.</li> </ul>	<ul style="list-style-type: none"> <li>• IDF assigns qualified personnel for the mapping.</li> <li>• Mapping integrated in the NFA process.</li> </ul>

<p>1.10 Field survey for data collection planned and carried out in nationwide systematic sampling in all forest types, other wooded lands and other lands and a network of permanent sample sites materialised on the ground.</p>	<ul style="list-style-type: none"> <li>▪ Sampling design.</li> <li>▪ Number of trained personnel and number of field teams created.</li> <li>▪ Organization of the fieldwork, e.g. setting up field teams, logistics, supervision, and technical guidance.</li> <li>• Number of field samples visited, number of interviews carried and field forms received, checked and validated.</li> </ul>	<ul style="list-style-type: none"> <li>• Reports describing approach and sampling design.</li> <li>• Forest inventory manual.</li> <li>• Field forms received from field crews.</li> <li>• Reports of supervision personnel.</li> </ul>	<ul style="list-style-type: none"> <li>• IDF personnel participate actively in organising and supervising field survey.</li> <li>• PTU designs plan for logistical support to field crews and their supervision.</li> <li>• Supervision done in systematic way as to harmonise data collection between field crews.</li> </ul>
<p>1.11 Field data encoded in database and processed, results analysed and findings reported and validated.</p>	<ul style="list-style-type: none"> <li>▪ Number of national personnel trained for data encoding and processing.</li> <li>▪ Results from data processing and analysis.</li> <li>• Workshop for presentation and validation of NFA results and findings.</li> </ul>	<ul style="list-style-type: none"> <li>• Reports and manuals.</li> <li>• Number of national personnel trained.</li> <li>• Final report of the project results and findings.</li> </ul>	<ul style="list-style-type: none"> <li>• FBD personnel and stakeholders participate actively in scoping project results.</li> <li>• PTU works to involve qualified personnel for project results analysis.</li> <li>• IDF involves wide range of stakeholders for validation of results.</li> </ul>
<p>1.12 Programme for long-term monitoring of the forestry resources and follow up actions defined in conjunction with partners and stakeholders and supported by the national authorities.</p>	<ul style="list-style-type: none"> <li>▪ Number of national personnel and stakeholders participated in defining the long term monitoring strategy of the forestry resources.</li> </ul>	<ul style="list-style-type: none"> <li>• Report and documents describing the strategy of IDF for the long term monitoring strategy of the forestry resources.</li> </ul>	<ul style="list-style-type: none"> <li>• IDF committed to maintain the process of the long term monitoring of the resources.</li> </ul>
<p>1.13 Policies and strategies of the forestry sector reviewed and priorities redefined.</p>	<ul style="list-style-type: none"> <li>▪ Number of personnel and stakeholders involved in the exercise of review of the forestry policy and strategies.</li> <li>• Number of meetings dedicated to review and adaptation of forestry policy and strategies.</li> </ul>	<ul style="list-style-type: none"> <li>• Reports and documents related policy dialogues among foresters and stakeholders.</li> </ul>	<ul style="list-style-type: none"> <li>• IDF involves partners and stakeholders in review and adaptation of the forestry policy.</li> </ul>
<p><b>Activities</b></p>			
<p>1.1 Partners and allies identified to participate in overseeing implementation of the project activities.</p>	<ul style="list-style-type: none"> <li>• Number of partners and allies from different sectors involved in the oversight of the project</li> </ul>	<ul style="list-style-type: none"> <li>• List of involved institutions and agencies</li> </ul>	<ul style="list-style-type: none"> <li>• IDF acts to involve wide range of partners and stakeholders to oversee the project and maximises the benefits.</li> </ul>

1.2 Inter-sectoral Steering Committee set up to oversee and provide guidance to the project team	<ul style="list-style-type: none"> <li>▪ Number of stakeholders and specialists involved in the Steering Committee</li> </ul>	<ul style="list-style-type: none"> <li>• Minutes of the meetings of the Steering Committee</li> </ul>	<ul style="list-style-type: none"> <li>• IDF secures participation of wide range of partners and stakeholders</li> </ul>
1.3 Project work plan integrating most modern concepts of forest and trees outside forest resources inventory defined in participatory way	<ul style="list-style-type: none"> <li>▪ Number of national international staff involved in the preparation of the work plan</li> </ul>	<ul style="list-style-type: none"> <li>• Reports describing the project work plan</li> </ul>	<ul style="list-style-type: none"> <li>• IDF accepts to introduce new concepts of forestry resources assessment and supports them</li> </ul>
1.4 National seminar to inform them about the national forestry resources assessment	<ul style="list-style-type: none"> <li>▪ Number of participants from different sectors involved in the seminar</li> </ul>	<ul style="list-style-type: none"> <li>• Proceedings of the seminar.</li> </ul>	<ul style="list-style-type: none"> <li>• IDF secures participation of wide range of partners and stakeholders.</li> <li>• Partners and stakeholders manifest interest in the project and become proactive in its implementation</li> </ul>
2.1 Building on the FAO NFA method, prepare a proposal for the sampling design to be followed by the project.	<ul style="list-style-type: none"> <li>▪ Number of national and international staff involved in the preparation of the work plan</li> </ul>	<ul style="list-style-type: none"> <li>• Reports describing the proposed general approach and statistical design of the project</li> </ul>	<ul style="list-style-type: none"> <li>• IDF accepts to introduce new concepts of forestry resources assessment and supports them</li> <li>• IDF secures participation of wide range of national professionals</li> </ul>
2.2 Define a general approach to NFA project of Angola on basis of FAO approach to NFAs, which covers inventory of benefits from all forest types, other wooded lands and other lands, long-term monitoring, capacity building, mapping, information system development, data processing and information management and dissemination.	<ul style="list-style-type: none"> <li>▪ Number of national international staff and stakeholders involved in the preparation of the work plan</li> </ul>	<ul style="list-style-type: none"> <li>• Reports describing the agreed general approach and statistical design of the project</li> </ul>	<ul style="list-style-type: none"> <li>• IDF accepts to introduce new concepts of forestry resources assessment and supports them</li> <li>• IDF secures participation of wide range of national professionals</li> </ul>
2.3 Prepare a field manual for the field teams based on adapted approach to NFA according to the contributions by national and international experts	<ul style="list-style-type: none"> <li>▪ Number of national and international staff involved in the preparation of the field manual</li> </ul>	<ul style="list-style-type: none"> <li>• Document of the field manual</li> </ul>	<ul style="list-style-type: none"> <li>• IDF acts to developing norms and knowledge reference for the NFA</li> </ul>

2.4 Assist IDF in harmonizing the forest-related terms and definition taking into account of the globally agreed definitions	<ul style="list-style-type: none"> <li>▪ Number of technical meetings on forestry information harmonisation</li> </ul>	<ul style="list-style-type: none"> <li>• Reports and proceedings of technical meetings</li> </ul>	<ul style="list-style-type: none"> <li>• IDF secures participation of partners and stakeholders on forestry information harmonisation</li> </ul>
1.1.3 Workshop on NFA methodology	<ul style="list-style-type: none"> <li>▪ Final version of NFA approach in Angola produced as working paper.</li> </ul>	<ul style="list-style-type: none"> <li>• Document describing NFA approach.</li> <li>• Working papers on introducing NFA into policy and planning processes.</li> </ul>	<ul style="list-style-type: none"> <li>• IDF secures participation of partners and stakeholders in development of NFA process and definition of stable approach to long term forestry resources monitoring</li> <li>• Partners and stakeholders work with IDF to develop a consensual process for NFA.</li> </ul>
3.1 Set up a NFAU with defined structure, mandate (updating information, initiating NFAs, disseminating information to users, training national staff, defining inventory norms and methods, helping in defining government policy in information generation, resources monitoring, knowledge management, etc.) and the needed personnel in the required skills	<ul style="list-style-type: none"> <li>• Number of national and international staff involved in the creation of the NFAU and defining its structure and mandate.</li> </ul>	<ul style="list-style-type: none"> <li>• Reports describing agreed organization of the NFAU</li> <li>• Project records (reports and meeting minutes)</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Government recognises the need for a permanent NFA process.</li> <li>• Partners and stakeholders concur with establishing durable NFA process and work for it.</li> </ul>
3.2 Work with IDF authority to organically institutionalize NFAU	<ul style="list-style-type: none"> <li>▪ Structure and mandate of the NFA unit.</li> <li>▪ Number of trained personnel assigned to NFA on permanent basis.</li> <li>• Government action to institutionalise NFA within IDF</li> </ul>	<ul style="list-style-type: none"> <li>• Government decision institutionalising NFA</li> </ul>	<ul style="list-style-type: none"> <li>• Angola institutionalises the NFA process and provides it with financial and human resources to continue its mission beyond the end of the project</li> </ul>
4.1 Assess national experiences in forest inventory and information management e.g. trained personnel, IDF organization for national forest inventory projects, partnerships and alliances for NFA, etc.	<ul style="list-style-type: none"> <li>▪ Existing skills and experiences and gaps to carry out NFA</li> <li>▪ Number of national personnel with skills and experiences in forest resources monitoring, assessment and information management</li> </ul>	<ul style="list-style-type: none"> <li>• Reports showing capacity of IDF for long term monitoring and gaps to fill.</li> </ul>	<ul style="list-style-type: none"> <li>• Angola acts to strengthen its capacity to bridge the gaps skills and capacities</li> </ul>

5.1 Plan and carry out training of the national personnel in mapping using remote sensing techniques based on the harmonised land cover and land use classification system.	<ul style="list-style-type: none"> <li>▪ Number of national personnel trained in mapping using remote sensing techniques.</li> </ul>	<ul style="list-style-type: none"> <li>• Report describing training needs for NFA.</li> <li>• Modules of training for the national personnel in mapping.</li> </ul>	<ul style="list-style-type: none"> <li>• Angola acts to strengthen its capacity to bridge the gaps skills and capacities</li> </ul>
5.2 Plan and carry out in-service training to the national team in field data collection.	<ul style="list-style-type: none"> <li>▪ Number of national supervision and field personnel trained in forest inventory techniques</li> </ul>	<ul style="list-style-type: none"> <li>• Report describing training needs for NFA for field survey in forest inventory.</li> <li>• Modules of training for the national personnel in forest inventory.</li> </ul>	<ul style="list-style-type: none"> <li>• Angola acts to strengthen its capacity to bridge the gaps skills and capacities</li> </ul>
5.3 Plan and carry out training of the national team in data processing and analysis, information management and dissemination	<ul style="list-style-type: none"> <li>▪ Number of national supervision and field personnel trained in database, data processing and information management</li> </ul>	<ul style="list-style-type: none"> <li>• Report describing training needs for NFA for database, data processing and information management</li> <li>• Modules of training for the national personnel in data processing and information management.</li> </ul>	<ul style="list-style-type: none"> <li>• Angola acts to strengthen its capacity to bridge the gaps skills and capacities</li> </ul>
5.2 Define the needs of training and capacity building in mapping, field data collection, processing/ analysis, and information management	<ul style="list-style-type: none"> <li>▪ Number teaching institutions participated in the design of the training plans.</li> <li>▪ Strategy for capacity building within IDF.</li> <li>▪ Number of training plans designed.</li> <li>▪ Number of trained personnel</li> </ul>	<ul style="list-style-type: none"> <li>• Training materials e.g. documents</li> <li>• Reports describing the strategy for capacity building and institutional strengthening of IDF.</li> <li>• Modules of training for the national personnel.</li> </ul>	<ul style="list-style-type: none"> <li>• Angola acts to strengthen its capacity to bridge the gaps skills and capacities</li> <li>• Project team ensures wide consultation on the specifications of the training of the project personnel</li> </ul>
6.1 Harmonize the classification system of the forestry vegetation and land uses. In developing this, consideration must be taken of the classification systems existing in the country and at the international level such as the one used by FAO for global FRA, etc.	<ul style="list-style-type: none"> <li>▪ Number of stakeholders participated in definition of forest/land use classification system</li> </ul>	<ul style="list-style-type: none"> <li>• Reports describing the agreed forest/land use classification system</li> <li>• Project records describing harmonised forest related terms and definitions and land use classifications.</li> </ul>	<ul style="list-style-type: none"> <li>• Angola adopts the forest/land use classification system as main base map for land use planning and reporting</li> </ul>
6.2 Ensure wide dissemination and review of harmonized classification system by professionals, scientists and the SC members.	<ul style="list-style-type: none"> <li>▪ Meetings for analysis and development of national forestry information framework.</li> <li>▪ Meetings for conceptualising and developing NFA database.</li> </ul>	<ul style="list-style-type: none"> <li>• Reports describing the agreed forest/land use classification system</li> <li>• Project records describing harmonised forest related terms and definitions and</li> </ul>	<ul style="list-style-type: none"> <li>• IDF acts to involve partners and stakeholders in information framework harmonisation as to generalise the benefit from the project results.</li> <li>• Partners and stakeholders understand</li> </ul>

	<ul style="list-style-type: none"> <li>▪ Meetings and workshops for forest related terms and definitions and land use classification system harmonisation.</li> </ul>	land use classifications.	and recognise the utility of harmonised information framework.
7.1 Prepare a manual for the interpretation of the satellite images and production of the maps.	<ul style="list-style-type: none"> <li>• Number of national and international staff involved in the preparation for the interpretation of the satellite images and production of the maps.</li> </ul>	<ul style="list-style-type: none"> <li>• Reports and field manuals.</li> </ul>	<ul style="list-style-type: none"> <li>• IDF facilitates developing knowledge reference for the NFA and mapping.</li> </ul>
7.2 Carry out digital interpretation of satellite images and prepare the final maps based on field reconnaissance and validation from the air.	<ul style="list-style-type: none"> <li>• Number of national personnel trained for the mapping using the remote sensing techniques.</li> <li>• Draft forest/land use map.</li> </ul>	<ul style="list-style-type: none"> <li>• Number of national personnel trained.</li> <li>• Forest and land use maps.</li> </ul>	<ul style="list-style-type: none"> <li>• IDF assigns qualified personnel for the mapping.</li> <li>• Mapping integrated in the NFA process.</li> </ul>
8.1 Carry out a review of the scope of the information needs and prepare a list of biophysical and socio-economic variables of the resources and their corresponding codes and definitions. The list should include the products & services of forest and trees outside forests.	<ul style="list-style-type: none"> <li>▪ Number of stakeholders participated in identifying information needs</li> </ul>	<ul style="list-style-type: none"> <li>• Reports describing nationally agreed list of variables;</li> <li>• Proceedings of meetings and workshops.</li> </ul>	<ul style="list-style-type: none"> <li>• Lead national institution coordinate efforts of all partners and stakeholders to reach a national list of forest and tree variables that generate the needed information for all users.</li> </ul>
8.2 Convene a national workshop involving representatives from partners and stakeholders to present, discuss and finalise the national list of variables	<ul style="list-style-type: none"> <li>▪ Number professionals and stakeholders participated in the workshop</li> </ul>	<ul style="list-style-type: none"> <li>• Reports and meetings of the workshop</li> </ul>	<ul style="list-style-type: none"> <li>• IDF acts to involve wide range of professionals and stakeholders in NFA development</li> </ul>
9.1 Prepare manual to field teams describing approach and techniques of data collection and the lay out of the sample plots in the field.	<ul style="list-style-type: none"> <li>• Number of national and international staff involved in the preparation for the field forest inventory.</li> </ul>	<ul style="list-style-type: none"> <li>• Document showing NFA methods and techniques for field teams</li> </ul>	<ul style="list-style-type: none"> <li>• IDF facilitates developing knowledge reference for the NFA</li> </ul>

9.2 Design the field forms for data collection from measurements, observations and interviews. The field forms should be based on those developed by NFA programme of FAO.	<ul style="list-style-type: none"> <li>• Number of national staff involved in the design of the field form.</li> </ul>	<ul style="list-style-type: none"> <li>• Field forms designed.</li> </ul>	<ul style="list-style-type: none"> <li>• IDF acts to involve wide range of experts in NFA development</li> </ul>
9.3 Plan and carry out representative field sampling throughout the country to collect data as defined in the national list of variables.	<ul style="list-style-type: none"> <li>• Number of sample plots visited, number of interviews carried and field forms received with field data, checked and validated</li> </ul>	<ul style="list-style-type: none"> <li>• Field forms received with field data.</li> </ul>	<ul style="list-style-type: none"> <li>• Logistical support provided and supervision done in systematic way as to harmonise data collection between field crews.</li> </ul>
9.4 Assist in encoding and processing collected field data, link it to the mapping data and ensure its compatibility with historical data.	<ul style="list-style-type: none"> <li>• Number of personnel trained worked on data entry</li> </ul>	<ul style="list-style-type: none"> <li>• Database with field and mapping data</li> </ul>	<ul style="list-style-type: none"> <li>• IDF acts to involve wide range of experts in NFA development and database management</li> </ul>
9.5 Convene national workshop for forestry professionals, scientists and representatives of partners and stakeholders to review and assess the project results.	<ul style="list-style-type: none"> <li>• Number of participants and stakeholders participated in the workshop</li> </ul>	<ul style="list-style-type: none"> <li>• Reports and minutes of the workshop</li> </ul>	<ul style="list-style-type: none"> <li>• IDF acts to involve wide range of experts in NFA results review</li> </ul>
10.1 Define a concerted long-term monitoring programme of the forestry resources that foresees stable institutional framework and skills and continuous government financial commitment.	<ul style="list-style-type: none"> <li>• Number of professionals and experts involved in designing the national strategy for long term monitoring</li> </ul>	Report describing the Government strategy for long term monitoring including allocating human and financial resources	<ul style="list-style-type: none"> <li>• IDF acts to involve wide range of experts in NFA development</li> </ul>
10.2 Convene a national workshop involving wide range of professionals to review, discuss and finalize the proposed monitoring programme	<ul style="list-style-type: none"> <li>• Number of participants and stakeholders participated in the workshop</li> </ul>	<ul style="list-style-type: none"> <li>• Reports and minutes of the workshop</li> </ul>	<ul style="list-style-type: none"> <li>• IDF acts to involve wide range of experts in designing the long term monitoring strategy for forestry resources monitoring</li> </ul>

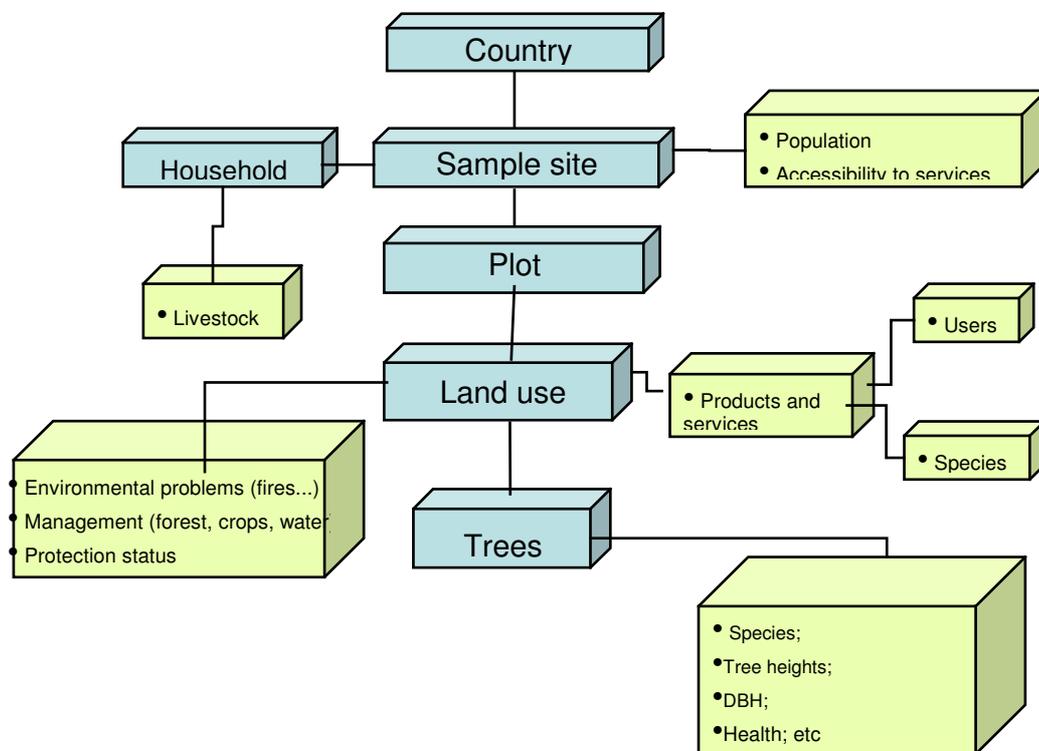
<p>11.1 Based on project findings, undertake SWOT (strengths, weaknesses, opportunities and threats) analysis of the forestry subsector in relation with other economic sectors, the state of the resources and their role in the socio-economic development and food security.</p>	<ul style="list-style-type: none"> <li>• Number of experts from different disciplines involved in the SWOT analysis</li> </ul>	<ul style="list-style-type: none"> <li>• Reports of the SWOT analysis</li> </ul>	<ul style="list-style-type: none"> <li>• IDF mobilises resources to promote and carry out the SWOT analysis of the forestry sector</li> </ul>
<p>11.2 Prepare recommendations to improve policies, strategies, and programmes in connection with the forestry subsector, environment and family sector development in the rural areas.</p>	<ul style="list-style-type: none"> <li>• Number of inter-sectoral policy analysis carried out with accepted recommendations.</li> </ul>	<p>Reports on recommendations for forestry policy adaptations.</p>	<ul style="list-style-type: none"> <li>• Sectors work together in defining policy requirements based on NFA findings.</li> </ul>
<p>11.3 Convene a national workshop for professionals from the forestry sector, scientists and representatives of partners and stakeholders to review and validate the SWOT analysis and the defined priorities of the sector</p>	<ul style="list-style-type: none"> <li>• Number of participants and stakeholders participated in the workshop</li> </ul>	<ul style="list-style-type: none"> <li>• Reports and minutes of the workshop</li> </ul>	<ul style="list-style-type: none"> <li>• IDF acts to involve wide range of experts in the review and validation of the SWOT analysis and the defined priorities of the sector</li> </ul>

## ANNEX 5: ELEMENTS OF NFA APPROACH

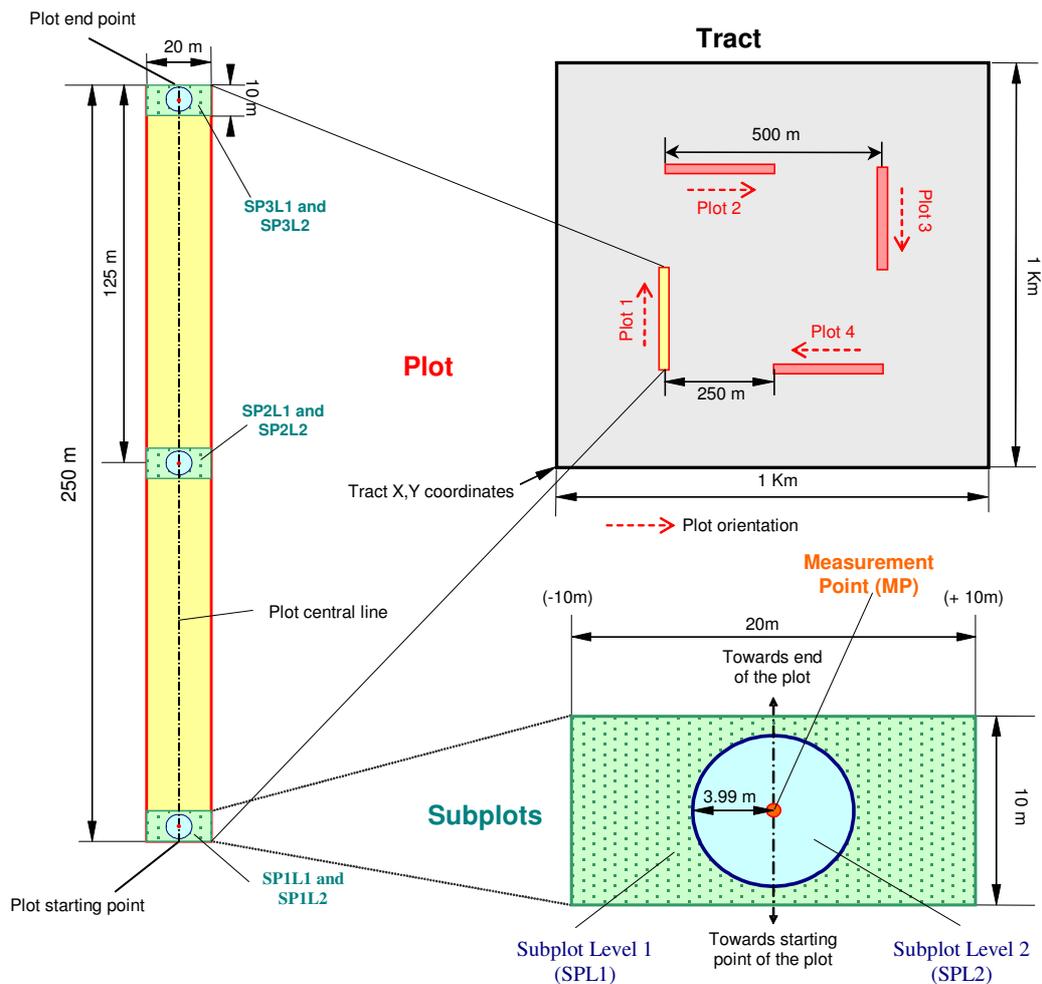
The systematic sampling will be followed in this project. It is based on the sampling design described in the FAO Approach which itself is based on systematic distribution of the sample sites. A sample site is a cluster of four plots of 5 000 m<sup>2</sup> each. The plots are designed to allow monitoring the dynamic of the land use systems and the changes of woody vegetation cover in the country. It is a one-phase sampling for continuous forest inventory (CFI).

The design is adaptable to different situations from tropical moist forest to tropical dry forest to subtropical vegetation. The data collection follows the following model:

**Figure 1: Data collection model**



In the above model, there are three levels of data collection. The first set of data on local population, their activities and accessibility to products and services is done at tract (1 km<sup>2</sup>) level. The second dataset is collected within the land use section and tied to it. The third level is on trees which are attached to the land use section where they are found (see Figure 2: Cluster and plot configuration).



## **PROJECT STRATEGY**

### **Steps of an NFA project**

Implementation an NFA project is divided into four main phases:

- i. Assessment of information needs, requirements and definition of inventory objectives
- ii. Planning of the field survey, including conceptualising the sampling design, developing data analysis software, preparing field and mapping manuals, assembling of available information, purchasing equipment and building capacity
- iii. Data collection through field survey and satellite images interpretation/analysis of digital imagery, gathering of reference material
- iv. Processing and analysis of the collected data and publication of findings.

Each of these steps requires knowledge and co-operation of many experts, not only survey statisticians, computer specialists and mensurationists, but also specialists who provided necessary information in their own fields and co-operated in the programme. The figure 2 below provides a flowchart of the strategy to follow to develop and implement an NFA project. The steps 1, 2, 3 and 4 describe the steps that will be finalised in the first four to six months of the project. The step 5 describes the activities that have to be carried out in the period following the planning phase of the project. The steps 6 and 7 describe the activities that will be carried out after having completed the data collection in the field and from the produced thematic maps.

Figure 3: Flow chart of the activities

Step	Main tasks	Activities			
Step 1	Alliances building and Analysis of Background Information	Analysis of Information Needs & Requirements	Alliances and Partnerships	Analysis of Means (Infrastructure & Personnel)	Analysis of Existing Information
Step 2	Capacity Building	Definition of Objectives		Training and Institutional Strengthening	Description: Formats, Quality, & Restriction of Data Availability
Step 3	Identify Needs of Information and Develop Approach	Variables, Terms & Definitions, Reference Units and Sampling Frame	National Forest Assessment Unit		
		<ul style="list-style-type: none"> <li>• Sampling design</li> <li>• Plot Configuration</li> <li>• Forest/Land use classification</li> <li>• Data collection model</li> <li>• Field forms</li> <li>• Data base/data processing</li> </ul>	General Approach to NFA (Survey Design Alternatives)		
Step 4	Manuals and Guidelines			Satellite Image Interpretation Manual	Field Manual
Step 5	Data collection (Survey and Mapping)			Mapping	Survey
Step 6	Data Processing and Analysis	Processing & Analysis			
Step 7	Publication of Findings	<b>Publication of Results:</b> <ul style="list-style-type: none"> <li>- Maps of landscape sample units</li> <li>- Statistics and analysis</li> <li>- Database</li> <li>- Trained personnel</li> </ul>			

## Implementation

The project will be implemented in three phases:

### Phase I: Preparation, training and mapping

This phase includes all the preliminary arrangements and preparatory work for the project: training of the national inventory supervisors and field crews members; adjusting and adapting the NFA methodology, development of harmonized classification system and list of variables according to national requirements; acquisition of equipment and satellite images; and recruitment of national and international personnel.

The project is a major capacity building exercise for IDF. The national team will be familiarized with the techniques and methods of integrated NFA, the forest and land use classification system and identification of forest, tree and land use attributes. The sampling design and data collection model in the FAO approach to national forest assessment will be reviewed and adjusted when necessary. The list of biophysical and management/use variables thoroughly analysed and finalized to include all parameters of national interest. The environmental, social and economic functions of the forests and trees will be properly addressed by the NFA.

As part of training, two officers from the IDF, associated with the project, will participate in a study tour to a country where a successful national forest assessment is underway. Among these countries, the following may be considered: the Congo, Kenya and Zambia.

The training will be assured through workshops, courses and the indicated study tour to professionals/representatives from the national institutions involved in land use resources management.

The mapping work of the project will be carried out by the technical personnel assigned by IDF to the NFAU. It will be done through field reconnaissance, interpretation and checking by air of the preliminary results of the interpretation. Four technicians will carry out the work over a period of 12 months.

### Phase II: Field survey and mapping

This phase includes data collection from measurements of forest attributes, observations of forest/site attributes, and interviews with local people/target groups, materialization of the permanent sample plots in their field location, and data entry/storage.

In this project, fieldwork is a crucial activity. The planned outputs will largely depend on it. Permanent sample plots will be established for long-term monitoring of forest and tree resources all over the country and in all land use classes. GPS is a key instrument in locating plots with the help of latitude/longitude coordinates defined in advance. The starting point of each plot will be marked with a metal pole driven in the ground. Reference points around the starting points of the plot will be identified, for which distance to and compass reading from the starting point of the plot will be taken and recorded to facilitate relocating plots in future surveys. Photographs will be taken as support documents for future plot location.

Measurements of forest and tree characteristics will be done in all land use classes (forest and non-forest lands). Observations of vegetation structure, health and spatial arrangements, and human activities will be recorded. The variables will be defined for this purpose in a workshop during the first phase of the project. Interviews of key informants from the local population, NGOs, and entrepreneurs, etc. will be conducted in every sample site to identify major users of the resources (men, women, children and other groups), the products and services provided by forests and trees, the way these are managed and used.

On-the-job training will be continued throughout the project implementation on planning, mapping, survey, database construction, data processing/analysis and information management. The field crews will be trained adequately and supervised to carry out the data collection and be prepared for future surveys and to maintain the established network of permanent sample plots.

For the purpose of estimating the project cost, the following assumptions are made:

- the country is divided in 18 administrative units (provinces). For this project, it proposed to create one field crew (fc) per province. This makes the total of 18 field crews. Each crew will be composed of one team leader (senior technician), one assistant (technician) and two workers recruited locally;
- each field crew surveys one cluster per week;
- the working period in the field is about 10 months;

- the total men/months of senior technician (team leader): 10 months x 18 fc = 180 m/m;
- The total men/months of technician (assistant): 10 months x 18 fc = 180 m/m
- The total men/months of local workers: 10 months x 18 fc x 2 persons= 360 m/m

The project will produce a forest type/land use map based on that harmonized classification. The work will be carried out in the field for reconnaissance and to design an interpretation key; in the office to interpret the satellite images in computer screen and in the field and by air to check and validate the preliminary interpretation results. The final map will be produced after having corrected all inconsistencies found during the field verification.

### Phase III: Data processing and reporting

The third phase includes the development of the database with maps and field data, training of the national staff in charge of the system, data processing and analysis, reporting of project findings. A national workshop will be organized to review the project findings and recommend on the follow-up actions.

The project will produce considerable amount of data at national level. A functional database will be set up to store, process and manage the collected data.