

TRUST FUND AGREEMENT
BETWEEN
THE GOVERNMENT OF TANZANIA
AND THE
FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

Title: NATIONAL FORESTRY RESOURCES MONITORING AND ASSESSMENT

Project Symbol: GCP/GLO/194/MUL (TFAA110408010)

Country: Republic of Tanzania

Duration: 44 months

Government Agency: Ministry of Natural Resources and Tourism

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November 2010)

Government Contribution: US\$ 794,200
(Ministry of Natural Resources and
Tourism)

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Executive Summary

In Tanzania, the state and trends of the forestry resources are largely unknown. The existing information is fragmentary and outdated. It is mainly constrained by the lack of institutional capacity. Under the National Forest Programme of Tanzania, the national forestry resources monitoring and assessment (NAFORMA) was identified as a priority activity for the Forest and Beekeeping Division (FBD) of the Ministry of Natural Resources and Tourism (MNRT). The results of NAFORMA are needed to support the national policy processes. Yet, the demand of the stakeholders in Tanzania for data and information on the state of the forestry resources is continuously expanding.

This project is planned to develop complete and sound baseline information on the forest and tree resources, assist the FBD to set up a specialised structure and put in place a long term monitoring system of the forestry ecosystems. It will also introduce policy relevant and holistic and integrated approach to forestry resources assessment that addresses all domestic needs of information as well as the international reporting requirements, thereby being 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 needs up to date and reliable data on the social, economic and environmental benefits of forests and trees outside forests.
- Basic countrywide information on the current state of forests and other ecosystems is inadequate, fragmentary and outdated. The existing data on the forestry resources at national level is mostly speculative. It is based on reconnaissance type inventories and unrealistic assumptions about forest production and other impacts exerted by human activities.
- Reliable estimates of the forest and ecosystem resources, consumption rate and real economic potential are still lacking. Generally, the awareness on their values is low. The extent of forest ecosystems and their rate of change over time are largely unknown.
- In spite of the many achievements in institutional and policy reforms in the forest sector, FBD shows insufficient capacity to respond to the growing need of information in the country.
- Tanzania is implementing the National Forest Programme (NFP, 2001-10) and the new NFP will soon be planned. National forest assessment and monitoring is an efficient tool to contribute to and guide the planning and implementation of the forestry and natural resources related programmes and projects.
- The project is linked to national Poverty Reduction Strategy and the 7th goal of the Millennium Development Goals.
- The project will help the process of decentralisation of the forestry administration, forest management planning, harvesting planning and building FBD capability to carryout monitoring of forestry resources
- It will set up a specialised structure in FBD for data collection, updating of information, training of inventory personnel, developing norms and methods of inventories and assessments, helping define government policy in the area of knowledge generation, management and dissemination, etc

- It will create a new baseline information complete in scope and harmonised with existing information with the international reporting requirements.
- The project is therefore consistent with the objectives and priority areas of the Government policy and strategies that support social programmes,

Justification revising the Project Document in 2010

After the original formulation of the project in 2007, the 13th Conference of Parties (COP) of the United Nations Framework Convention on Climate Change (UNFCCC) in Bali in 2007 brought sustainable forestry development to the centre of the international development agenda. There are high expectations for **Reducing Emissions from Deforestation and forest Degradation** in developing countries (REDD+) in ongoing UNFCCC negotiations. The REDD+ mechanism is highlighting the need for more accurate information on forest resources and thereby the carbon stock. The Bali meeting also called for member countries and the international community to demonstrate on REDD+ alternative methodologies.

At the early stages of NAFORMA (June-July 2009) a series of stakeholder consultations and workshops were held to clarify the information needs. These consultations produced two major outputs;

1. That output data and maps of NAFORMA should be of a resolution that would produce sufficiently detailed information at sub-national level, possibly even on District Level.
2. That the data of NAFORMA should be REDD+ compliant and form the basis of Forest Carbon Monitoring in Tanzania.

During 2009 Finland decided to provide funds to FAO Forestry Department to develop methodologies for National Forest Monitoring and Assessment (NFMA), National Forest Programmes (NFP) as well as tools for NFMA, NFPs and Sustainable Forest Management (SFM). The FAO Finland Forestry Programme supports the capacity building and tools / methods development both at the FAO HQ and in five selected pilot countries. In 2010 Tanzania was included as one of the programme's pilot countries. Mobilisation of the country projects is a lengthy process and due to its early inception, NAFORMA has become the global focal point for developing NFMA and REDD+ Monitoring Reporting and Verification (MRV) methodologies.

In this changed environment and with the clear recommendation from the national stakeholders, it was decided that the methodology of NAFORMA should be revised to provide sufficiently detailed data to meet the needs. A 7th immediate objective was added to the Project: "to Develop Tools and methods for integration of REDD+ MRV to NFMA methodology". The Finnish Forest Research Institute (Metla) was contracted by FAO to assist in designing the inventory and proposing alternative designs with budgets (Appendix 6).

The Euro has gained strength towards the USD compared to when the original project budget was compiled in 2008 and this has affected adversely the financing of NAFORMA,. Accordingly, the original budget of 2 million Euro (which in 2008 equalled 3 million USD) is reduced to 2.75 million USD when using the rates at the time of the actual instalments. This conversion loss of ca. 250,000 USD is beyond the control of NAFORMA and has negative impact on the level of project activities.

Project Development Objective:

In line with the overall policy of the GoT, the main goal of the project is to assist FBD in developing sustainable forest management in Tanzania. The development objective of this project is to:

- (i) contribute to the sustainable natural resources management and utilisation and REDD+ readiness through improved, efficient and cost effective forestry related activities;
- (ii) facilitate the sustainable development of the country;
- (iii) improve the productivity of the rural livelihood and;
- (iv) mainstream the benefits of better forest resources management in national economies and policies for better involvement of women, alleviation of poverty and meeting the Millenium Development Goals (MDGs).

Immediate Objectives:

The project has the following objectives:

1	Establish broad consensus at the national level on the process and approach to NAFORMA in Tanzania, taking into account national users’ information requirements for planning and sustainable management of the forestry resources and country’s obligations of reporting to the international processes including GHG reporting and expected REDD+ MRV.
2	Strengthen the capability of FBD to collect, analyse, update and manage the needed information on forests and TOF for planning and sustainable management of the forestry resources and REDD+ MRV.
3	Develop a national database and information system on Forests and TOF.
4	Prepare national maps of forests and land uses based on harmonised classification and forest related definitions.
5	Undertake a national assessment of the forest and TOF resources with the aim to create an information base according to national and international requirements and to set up a long term monitoring system of the resources.
6	Define long term monitoring programme of the forestry resources, design specific and management oriented inventory in priority areas and formulate projects.
7	Develop Tools and methods for integration of REDD+ MRV to NFMA methodology

Outputs:

By the end of the project, it is expected to achieve the following:

- Approach and methodology for National Forest Inventory in Tanzania designed and capacity of FBD built and consolidated

- Forest/land use classification system harmonized and maps of state and changes of produced based on remote sensing data.
- New baseline information encompassing wide range of biophysical and socioeconomic data related to the woody resources of Tanzania (Forests and Trees Outside Forests (TOF)) generated and disseminated to both local and international users.
- Specific and management oriented inventory in priority areas designed and implemented, and projects formulated.
- REDD+ monitoring tools developed, tested and integrated to the implementation NAFORMA

Budget and sources of funding

Government of Finland (UTF) original funding:	US\$ 3,017,157
Government of Finland (UTF) additional funding:	US\$ 2,896,400
Government of Tanzania (in-kind):	US\$ 794,200
Total budget of the project:	US\$ 6,707,999

Project duration: 44 Months

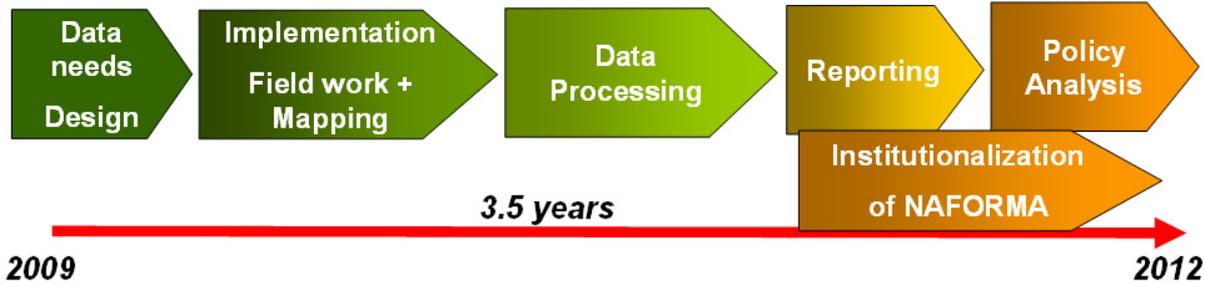


Figure 1: Overall schedule and phases of NAFORMA:

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Acronyms

a.s.l.	Above Sea Level
CC	Carbon Credits
CCA:	Common Country Assessment
CIDA:	Canadian International Development Agency
CFI:	Continuous Forest Inventory
COFO:	Committee on Forestry of FAO
COP	Conference of the Parties
CTA:	Chief Technical Advisor
DBH:	Diameter at Breast Height
FAO:	Food and Agriculture Organization of the United Nations
FCPF:	Forest Carbon Partnership Facility
FIP:	Forest Investment Programme
FBD:	Forest and Beekeeping Division
GDP:	Gross Domestic Product
GoT:	Government of Tanzania
LULC:	Land Use / Land Cover
MAR:	Monitoring, Assessment and Reporting
Metla	Finnish Forest Research Institute
MDGs:	Millennium Development Goals
MNRT:	Ministry of Natural Resources and Tourism
MRV	Monitoring, Reporting and Verification
MSU:	Management Support Unit of FAO
NAFOBEDA:	National Forest and Beekeeping Database
NAFORMA:	National Forestry Resources Monitoring and Assessment
NBKP:	National Beekeeping Programme
NC:	National Consultant
NFA:	National Forest Assessment
NFAU:	National Forest Assessment Unit
NFMA	National Forest Monitoring and Assessment
NFP:	National Forest Programme
NMTPF:	National Medium Term Priority Framework
NPC:	National Project Coordinator
NWFPS:	Non Wood Forest Products and Services
PPER:	Project Performance Evaluation Report
PRSP:	Poverty Reduction Strategy Papers
PTU:	Project Technical Unit
RAF:	Regional Office for Africa
REDD+	R educing E missions from D eforestation and forest D egradation
SC:	Steering Committee

SFR: Sub-Regional Office for Southern Africa
SFM: sustainable forest management
SIDA: Swedish International Development Cooperation Agency
SWAp: Sector Wide Approach
TOF: Trees Outside the Forest
TPR : Tri-Partite Reviews
UNFCCC: United Nations Framework Convention on Climate Change
UNPAF: United Nations Partnership Framework
UNDAF: United Nations Development Assistance Framework
UNFF: United Nations Forum on Forests
UTF: Unilateral Trust Fund
WAE: When Actually Employed

1. BACKGROUND

1.1 General Context

1.1.1 Geographical description

a) Location and Administrative Framework

Tanzania is located in East Africa between longitude, 29° and 41° east and latitude 1° and 12° south. It has total area of about 945,087 km². It is bordered by Kenya and Uganda to the North, Rwanda, Burundi, and the Democratic Republic of Congo to the West, Zambia, Malawi and Mozambique to the South and Indian Ocean to the East. A large central plateau makes up most of the mainland (ranging from 900 m to 1,800 m) and the mountain ranges of the Eastern Arc and the Southern and Northern Highlands cut across the country to form part of the Great Rift Valley 881,289 km² (99.72%), while the islands account for the rest (2,460 km², 0.28%). The country is endowed with a wide range of natural resources offering considerable social and economic potential, including extensive areas of arable land, a coastal and marine zone, wildlife reserves and parks, forests, rivers, and lakes.

Administratively, the mainland is divided into 21 regions, each of which has a high degree of autonomy in the administration of its development programmes. Each region is divided into districts, and these are also subdivided into divisions, wards and villages. At present, there are over 130 districts. Generally, the road and railway network in Tanzania is poor, and most areas are poorly accessible.

b) Physiography

Tanzania has both the highest and lowest elevations in Africa - the summit of Mt. Kilimanjaro (5,950 metres above sea level (a.s.l)) and the floor of Lake Tanganyika (358 m below sea level). Except for the coastal belt, most of the country is part of the Central African plateau (1,000 – 1,500 metres a.s.l) characterised by gently sloping plains and plateaux broken by scattered hills and low-lying wetlands.

c) Climate

The country has a great diversity of climatic conditions, with mean annual temperatures ranging from 24°-34°C, while mean annual rainfall varies from below 500 mm to over 2500 mm per annum, depending on altitude and latitude. The rainy season lasts from March to June. The central plateau is dry and arid. The northwestern highlands are cool and temperate and the rainy season there lasts from November to December and February to May.

d) Soils

The coastal zone is covered mainly with deep, sandy to heavy textured soils with moderate to high available water content. Most of the central and western plateau areas are mantled by sandy loams of low nutrient content and low water holding capacity. Drought-prone soils cover a great part of the northern portion of the country, including the Masai steppe and the south eastern plateau. Eroded land and deeply weathered soils, susceptible to erosion, occur on hill or mountain slopes and in the central highlands.

Well drained, volcanic soils of high ash content are found in the northern rift zone and the volcanic areas in the northern and southern highlands. Generally, these are heavy textured, moderate to well drained, with moderate to high moisture storing properties. The soils of the western highlands are developed on basaltic or argillaceous rocks, and are well drained with good moisture holding properties. Those soils developed over sandstone are sandy to loamy and have low fertility.

e) Hydrology

Tanzania can be divided into nine hydrological basins: areas draining into the Indian Ocean - mainly the Rufiji River and its tributaries (draining one fifth of the land of the country), the Pangani and Ruvu Rivers; The Malagarasi basin draining into Lake Tanganyika, the Lake Victoria basin draining via the Nile into the Mediterranean Sea; and two inland drainage systems - one draining into Lakes Eyasi, Manyara and Natron in the North and Lake Rukwa in the South-West.

1.1.2 The Socio-Economic Environment

a) Population

Recent population is estimated at 41 million people, with a population growth rate of 2.0%. Tanzania population density averages about 44 persons per km². However, some areas are more densely populated with over 200 persons per km², e.g. Ukerewe Island, Kilimanjaro, Mwanza and Dar es Salaam. Other areas are more sparsely populated (e.g. Lindi, Rukwa, Ruvuma and Tabora regions). Some of these regions are areas with low and unreliable rainfall and, mainly, infertile soils.

b) Economy

The Tanzanian economy is dependent mainly on agriculture, most of which is at subsistence level. Approximately 90% of the population is engaged, directly or indirectly, in agricultural activities, which provide about 50% of Gross Domestic Product (GDP) and more than 75% of foreign exchange earnings. Recent increases in mineral exports (including gold) have reduced these percentages somewhat. Since the mid 1970s, the economy has declined for many reasons, including the sharp rise in oil prices, low export commodity prices and the break-up of East African Community. Performance over the last five years has been encouraging, as result of measures taken under the government's Economic Recovery Programme following successive years of favourable weather.

Tanzania has been characterised by political stability and possesses abundant natural resources capable of supporting a buoyant economy: extensive fertile agricultural land and pasture land supporting livestock production, world-renowned wildlife reserves, vast woodlands and unique forest ecosystems.

1.1.3 Agro-Ecological Zones and Land Resources

a) Crop Production

Agriculture in Tanzania is dominated by smallholder farmers cultivating an average farm sizes of between 0.9 hectares (ha) and 3.0 ha each. About 70% of Tanzania's crop area is cultivated by hand hoe, 20% by ox plough and 10% by tractor. It is rainfed agriculture. Food crop production dominates the agriculture economy. 5.1 million ha. are cultivated annually, of which 85% is under food crops. Women constitute the main part of agricultural labour force. The major

constraint facing the agriculture sector is the falling labour and land productivity due to application of poor technology, dependence on unreliable and irregular weather conditions.

The macro economic reforms have and continue to have had significant impact on the Agriculture sector. The economic reforms have led to opening up of the sector to private investment in production and processing, input importation and distribution and agricultural marketing. Most of production and processing and marketing functions have been assigned to the private sector. The Government has retained regulatory and public Support functions or facilitation role.

b) Grazing and Livestock Keeping

Livestock production is one of the major agricultural activities in Tanzania. The sub sector contributes to national food supply, converts rangelands resources into products suitable for human consumption and is a source of cash incomes and inflation – free store of value. It provides about 30% of the Agricultural GDP. Out of the sub sector's contribution to GDP, about 40% originates from beef production, 30% from Milk production and another 30% from poultry and small stock production.

Commercial ranching accounts for about 2% of the total cattle herd. Private Commercial ranching exists in different regions of the country with small stock numbers. Pastoralism is concentrated in the northern plains and is practised in traditional grazing areas where climatic and soil conditions do not favour crop production. The main roles of livestock in this system are subsistence, store of wealth and source of cash incomes.

Agro-pastorals, comprising a range of combination of crop cultivation with livestock keeping is thriving. The government is adopting a strategy for range development by formal recognition of associations and organizations of livestock keepers through active collaboration between the government and the pastoral organizations.

The livestock numbers have been increasing steadily in recent decades at roughly the same rate as the human population growth. Out of 3.7 million households in the country, 3% are pastoralists and 7% are agro-pastoralists. Cattle are dominant species, they account for about 75% of total livestock production. There are sheep, goats and poultry. Approximately 99% of livestock sub-sector belongs to traditional small owners. The big ranches and dairy farms constitute the remaining 1%. Carrying capacity of the rangeland is estimated at 20 millions animal units but currently there are only 16 million animal units.

c) Wildlife

Tanzania has 19% of her surface area devoted to wildlife in protected areas where no human settlement is allowed and 9% where wildlife co-exists with humans. The networks of protected areas which are devoted to wildlife conservation are the major country's utilization industry. The wildlife of Tanzania is a unique natural heritage and resource that is of great importance both nationally and globally.

Furthermore, the sector employs about 2,282 people who are permanent and about 2046 are employed on temporary basis. The communities living adjacent to protected areas do benefit through hunting animals for game meat and get support of services from the private companies operating nearby and the government institutions related to wildlife sector.

On the other land, the sector is constrained by illegal hunting (poaching) especially of the endangered species like elephants, competition with other land users, lack of public awareness of

wildlife importance, lack of baseline data and information, inadequate rural user rights to the community and limited capacity in terms of budgetary allocation and human resources.

Tanzania has a rich and diverse spectrum of fauna and flora including a wide variety of endemic species and sub-species. The biological diversity and degree of endemism consist of primates, (20 species and 4 endemic), antelopes (34 species and 2 endemic), fish (with many endemic in Lake Victoria, Tanganyika and Nyasa and other small lakes and rivers), reptiles (290 species and 75 endemic), and amphibians (40 endemic) invertebrates and plants around 11,000 species including many endemic).

d) Forests and Woodlands

Tanzania has about 33.5 million ha of forests and woodlands. Out of this total area, almost two thirds consists of woodlands on public lands, which lack proper management. About 13 million ha of this total forest area have been gazetted as forest reserves. Over 80,000 ha of the gazetted area is under plantation forestry and about 1.6 million ha are under water catchment management. The forests offer habitat for wildlife, beekeeping unique natural ecosystems and genetic resources. Also bio-energy is the main sources of fuel for rural population and accounts for 92% of the total energy consumption in the country. However, it is estimated that the sector's contribution to the Gross Domestic Product is between 2.3% and 10% of the country's registered exports. This contribution is underestimated because of unrecorded consumption of woodfuels, bee products, catchment and environmental values and other forest products.

The value of the Tanzanian forests is high due to the high potential for royalty collection which increases revenues to the country, exports and tourism earnings as well as the recycling and fixing of carbon dioxide and conservation of globally important biodiversity. The sector also provides 730,000 person's years of employment who are engaged in various forest related activities. The real contribution is under-estimated due to unrecorded labour in the collection of woodfuels and other forest related products consumed by households. The wood industry accounts for about half of the sector recorded contribution to GDP. The other half is contributed by non-wood products and services (NWFPS).

Despite all the importance and roles played by the forest resources to the economy, there are a number of problems faced which hamper the development of the sector and thus the under estimation of contribution to the economy. The various problems include among others deforestation, inadequate forestry extension services, inefficiency wood based industries and poor infrastructural facilities. Others are outdated legislation, fragmented administration at all levels between the centre and the local levels, lack of participation of various stakeholders in the management of the resources and poor resource databases, outdated and non existence of management plans for efficient resource use.

According to the existing national accounting system in Tanzania, the performance of the sector is measured in the monetized goods and services from it. This is to say only the production and sale of forest products within and outside the country are considered in this matter.

Other services derived from the sector include pasture for livestock, raw materials for industries protection of watersheds, source of water for irrigation, generation of electricity, environmental protection, control of soil erosion and nutrients. All these continue to be offered by the forest resources.

Performance of the sector is characterized with low capacity utilization despite the country's great forest potential. There are also huge potential for non-wood products such as tourism, game, bee products but are still unknown and undeveloped. The utilization and management of

these resources require multi-purpose forest management, local processing and improved marketing.

According to the official statistics total of 26,200 m³ were harvested from the natural forests and 127,100 m³ from the plantations in 1999. There was a remarkable decrease in harvesting compared to 1998 in which 60,850 m³ from the natural forests and 450,400 m³ from plantations were harvested. The demand for wood products is higher than supply for both domestic and export markets. Export trade is in fine hardwood timbers which are popular for domestic market and are only exported for foreign exchange earnings rather than as a surplus.

Afforestation activities are being carried out throughout the country to conserve the environment; this exercise is done on participatory approach in which the private sector, the communities, non governmental organizations and the public at large are involved. For example, during the year 1999 period, a national campaign on tree planting was initiated and about 100 million trees were planted. Harvesting of forest products is carried out in both the natural forests and the plantations. The main actors being the private companies, pit sawyers and the small scale companies.

e) Fishing and Water Resources

Tanzania is a coastal state endowed with fishery resources. She has both marine and inland fisheries potential. The marine water covers 64,000 km² which includes the Indian Ocean and the Exclusive Economic Zone which covers 223,000 km². The fresh water includes the riparian shared waters of East African great lakes namely Lake Victoria, Tanganyika and Nyasa. The country has also other small natural lakes, man made lakes, river systems and many wetlands with fish potential. All these waters cover 58,000 km². The country has coastline of about 800 km declared as its Exclusion Economic Zone but has not yet been exploited. The present annual fish catch is about 350,000 metric tons.

f) Minerals Resources

In 2005, the mining sector grew by 15.7% compared to 15.4% in 2004. The contribution of mining sector to the GDP increased to 3.5% compared to 3.2% in 2004. The value of mineral export in 2005 was US\$ 711.3 million compared to US\$ 680.2 million in 2004, equivalent to an increase of 4.6%. It is one of the leading components in generating foreign exchange earnings within the non-traditional exports. Further it has great potentials for employment opportunities.

Tanzania has a great potential particularly for gold, base metals, diamonds, ferrous minerals and a wide variety of gemstones, some of, which are unique such as tanzanite. Coal, uranium, and various industrial minerals such as soda, kaolin, tin, gypsum, phosphate and dimension stones are available at an attractive economic rate.

g) Energy Resources

Petroleum, hydropower and coal are the major source of commercial energy in the country. The biomass energy resource, which comprises fuel-wood and charcoal from both natural forest and plantations, accounts for 93% of total energy consumption.

Petroleum is imported. Presently only 70% of the demand for petroleum is met.

Electricity subsector contributes about 0.6% of total energy consumption. Electricity is mainly generated from hydropower - which is prone to draught effects- so some thermal power stations

have been installed. There are plans to connect with neighbouring countries of Zambia and Uganda to the national grid to boost the supply of electricity.

Only three quarters of the country (mainly urban areas) is connected to the national grid. It is intended that the rest of the country, including an estimated 8,200 villages should be supplied with electricity to curb deforestation. In addition there are plans to supply power to Kenya and Malawi from Tanzania.

Tanzania has per capita electricity consumption of 46/KWh per annum, which is growing at the rate of 11 - 13%. Hence the government is encouraging investment to expand generating capacity, distribution system and developing indigenous sources of energy.

There are other indigenous alternative sources of energy which include coal. Tanzania has 1,200 million metric tons, which could provide energy for paper mills, cement factories, agriculture and household consumption, and generation of power.

Wind and solar energy is another source of energy. Very little attempt has been made to utilize this source of energy which could be a viable alternative source to reduce use of wood and oil for heating purposes.

h) Tourism Development

Tanzania's tourism sector is among the sectors with great economic growth potential. It provides a substantial amount of foreign exchange earnings, employment for 30,000 people and stimulates other sectors like agriculture thereby contributing to the economic growth. Its contribution to the GDP is about 14%, but this is minimal compared to country's potential in the sector.

The country is endowed with numerous tourist attractions. Tanzania's competitive strengths in tourism lie in the abundant and diverse wildlife, the spectacular landscape and scenery, an unspoilt environment, friendly people and other economic sectors that have potential to support the tourist sector such as mining sector. The many natural attractions and the vast size of the country provide opportunities for developing and promoting different tourism activities ranging from game viewing, safari and beach holiday activities, mountain climbing, sight seeing, game hunting and photographic safaris.

Tanzania is one of the unique destinations in Africa that has yet to be discovered by many. It is a land of many wonders hobbling a un-paralled diversity of fauna and flora. Kilimanjaro, the highest permanently snow-capped free standing mountain in Africa, the exotic islands of Zanzibar, the finest game sanctuaries of ruins Serengeti, Tarangire, Lake Manyara, Ngorongoro Crater, Ruaha Selous impressive ruins of 14th – 16th Century at Kilwa Kisiwani, Songomnara, Olduvai George and Laitoti footprints and the Marine park of Mafia island are only but a few of the living examples of tourist attractions.

1.1.4 Land Tenure and Land Use Planning

Since Tanzania attained its political independence in 1961, it has been realized that there was a need to develop a coherent and comprehensive land policy. This would define the land tenure and enable proper management and allocation of land in the urban and rural areas and provide a clear position on customary land tenure in the light of profound economic and social reforms. Thus, a new land policy was needed to:

- (i) Accommodate changes in land use and increase in human population;
- (ii) Control large stock population which increases demand for grazing land and creates serious land degradation;
- (iii) Protect the environment from extension of cultivation to marginal areas;

- (iv) Reduce conflicts in land use between agriculturalists, livestock keepers, forest areas, wildlife areas, water sources and miners;
- (v) Provide for increased urbanization requiring lands for settlements, industries and commerce and preserve valuable agriculture land;
- (vi) Facilitate prospective investors who require land as a result of liberalization of the economy and investment promotion;
- (vii) Protect individual land rights under a pluralistic political system since 1992
- (viii) Accommodate Appeal Court decision affirming customary land tenure rights of the local people.

The fundamental principles of the national land policy have been incorporated in the Land Laws - Land Act No.4 and Village Land Act No.5 passed by Parliament in 1999 and become operational since May, 2001.

The well-established fundamental principles of the Land Laws are:

- (i) recognize that all land in Tanzania is public land vested in the President as trustee on behalf of all citizens;
- (ii) ensure existing rights in land and recognizes long standing occupation or use of land are clarified and secured by the law;
- (iii) facilitate an equitable distribution of and access to land by all citizens;
- (iv) ensure that land is used productively and that any such use complies with the principles of sustainable development;
- (v) pay full, fair and prompt compensation to any person whose right of occupancy or long standing occupation or customary use of land is revoked or interfered with to their detriment by the State or is acquired;
- (vi) provide for an efficient, effective, economical or transparent system of land adjudication;
- (vii) facilitate and regulate the operation of a market in land so as to ensure that rural and urban small holders and pastoralists are not disadvantaged;
- (viii) encourage the dissemination of information about land administration of information about land administration and land law through programmes of public education.

The Land Policy and Laws represent a turning point in the development of Tanzania. Their implementation give substantive push to Government economic and social development objectives under the liberalized free market economy and poverty eradication strategy and the realization of the National Development Vision 2025. They regard land ownership, control and management in three main forms of tenure such as right of occupancy, customary or traditional land tenure and communal land tenure.

1.2 Sectoral Context

1.2.1 Development priorities and Millennium Development Goals

About 38% of the Tanzania's 886,000 km² total land area is covered by forests and woodlands that provide for wildlife habitat, unique natural ecosystems and biological diversity and water catchments amounting to 1.6 million ha. These forests are however faced with deforestation at a rate of between 130,000 and 500,000 ha per annum, which results from heavy pressure from agricultural expansion, livestock grazing, wild fires, over-exploitation and unsustainable utilization of wood resources and other human activities mainly in the general lands.

In the context of proper forest management the National Forest Programme (NFP) was designed as an instrument meant to implement the National Forest Policy, which was approved by the Government in 1998. The policy takes cognisance of macro-economic and other sectoral policies ranging from environmental conservation to sustainable development of the land based natural resources. Major policies that have a bearing on the forest sector include the Environmental Policy, Agriculture Policy, Livestock Policy, Wildlife Policy and Land Policy. The formulation of respective legislation and their operationalization will enhance sustainable forest management mainly in the general lands and cross-sectoral areas.

The NFP was developed in order to address the challenging responsibilities in the near future and to increase the forest sector's contribution to the national economy and more so in poverty reduction.

Forests and trees play multiple roles in the life of majority of Tanzanian rural people, especially women and marginal groups in relation to food security, rural energy supply and household subsistence. Forests are increasingly becoming important in the local and global environmental and biodiversity conservation.

The NFP would significantly enhance not only sustainable forest management (SFM) but also improve the design and implementation of projects and programmes which have so far been fragmented and uncoordinated. Recognizing the ever increasing environmental degradation and loss of forest resources, Tanzania embarked on developing a long-term National Forest Programme to implement the National Forest Policy. The objectives of the NFP development programmes are to:

- (i) Ensure sustainable supply of forest products and services to meet the needs at the local and national levels;
- (ii) Enhance national capacity to manage and develop the forest sector in a collaborative manner;
- (iii) Enable legal and regulatory frameworks for the sector in place and;
- (iv) Increase economic contribution, employment and foreign exchange earnings through sustainable forest-based industry development and trade of forest products.

The NFP (2001-2010) is based on four implementation programmes covering both forest management as well as institutional and human resources development aspects. The NFP development programmes are:

- (i) **Forest Resources Conservation and Management** programme which aims at promoting gender balanced stakeholders participation in the management of natural and plantation forests, giving priority to ecosystems conservation, catchment areas and sustainable utilization of forest resources;
- (ii) **Institutions and Human Resources Development** programme which aims at strengthening institutional set up, coordination of forest management, establishing sustainable forest sector funding and improvement in research, extension services and capacity building through strengthening human resources;
- (iii) **Legal and Regulatory Framework** programme which focuses on the development of regulatory issues including the Forest Act, rules, regulations and guidelines to facilitate operations of the private sector and participatory management, and
- (iv) **Forestry Based Industries and Sustainable Livelihoods** programme which is intended to enhance forest industry development by promoting private sector investment, improving productivity and efficiency and to tap the income generation opportunities provided by NWFPS.

1.2.2 National Medium Term Priority Framework and UNDAF

a) National Medium Term Priority Framework

Tanzania and FAO are jointly formulating a national medium-term priority framework (NMTPF) - a planning and management tool, which outlines how FAO can best assist the country in carrying out NFA.

The Government is both the owner and leader of its development efforts, including programmes funded through external partners, and thus looking to get the best output from FAO's technical assistance.

Aiming largely at helping Tanzania to achieving its MDGs, FAO technical assistance will need to be effectively complementary to other programmes carried out under parallel mechanisms such as the United Nations Partnership Framework (UNPAF), other UN agencies activities, and those of other development partners. Taken together, these external efforts will contribute to the implementation of Tanzania's national plans and/or frameworks for development.

- Poverty Reduction Strategy Papers (PRSP)

Tanzania prepared Poverty Reduction Strategy Papers (PRSP) through a participatory process involving domestic stakeholders as well as external development partners, including the World Bank and International Monetary Fund. PRSP describes the country's macroeconomic, structural and social policies and programs over a three year or longer horizon to promote broad-based growth and reduce poverty, as well as associated external financing needs and major sources of financing.

PRSP will summarize the current knowledge and analysis of a country's poverty situation and describe the existing poverty reduction strategy, and lay out the process for producing a fully developed PRSP in a participatory approach.

b) United Nations Development Assistance Framework (UNDAF)

As part of his 1997 reform agenda to make the United Nations an effective and efficient institution for world peace and development in the 21st century, the UN Secretary-General stressed the strong inter-linkages between peace and security, poverty reduction and sustainable human development and the promotion and respect for human rights. In response to his call for the United Nations to articulate a coherent vision and strategy that allows for a unified approach towards common development goals, the Common Country Assessment (CCA) and the UNDAF guidelines were issued in April 1999.

- Common Country Assessment (CCA)

As defined by the General Assembly, the CCA is the common instrument of the United Nations system to analyse the national development situation and identify key development issues. Both a process and a product, the CCA takes into account national priorities, with a focus on the MDGs and the other commitments, goals and targets of the Millennium Declaration and international conferences, summits and conventions.

- United Nations Development Assistance Framework (UNDAF)

As the common strategic framework for the operational activities of the United Nations system at the country level, the UNDAF provides a collective, coherent and integrated United Nations system response to national priorities and needs within the framework of the MDGs. It provides

the same to the other commitments, goals and targets of the Millennium Declaration and the declarations and programmes of action adopted at international conferences and summits and through major United Nations conventions. The UNDAF emerges from the analytical and collaborative effort of the CCA and is the foundation for United Nations system programmes of cooperation.

1.3 Sectoral Policy and Legislation

In 1998, the Government approved a new Forest Policy. The overall goal of this policy is to enhance the contribution of the forest sector to the sustainable development of Tanzania and the conservation and management of her natural resources for the benefit of present and future generations. This policy focuses in four areas:

- Forest land management
- Forest-based industries and products
- Ecosystem conservation and management
- Institutions and human resources

The objectives of the forest sector on the basis of the overall goal are as follows:

- Ensure sustainable supply of forest products and services by maintaining sufficient forest area under effective management.
- Increase employment and foreign exchange earnings through sustainable forest-based industrial development and trade;
- Ensure ecosystem stability through conservation of forest biodiversity, water catchments and soil fertility; and
- Enhance national capacity to manage and develop the forest sector in collaboration with other stakeholders.

In order to implement this new policy, two instruments have been developed, these are:

- The NFP, approved by the Government in November 2001, aims at promoting conservation and sustainable use of forest resources to meet local, national and global needs.
- The Forest Act 2002 aims at putting the legal framework for the implementation of the Policy. The Parliament, on its sitting in April 2002, approved the New Forest Act.

1.4 Climate change and REDD+ process

After the original formulation of the project in 2007 the 13th Conference of Parties (COP) of the UNFCCC in Bali in 2007 brought sustainable forestry development to the centre of the international development agenda. There are high expectations for reducing emissions from deforestation and forest degradation in developing countries (REDD+) in ongoing UNFCCC COP negotiations. REDD+, and carbon markets in general, are perceived as having significant potential for increasing funding for the forestry sector in developing countries. However, the perspective of a REDD mechanism is also highlighting the need for more accurate information on forest resources and for appropriate methods for achieving SFM in these countries. The Bali meeting called for member countries and the international community to demonstrate on REDD+ alternative methodologies.

Additionally, REDD-related initiatives, such as UN-REDD, the Forest Carbon Partnership Facility (FCPF) or Forest Investment Programme (FIP) by the World Bank, and the voluntary carbon trade market and private financing in REDD will require commonly agreed and reliable monitoring, reporting and verification (MRV) systems. The scope and quality of the required forest resources information remains a major challenge for developing countries that account for a large proportion of the world's most vulnerable forests. National forest monitoring and assessment and remote sensing studies and reports will be increasingly important information sources for policy and decision makers and managers at national, regional and international levels.

In this changed environment with increased REDD+ MRV needs and in accordancy with the recommendations from the June-July 2009 stakeholder consultations, workshops and consultancies for assessing the information needs for the outputs NAFORMA – it was decided to revise NAFORMA's approach during the inception phase of the project in 2009 – 2010. Metla (Finnish Forest Research Institute) was contracted by FAO to assist in designing the inventory and proposing alternative designs with budgets (Appendix 6).

2. RATIONALE

2.1 Problems/Issues to be addressed

Lack of funds for some time left the FBD in almost total disarray, despite the efforts of the government to maintain the forest resources under control. The following problems still facing smooth running of the forest sector:

- (i) The knowledge of the state and changes of the forest and tree resources is not sufficient if not totally lacking as no National Forest Assessment (NFA) has been done since independence. Even logging companies did seem to undertake inventory before timber extraction. There are no records available in this area. It is difficult to give an acceptable appreciation of how much forest exists and what had happened over the last decades.
- (ii) The lack of proper information about what, when and where we went wrong or went well with the forestry resources over the years impedes taking right measures at right time, in the right location in order to reach the best results.
- (iii) Information on deforestation and forest degradation is weakly known in Tanzania.
- (iv) Information on all carbon pools is not available in adequate level in Tanzania
- (v) The socio-economic dimensions of forests, such as management, uses, users and consumption of forest and tree products e.g. Medicine, fruits and other products, are almost totally unknown.
- (vi) Forest governance related information is unknown and methodologies are not available for the monitoring local governance at the community level.
- (vii) Besides the lacking of information, the FBD lacks the capacity to generate, manage, update and use the information. The existing capacity is very low. The FBD needs both internal and external assistance to provide the proper training to a core team of foresters in forest inventory related activities.
- (viii) The FBD is under-resourced by forestry staff. Professionals, Technicians and forest guards are not performing adequately as they are poorly equipped.
- (ix) The system for information management does not exist. The information being used over the last decades is scattered and inconsistent. Various figures used at the same time to describe same situation are not uniform.
- (x) Harvesting without management plans. Timber and other products exploitation is based on annual license system for a given quantity of given species in given area. This is easy system to implement but very harmful to the resources. Exploiting under license system tends to target and apply pressure on few market demanded species. It was seen that, in other countries of similar conditions, exploitation under licence exhausted species and lead to their extinction from some areas. Foresters also confirmed that along the coast some known species have ceased to exist.
- (xi) Excessive consumption of fuelwood and charcoal in urban centres. Collection of firewood without management plans has lead to indiscriminate and total destruction of the forest cover. Even valuable commercial species like *Melicia excelsa*, *Olea* sp, *Pterocarpus angolensis*, *Dalbergia* sp, *Afzelia* sp, *Brachlaena* sp 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 the encroachment in the forest.

- (xii) The type of 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. The commonly used simple tools like axes, pangas due to high cost of chainsaws render trees with small diameter and high calorific value including those producing high quality timber more vulnerable. The damage to the regeneration of the forests is considerable.
- (xiii) Bush fires and nomadic agriculture are real threat to 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 well known how it advances in forests
- (xiv) Refugees and encroachment made by communities surrounding protected areas contributed to the destruction and over exploitation of forest resources.
- (xv) The contribution of the forestry sector in the national economy is very low compared to the 1970s. Timber exploitation dropped drastically. This is due partially to the low fees and royalties rates. The removal of other benefits in terms of non timber forest products is not assessed to estimate the real contribution of the forestry sector. The indirect contributions in terms of services provided are not easy to measure, but considerably quantified i.e. soil and water conservation, water quality, biodiversity conservation, etc. With the stabilization of the political and economic situations, the contribution/share of the forestry sector is expected to improve.

2.2 Stakeholders and Target Beneficiaries

Involvement of stakeholders in the developmental projects assumed to guarantee their sustainability. In course of NFA process various stakeholders are involved in the planning and implementation phases, (like the initial information needs analysis and the stakeholder consultations that lead to the revision of the methodology and sampling design (appendix 6). The key identified stakeholders and targeted beneficiaries include:

- (i) Ministry of Natural Resources and Tourism
- (ii) Vice President's Office -Environment
- (iii) Prime Minister's Office - Regional Administration And Local Government
- (iv) Ministry of Water and Livestock Development
- (v) Ministry of Agriculture, Food Security and Cooperatives
- (vi) Ministry of Planning, Privatization and Empowerment
- (vii) Local and International Community
- (viii) Civil Society Organisations
- (ix) Teaching And Research Institutions
- (x) Non Governmental Organisations
- (xi) Other Government Institutions such as Tanzania Investment Centre, Survey and Mapping Division and
- (xii) Private Sector

2.3 Project Justification

In spite of the many achievements in institutional and policy reform in the forest sector, basic countrywide information on the current state of forests and other ecosystems, including main land cover types and their distribution is inadequate. Reliable estimates of the forest and ecosystem resources, consumption rate and real economic potential are still lacking. Generally, inadequate baseline information on forests and ecosystems (biodiversity) and a low level of awareness on

their values has impaired effective management. The rates by which forest ecosystems change over time and the overall distribution of the lands supporting them is not precisely known.

Existing statistics on the forest sector are based on reconnaissance type inventories only and unrealistic assumptions about forest production and other impacts exerted by human activities (illegal logging, mining, encroachment, etc.)

Timber harvesting is not allowed in all forests managed for protection of water catchment and biodiversity purposes, although illegal cutting is often reported. In production forest reserves (mainly Miombo woodlands) controlled harvesting is allowed. However, in order to bring about sustainable timber harvesting, knowledge of the growing stock is a prerequisite and necessitates carrying out a forest inventory. Forest inventories are expensive endeavours and therefore are not given priority due to limiting funds. As a result, timber harvesting is done haphazardly without any prior knowledge of the total resources and leads to poor management of forest ecosystems.

An up to date survey of the current conditions of the forest resources in Tanzania would greatly help the performance of the on-going decentralisation process of the forestry administration, forest management planning, harvesting planning and building FBD capability to carry out monitoring of forestry resources. Moreover, NFA will greatly benefit public and private forestry sectors by increasing the forest and other ecosystem' resource base information to guide investment and assist in setting up a coherent strategy for improving the overall management and use of natural resources.

National Forestry Resources Monitoring and Assessment (NAFORMA) data will be used to identify research areas that will be basis for improved forest and ecosystems management techniques. Other stakeholders will also benefit from the collected data when assessing investment opportunities. NFA data are needed for making a National Forest Policy review and analysis and to know the policy impacts. Therefore, there is an urgency to undertake the forest and ecosystems inventory.

The project is therefore consistent with the objectives and priority areas of the Government policy and strategies that support social programmes, which aim to poverty reduction, foundation of effective system of social security and sustainable economic growth through sustainable use and management of natural resources. The project aims among other objectives to contribute to sustainable and lasting management of the forest and tree resources which role is to improve soil fertility, forest ecosystem productivity and ultimately contribute to food security. It will also strengthen the capacity for resources assessments and monitoring; improve knowledge and the capabilities through training of professionals, technicians and students.

2.4 Changes impacting the required outputs of NAFORMA since compiling original project document

Since the original Project Document was compiled in 2007 Climate Change and the potential role of forestry in mitigating climate change through carbon sequestration have risen on the development agenda. After the COP14 in Bali, Norway pledged to donate USD 100 million to Tanzania for REDD related initiatives. New and expanded requirements for forestry information including forest carbon monitoring and forest governance is needed to provide data useful to the REDD+ processes and a possible Carbon Credits (CC) mechanism. The potential of Tanzania as a beneficiary of the REDD+ mechanism is not known as the negotiations are still open. However, it is important that the NAFORMA investment will meet the foreseen expanded MRV needs of the future.

The REDD+ mechanism is highlighting the need for more accurate information on forest resources and for appropriate methods for achieving Sustainable Forest Management (SFM) in these countries. The Bali meeting also called for member countries and the international community to demonstrate on REDD+ alternative methodologies.

At the early stages of NAFORMA (June-July 2009) a series of stakeholder consultations and workshops were held to clarify the information needs. These consultations produced two major outputs;

1. That output data and maps of NAFORMA should be of a resolution that produced useful information at District Level.
2. That the data of NAFORMA should be REDD+ compliant and form the basis of a Forest Carbon Monitoring in Tanzania

During 2009 Finland decided to provide funds to FAO Forestry Department for developing methodologies and tools for National Forest Monitoring and Assessment (NFMA), National Forest Programmes (NFPs) and Sustainable Forest Management (SFM). The support finances FAO Finland Forestry Programme in building capacity and developing tools and methods both at FAO HQ and in five selected pilot countries. Later in 2010 Tanzania was included as one of the pilot countries in the programme. Mobilisation of the projects is a lengthy process and NAFORMA has become the focal point globally for developing methodologies in NFMA and REDD+ MRV due to NAFORMA evolving a little ahead in time of the other pilot countries.

In this changed environment and with increased Monitoring Reporting and Verification (MRV) needs for REDD+ indicated by the national stakeholders, it was decided to revise NAFORMA's approach during the inception phase of the project in 2009 – 2010; hence adding a 7th immediate objective to the Project - to Develop Tools and Methods for Integration of REDD+ MRV to NFMA methodology. Metla was contracted by FAO to assist in designing the inventory and proposing alternative designs with budgets (Appendix 2).

Regarding staff: FAO Finland Forestry Programme has evolved into a very strong technical backstopping unit providing state of the art and quick support to issues relating to the development of NAFORMA Inventory, Database and Mapping. Much of the support is provided remotely through the internet with technologies that did not have wide application when the original project document was compiled. Furthermore NAFOMRA has received additional technical support in June 2010 in the form of a Associate Professional Officer with forest inventory background for a 2 year period. Therefore it has not been needed to recruit an international expert for 12 months to support the mapping as prescribed in original Project Document.

On the financing side, the Euro has declined towards the USD compared to when the original project budget was compiled in 2008. This means that the original budget of 2 million Euro (which in 2008 equalled USD 3 million) is reduced to USD 2.75 million when using the rates at the time of the actual installments. This conversion loss of app. 250,000 USD is beyond the control of NAFORMA and has negative impact on the level of project activities.

2.5 Past and Related Work

The FBD conducted different management and reconnaissance forest inventories and land use management classifications. During 1971 -1973 government under the financial support from Canadian International Development Agency (CIDA) conducted a reconnaissance indigenous forest Inventory for five blocks i.e. Kilimanjaro, Tanga, Kilombero, Tabora and Mtwara. During 1975/1977 an industrial inventory was done by Jaako Poyry in five blocks previously inventoried in Kilimanjaro, Tanga, Kilombero, Tabora and Mtwara. In 1996, Hunting Technical Services was contracted to carryout a National Reconnaissance Level Land Use and Natural Resources Mapping under the component of Forest Resource Management Project. Swedish International Development Cooperation Agency (SIDA) supported a Reconnaissance Forest Inventory in three regions of Singida, Arusha and Dodoma. In 1999, FBD conducted a study on the status of Non Timber Forest Products in Tanzania. During 2005 FBD conducted a reconnaissance forest inventory in 11 districts covering Liwale, Mkuranga, Tunduru, Nachingwea, Rufiji, Kilwa, Kisarawe in Southern part of the country and Kilombero/Ifakara and Mvomero the in Eastern; Handeni/Kilindi in the Northern and Mpanda in the Western.

2.6 FAO's Comparative Advantage

FAO has responded positively to the letter from the Government of Tanzania requesting technical assistance to plan and implement national forestry resources assessment. FAO has sufficient knowledge, 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. Furthermore, 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, 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 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 forest resources and carbon stocks at country and global levels including those needed for REDD+ mechanism, FAO's Finnish funded forestry programme within the Forestry Department, provides support to 6 pilot countries to build national 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 national forest assessments (including both biophysical, socioeconomic and local governance data) and on developing new methodologies using cutting edge technology especially in remote sensing and data analysis.

FAO partners with UNEP and UNDP in the joint UN-REDD Programme which is executed alongside NAFORMA and therefore is able to ensure synergies between the activities.

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

3. PROJECT FRAMEWORK

3.1. Impact

In line with the overall policy of the Government of Tanzania, the impacts of this project are to:

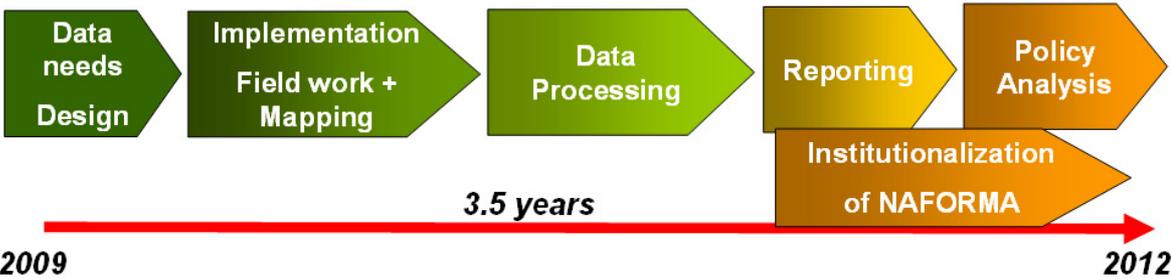
- (i) contribute to the sustainable natural resources management and utilisation through improved, efficient and cost effective forestry-related activities;
- (ii) facilitate the sustainable development of the country;
- (iii) facilitate improved REDD+ readiness;
- (iv) improve the productivity of the rural livelihood and;
- (v) mainstream the benefits of better forest resources management in national economies and policies for better involvement of women, alleviation of poverty and meeting the MDGs.

3.2. Outcomes

More qualified capacity of FBD to manage forestry resources with a landscape and livelihoods focus and policy dialogue at national level, particularly when addressing the broader development agenda, is better informed about forestry resources, their management and uses. Mainstreaming of forestry facilitated.

3.3. Specific Objectives

1	Establish broad consensus at the national level on the process and approach to NAFORMA in Tanzania, taking into account national users’ information requirements for planning and sustainable management of the forestry resources and country’s obligations of reporting to the international processes including GHG reporting and expected REDD+ MRV.
2	Strengthen the capability of FBD to collect, analyse, update and manage the needed information on forests and TOF for planning and sustainable management of the forestry resources and REDD+ MRV.
3	Develop a national database and information system on Forests and TOF.
4	Prepare national maps of forests and land uses based on harmonised classification and forest related definitions.
5	Undertake a national assessment of the forest and TOF resources with the aim to create an information base according to national and international requirements and to set up a long term monitoring system of the resources.
6	Define long term monitoring programme of the forestry resources, design specific and management oriented inventory in priority areas and formulate projects.
7	Develop Tools and methods for integration of REDD+ MRV to NFMA methodology. (This Objective has arisen since the original project document was compiled in 2007.



Picture 2: Overall schedule and phases of NAFORMA:

3.4. Outputs and Activities

Objectives	Outputs	Activities
Obj. 1.	1. Approach to national forestry resources monitoring and assessment (NAFORMA) introduced and adapted on consensual basis to meet specific needs of Tanzania for integration with national forest policy, planning development processes and the expected REDD+.	<p>1.1. National seminar to inform stakeholders and development partners about the national forestry resources monitoring and assessment.</p> <p>1.2. Review and adaptation of approach to national forestry resources monitoring and assessment on consensual basis to meet specific needs of Tanzania for integration with national forest policy and planning development processes.</p> <p>1.3. Workshop on NAFORMA methodology.</p>
Obj. 1.	2. Information needs on forests, trees and forestry ecosystems defined with focus on management, uses and users of forestry resources and on their economic, environmental, social and cultural functions and REDD+ MRV.	<p>2.1. Survey of users (key line ministries, research institutions and other relevant stakeholders) on information needs about forests and trees for planning and sustainable management of the forestry resources, taking into account the country's obligation to report to the international processes, conventions and forums.</p> <p>2.2. Review of the national policy requirements to be addressed by NAFORMA.</p> <p>2.3. National workshop for the definition of information needs on forests, trees and forestry ecosystems with focus on management, uses and users of forestry resources and on their economic, environmental, social and cultural functions.</p>
Obj. 2.	3. National experiences and skills in forestry resources monitoring, assessment and information management assessed. Capacity building needs identified and training plans designed.	<p>3.1. Assessment of the country's experiences and skills in forestry resources monitoring, assessment and information management. Identification of capacity building needs.</p> <p>3.2. Design of training plans and preparation of didactic material in collaboration with teaching institutions.</p>
Obj. 2.	4. NAFORMA organised and operational with core trained personnel and necessary equipment, including creating and institutionalising a specialised unit within FBD and in cooperation with other initiatives and projects.	<p>4.1. Definition of organisation, responsibilities and mandates of NAFORMA (Project Technical Unit, field teams...).</p> <p>4.2. Training of NAFORMA supervision personnel in the Project Technical Unit (PTU).</p> <p>4.3. Training of NAFORMA field teams personnel.</p> <p>4.4. Training of NAFORMA mapping personnel.</p> <p>4.5. Training of NAFORMA database personnel.</p> <p>4.6. Logistical organisation of NAFORMA, including procurement and assignment of project equipment, office space allocation, transport, supervision.</p>
Obj. 3.	5. National forestry information framework – NAFOBEDA and results from NAFORMA - including forest related definitions and classifications harmonised with due consideration of relevant international, regional and national definitions and classifications.	<p>5.1. Review of structure and functionalities of NAFOBEDA and other forestry related databases.</p> <p>5.2. Harmonisation of national forestry information framework – NAFOBEDA and results from NAFORMA - including forest related definitions and classifications with due consideration of relevant national, regional and international definitions and classifications.</p> <p>5.3. National workshop on harmonisation of the national forestry information framework including forest related definitions and classifications.</p>

Obj. 3.	6. Functional forestry database and information system integrating georeferenced field data of all variables following the data collection model designed and set up.	6.1. Design and setting up of functional forestry database integrating georeferenced field data of all variables following the data collection concept.
Obj. 4.	7. Appropriate remote sensing data selected and procured, interpretation carried out and forest/land cover and land use map produced. Multi-source inventory methodology applied for vegetation and biomass mapping	7.1. Acquisition of remote sensing data (2009/10) and historic for mapping Present Land Use Land Cover (LULC) and for historic forest cover change analysis. 7.2. Development of forest/LULC mapping methods and approach- interpretation key and manual, map legend, etc 7.3 Field reconnaissance, interpretation of remote sensing data, field and air checking of interpretation results and finalisation of the map. 7.4. Production, editing and validation of forest/land use map. 7.5 Integration of in-situ data with LULC. Preparation of thematic maps illustrating NAFORMA results
Obj. 5.	8. National forest and tree inventory planned and carried out and data collected from representative nationwide systematic sampling in all forest types, other wooded lands and other lands.	8.1 Planning of the national forest and tree inventory. 8.2 Implementation of the field survey and data collection on forests and trees from the representative nationwide systematic sample plots.
Obj. 5.	9. Field data encoded in database and processed, results analysed and findings reported and validated. Basis for the permanent Forest Information System established.	9.1 Entry of field data in database, checking, cleaning and validation. 9.2 Processing of field data, analysis of results, reporting. 9.3 Validation workshop of NAFORMA findings.
Obj. 6.	10. Diagnosis prepared on state of the forest, tree resources, their biomass and carbon changes, forest ecosystems, local governance and the environment, and on the way these are managed and used by all parties; follow up actions defined and prioritised.	10.1 Diagnosis of the state of the forest and tree resources, forest ecosystems and the environment, and on the way these are managed and used by all parties; definition and prioritisation of follow up actions. 10.2 Workshop on the state of forestry resources and definition of follow up actions 10.3 Dissemination of NAFORMA findings to all users through reports, leaflets, medias and the web. .
Obj. 6.	11. Specific/management oriented inventories in priority areas designed and project documents formulated for funding by development partners.	11.1 Definition of priority areas for detailed forest inventories including forest management oriented inventories. 11.2 Definition of objectives of detailed forest inventories e.g. timber concession management, community based management, timber exploitation, etc. 11.3 Design and formulation of projects of detailed forest inventory for funding by development partners.
Obj. 7	12 Develop Tools and methods for integration of REDD+ MRV to NFMA methodology	12.1 In dialogue with Metla and UNREDD to develop NAFORMA into a possible multisource NFMA that will form the backbone of future monitoring of forest and TOF resources in Tanzania to feed a REDD+ / CC process. (Ongoing development work)

3.5 Sustainability

The project focuses on assisting the GoT to generate on periodic basis the knowledge necessary for taking decisions 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 Tanzania in generating, updating and using knowledge about forestry resources. The Tanzanian government has committed to acting on the NAFORMA and linking it to the national policy processes. The project is designed to provide critical baseline data and will develop environmental capacity in Tanzania through training in essential skills as well as supporting stakeholders and providing avenues for Tanzanians to extend their training internationally through study tours and international workshops and meetings.

In order to ensure the sustainability of the project results in the future, FBD, in accordance with its mission, will work to develop, consolidate and expand its programme of forest inventory, assessment and monitoring to include the TOF resources and to cover all benefits to all users of forests and trees. Under this project and with the help of the international assistance, FBD will work to develop an innovative approach for resources assessment and monitoring and to introduce new concepts and technologies. FBD 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. FBD 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 FBD 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). FBD 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.

3.6 Assumptions and Risks

The Government of Tanzania and the International Development Partners including FAO have worked together to develop, and formulate the project starting with the expressed national need for NAFORMA information and demonstration of interest of partners to support the project. The project was designed under the assumptions that:

- All Development Partners remains committed to support financially and technically to the project.
- GoT remains committed to creating all the necessary conditions for the implementation of the NAFORMA project and its sustainability in the long term. In particular GoT works to:
 - link the project to the national policy processes (nfp, PRS, sectoral policy, etc).
 - build legitimacy (partners and stakeholders acceptance) for NAFORMA, through wide participation during planning and implementation of the project.
 - create synergies between the project and other related ongoing initiatives.
 - ensure NAFORMA 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 NAFORMA programme

- National stakeholders are engaged in the harmonization of the forest/land use classification and forest related information framework
- FBD coordinates and supervises project activities. Particularly FBD 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:

Risk	Impact	Probability	Mitigation
1. Donors change their priorities and strategies	Project progress is disrupted and objectives are not reached	Low	Offer modular (element) components to the donors
2. GoT's commitment to the project fades away	Sustainability of the project is not guaranteed	Medium	GoT to clearly express its commitment for NAFORMA beyond project cycle
3. 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
4. Donors provide 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 Government budget to mitigate this risk
5. Stakeholders require more than what the project can deliver.	Project enters into phase of turbulence due to unnecessary argument among stakeholders and project team	Medium	Hold informative meetings from the onset to inform about scope, possibilities and limits of the project Seek additional funding to satisfy the information needs expressed by stakeholders.
6. National and FAO administrative procedures hinder timely implementation of the project work plan	Delivery of the outputs may be delayed and cost of the project increased	High	Assign full time personnel to the project ensure that all levels of decision makers on project budget and other issues are aware of the project requirements
7. Fluctuations in exchange rates between Euro (donors budget currency) and USD (NAFORMA) budget currency can cause less funds to be made available to Project than originally planned.	Project cannot afford the described level of activities. The overall statistical sampling design will not be valid if it cannot be implemented as planned	High	Seek additional funding to satisfy the information needs expressed by stakeholders.

4. IMPLEMENTATION AND MANAGEMENT ARRANGEMENTS

4.1 Institutional Framework and Coordination

The project will be anchored within the Forestry and Beekeeping Division of the Ministry of Natural Resources and Tourism (MNRT). The Forestry and Beekeeping Division will be the national executing institution in Tanzania. It will have the overall responsibility of the project. The FBD will collaborate with FAO in its quality of implementing agency of the project and with the related international development partners (donors) and organizations.

The FBD will nominate an officer as the National Project Coordinator (NPC), who will be the national focal point for the project and will be fully dedicated to the project, have the overall responsibility for planning, managing, coordinating and supervising the project activities. He will also have the responsibility of establishing a Project Technical Unit (PTU) at the inception of the project and ensuring that the Government strategy of setting up a permanent National Forest Assessment Unit (NFAU) adequately manned and mandated is realised. The NPC will be the direct responsible of coordinating inputs from FAO, the Government and Development Partners

A project Technical Unit (PTU) will be established at the inception of the project. The PTU will be headed by a national Forestry Officer. Under the supervision of the NPC, the Head of the PTU will be responsible of executing the project work plan and channelling the inputs to the activities. He will provide the training, logistical support and supervision to the field (forest inventory) and office (mapping and database) personnel.

The PTU will be composed of national and international consultants and their counterpart personnel and supporting staff. The national counterpart staff will include an Officer who will head the PTU, an officer for the mapping/GIS component, an officer for the database and an officer for the field inventory component. These officers will be subordinated by technicians for data entry and database management and interpretation of satellite images. It will include also the general support staff.

It is Government policy that all interventions/projects under the Sector Wide Approach (SWAp) for the National Forest Programme (NFP) and the National Beekeeping Programme (NBKP) implementation should be monitored by an established coordination and communication system under the MNRT. Being part of the NFP, the NAFORMA project should be directly taken care by the existing NFP Steering Committee (SC) and by the Technical Committee of FBD where FAO will be represented. The importance of a SC that cross-cut the sectors is indisputable for the project as it will ensure a general awareness about it and maximises its benefits to all users from the generated information and the capacity building.

Under these supervisory instruments, the progress of the project will be reviewed and scrutinised, its achievements assessed against the planned outputs, its work plan for the next periods analysed, the actions to take in case of constraints identified and responsibilities assigned. At its discretion, the SC may recommend to MNRT and to FAO that amendments be made to the content, location, timing and implementation arrangements of project activities. The SC will not amend the development or immediate objectives of the project.

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, 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 Dar Es Salaam (FAO Representative Office to Tanzania), Accra (Regional Office) and Rome (FAO Headquarters) to ensure timely inputs to the project and smooth implementation at highest technical quality. The technical officers from FAO 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 FBD and in compliance with the FAO procedures.

4.2 Strategy/Methodology

4.2.1 Strategy

The overall strategy of the project is to work in collaboration between FAO, the FBD and the Development Partners (donors) and organizations, to develop, promote and implement management tools to bridge the gap between knowledge generation and policy processes with emphasis on inter-sectoral coordination. This would help to improve sustainable forest management, to mainstream forestry within the national efforts to eradicate extreme poverty and hunger, achieve sustainable water and land use, mitigate climate change and achieve the MDGs. The project strategy includes collaboration with all donors engaged in support of other forestry activities in Tanzania. The project strategy plans to make use of information exchange between various projects (e.g. RESEARCH PROJECT IN THE MIOMBO WOODLAND, MOROGORO) and sectors, to ensure technology transfer and to build national capacity.

The project will be fully integrated into the existing planning and management instruments to ensure that FAO can best assist the Government of Tanzania in meeting its priorities in forestry, including meeting the MDG targets, while insuring coherence between global, regional, sub-regional and the underlying country priorities.

Following directions given by COFO in 2007, the project strategy is to collaborate with the NFP, to assist MNRT in better integrating forestry issues within the larger context of sustainable development like poverty reduction strategies in order to enhance the contributions of forestry to poverty alleviation and sustainable livelihoods.

The project strategy is also to contribute towards Strengthening Monitoring, Assessment and Reporting (MAR) on Sustainable Forest Management (SFM) and the international dialogue on forests including implementation of the non-legally binding instrument endorsed by United Nations Forum on Forests (UNFF).

NAFORMA must strive to harmonise the methods and techniques of forestry resources assessment in Tanzania as well as the information framework. This will facilitate sharing of information in the country and maximise the benefits towards users. The harmonisation applies to forest/land use classification as well as to fieldwork and data processing/analysis techniques. The work on information harmonisation should be a high priority of the project.

The project aims at strengthening FBD to enable it to carry out future updating of NAFORMA, promote modern techniques and integrated approaches, support exchange and sharing of

information and expertise, insure transfer of technologies, provide training when required, develop national norms of forest inventory, assessment and monitoring.

The focus of the project will also be on forging national inter-sectoral collaboration and partnerships, and reinforcing cooperation with international partners. Involvement of the national stakeholders in NAFORMA through the existing SC and Technical Committee in FBD will ensure a coordinated and participatory process for laying the foundation of widely agreed and stable information framework and long term resources monitoring approach.

The project will serve the basis for follow up programme of detailed and specific inventories such as for community based management, in forest plantation, in timber concessions, etc.

One major output of the project will be a national database that will be established to host the field and mapping data, process the data and store the results for future updating and dissemination. The project will work to ensure that the national database on the forestry resources is accessible to all users and transparent, and is designed to respond to different users needs. The knowledge gained in reaching this objective, will be put to use in the support of other pilot countries receiving support from FAO Finland Forestry Programme.

4.2.2 Methodology

A common element in the below components (field data collection, mapping and database) is that capacity of FBD must be built through learning by doing to allow for future repetitions and maintenance of NAFORMA after the project phase.

a) Field data collection

NAFORMA applies two complementary methods of data collection. The first is from a network of field sample cluster where biophysical and socioeconomic data is collected. The second is from mapping using remote sensing techniques. The inventory design was supported by Metla, Finland and is described further in Appendix 6. For description of the (Annex Socioeconomic and Biophysical parameters and methodology please refer to the NAFORMA manuals (developed March 2010). A total of about 3400 Sample will be measured throughout the country and 25% of these (app. 850) permanent sample clusters that will be remeasured in the future and thereby be an important part of the permanent monitoring system.

For the fieldwork the country is divided in seven (7) zones¹. During the time of revising the Project Document the Eastern Zone has almost been completed (meaning app 12% of the sample sites have been measured). The field component will proceed capturing all data in the Southern Zone and Southern Highlands. A panel based approach for capturing the forest and TOF resources of the remaining 4 less forested zones. This in order to ensure that at the end of the project period NAFORMA will have data at national coverage and that the main forested regions will be covered.

The field work will be performed by a number of field teams – up to 20 teams when the capacity is fully built out. The teams function under the coordination of the Assistant National Project Coordinator. Each team has its own vehicle and is composed of 7-8 people:

¹ Southern Zone, Eastern Zone, Western Zone, Southern Highland Zone, Lake Zone, Central Zone and Northern Zone.

- 1 Team Leader
- 3 Team Members (Biophysical inc. soil sampling)
- 1 Team Member (Socioeconomic)
- 1 Tree Identifier / Botanist
- 1 Driver
- 1 Armed guard (in areas of wildlife)

Parallel to the fieldwork a quality assurance system will be developed to ensure that NAFORMA produces reliable, accurate and reproduceble data.

b) Mapping

The project will set up a team within the Project Technical Unit to carry out the mapping. At the beginning of the project, the project team will make the necessary consultations to find out what quality data is available (cloud free, right season) and select the appropriate imagery for the production of the LCLU Map.

The interpretation will be preceded by a field reconnaissance to develop an interpretation key, using training sites and interpretation methods and manual using:

- Available historical air photographs;
- Available thematic maps;
- Photos taken during the fieldwork;
- Description of the vegetation in selected representative sites and;
- Forest/Land use classes (refer to the developed classification system) in selected, geo-referenced sites.

Image interpretation will be carried out digitally. The photo-interpretation/ classification must be followed by an interpretation checking by air following selected transects all over the country.

Additional tasks for the mapping group include:

- Keeping the field inventory teams supplied with field maps and high resolution imagery where available.
- Providing reliable LULC change estimates based on analysis of historical imagery.

c) Database

The project will develop a database with the digitised maps (GIS files) and field data. FAO has developed a functional database application, which will be of use also for the other countries supported by FAO- Finland Forestry Programme successfully by other countries. The database application used for the NAFORMA of Tanzania stores, processes and manages the collected field data and will be linked to the GIS files to carry out GIS analysis and display the data on thematic maps.

4.3 Government Inputs

The inputs by the Government of Tanzania will be provided “in-kind” and in cash to be taken from the national budget allocated to the NAFORMA programme under the NFP.

The FBD will provide all the 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 FBD will provide the national personnel to run the PTU and later the NAFORMA programme as well as the personnel for data collection in the field, data entry and processing and for the mapping work. For sustaining the NAFORMA at the long term, FBD will nominate a core of permanent personnel headed by an Officer.

The FBD will bear the:

- General operating expenses of local transport;
- Salaries of national staff participating in study tours and short courses and workshops overseas;
- Salaries of national staff participating in the fieldwork for forest and tree inventory, for mapping and database;
- Costs of office space, furniture, facilities, electricity and communications;
- Cost of the in-country seminars, workshops and meetings.

The FBD will also arrange for quick clearance of experts, custom clearance of equipment, tax-free local purchase of project equipment and supplies.

The Government will make available 5 four-wheels drive vehicles from the existing Government car pool.

The Government will contribute an estimated US\$ 794,200 to the project to cover the cost of the in-country seminars, workshops and meetings, the salaries of the national personnel and the general operating expenses.

Training – US\$ 28,000

- Series of workshops (NAFORMA methodology adaptation, information needs, harmonisation of land use classification, Diagnosis of the forestry sector, Validation of NAFORMA results) and seminars on NFA approach and methodology adaptation, land use classification, institutional adaptation, information needs identification, project results, findings and recommendation.
- Technical and supervisory meetings on project progress and planning.

Salaries of national personnel – US\$ 343,200

- Forest Inventory Technicians: Total. 420 months (42 technicians (3 per region) for 10 months each).
- Forest Mapping Technicians: Total. 72 months (3 technicians for 24 months each).
- Database Technicians, Total. 48 months (2 technicians for 24 month each).
- Drivers for fieldwork and Office, Total 210 man months (one driver per field team).
- Two workers per field team to support data collection, guide the technicians as well as to help give correct local name (s) of tree species.
- Personnel of the PTU

General Operating Expenses – US\$ 423,000

This amount will serve to maintain the project cars operational (fuel and maintenance) during the entire project activities.

The FBD will have the overall coordinating role of the project, including training of the national personnel, planning and implementation of the project. FBD will act to set up and institutionalise the NAFORMA and build its capacity for future updating of the NFA data and information management.

FBD will appoint a National Project Coordinator (NPC) who shall:

- i) Coordinate interventions of the national institutions and individuals involved in the project;
- ii) Plan and facilitate training of the field team members, the mapping and database personnel;
- iii) Oversee fieldwork and mapping activities and secure timely logistical support to field teams;
- iv) Participate in and oversee the design and development of the database, processing of the field data, analysing the findings and reporting of project findings;
- v) Report to the SC on the progress of the project activities and relay the recommendations of the SC to the project team;
- vi) Ensure that NAFORMA is included in the agenda of the meetings of the SC and serve as its Secretariat on matters relating to the project;

Under the supervision of the Director of FBD, the NPC will oversee the work of the international experts, national consultants and the national personnel of the PTU; follow their progress and performances to ensure timely implementation of the mapping and fieldwork and making best use of the services provided by FAO and the Development partners for the implementation of the project activities.

4.4 Donor Inputs

Personnel Services²

<u>Activities supported</u>		Months
	<u>International Experts & Consultants</u>	
1. Coordination, Supervision and Training	IE-1, Chief Technical Advisor and Forest Assessment	44
3. Various activities	IE-3, Various	4
	Total (TIE&C)	48
	<u>National Consultants</u>	
1. General coordination and supervision	National Project Coordinator	44
2. Forest Inventory	NC-1, Forest Inventory	24
3. Mapping	NC-2, Mapping (Forestry)	24
4. Data Processing	NC-3, Data Processing (Biometrician) (WAE)	10
	Total (NC)	102
FAO Supervision	Technical Support Services:	9 missions

² Terms of Reference in Appendix 3.

The detailed budget is attached in Appendix 2.

4.5 Linkages/Technical Support

Linkages:

The project is related to the macro-economic policies and strategies of the Government of Tanzania, namely the objectives of the macro-economic policy framework and the socio-economic development. Being for knowledge generation to support the national policy processes, the project will contribute at the long run in combating poverty and improving efficiency in the use of public resources. This will contribute towards macro-economic stability.

The project is also related to the national Poverty Reduction Strategy, which was meant to tackle the constraints manifesting poverty including governance, productivity and products marketing issues.

The project is part of the national forest programme (NFP). It is acknowledged that the overall forest management and certainly the major decisions on forestry issues has for years been based on outdated and unreliable data and information due to inadequate collection, analysis, interpretation, dissemination, storage and updating of forest resources information. The priority of the NFP will be to develop forest resources information research and countrywide resources assessment involving ongoing programmes and projects.

Globally, the project is related immediately to the FAO normative activity: "Sustainable Management of forests, woodlands and trees outside of forests" and particularly the sub-programme of "Support to countries to monitor and assess forest and tree resources and their management, within an integrated land use perspective". The project is also related to the FAO normative activities "Assessment, monitoring and reporting on forest resources products and institutions" and "Technical Support Services to Members and the Field Programme" namely providing advice to member countries on forest policy and institutional issues. Tanzania is one of 5 pilot countries receiving technical support through the FAO Finland Forestry Programme.

As the project will yield large amount of harmonised information, the results will be immediately usable by the country to report to the international conventions and forums including the global Forest Resources Assessment (FRA). It will also help initiate national dialogue on policy issues.

Technical Support

The technical support mechanisms and their nature are identified and defined in the project document and will be refined during in the implementation of the project depending on the evolving needs of the project work plan.

The project envisages technical backstopping, supervision and support missions by the technical officer(s) concerned. It also envisages assigning specialised national and international experts to assist the FBD implement the project activities.

4.6 Management and Operational Support Arrangements

The project will be managed by the National Project Coordinator (Terms of reference in Appendix 5) who will be assisted by a Chief Technical Advisor and Forest Assessment Expert (CTA) (Terms of reference in Appendix 4) and the personnel of the PTU. The NPC in collaboration with the CTA will be responsible for the overall administration and technical execution of the project,

including budgeting, programme planning and report preparation. The Project will be hosted by the Forest and Beekeeping Division of the MNRT. Through the NPC, the FBD will ensure the closest liaison with other Government departments and agencies that deal with the land use resources and can provide advisory/technical inputs to the project and assist in the implementation of its activities according to the norms and standards that meet all users needs of information.

Implementation of the field activities, assignment of duties and reporting on related activities will be under the direct supervision of the NPC in collaboration with the CTA. The international consultants assigned to the project, under the general supervision of the FAO Representative in Tanzania and the respective Technical Division (Head of the FAO Finland Forestry Programme) in FAO headquarters will ensure high quality of technical assistance and advice.

The NPC and the CTA shall coordinate with FAO Representative in Tanzania and the NFA programme Coordinator in FAO Headquarters to ascertain availability of required funds for the project to establish work priorities and to maintain standards of technical excellence in the work of the project.

The administrative and financial work will be carried out by the FAO Representation in close collaboration with the CTA and the NPC.

A close collaboration will be established with the Faculty of Forest and Nature Conservation of the Sokoine University of Agriculture in the activities related to NFA methodology development and also with other research institutions and departments of relevance to the project.

The programme of work, which will be formulated in detail by the NPC in collaboration with the CTA, will be executed by the Government assigned staff to the project assisted by the national and international consultants.

5. OVERSIGHT, MONITORING, MANAGEMENT INFORMATION AND REPORTING

5.1 Oversight and Reviews

The Tri-Partite Reviews (TPR) will evaluate the project. Consequently, in-depth project evaluation will take place after 18 months from the start of the project and again towards the end of the project.

The representatives of FAO, the Donor Government and the Government of Tanzania will jointly examine the progress of the project. Two such TPRs are scheduled for this project. The first is a mid-term TPR, to be held at 18 months from the start of the project. The second, terminal Tri-Partite Review meeting, to take place towards the end of the project. The TPRs 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, the Donor Government and the Government of Tanzania. The National Project Coordinator in coordination with the CTA will prepare and submit a Project Performance Evaluation Report (PPER) to FAO and to MNRT at least one month in advance of each review. Additional PPERs may be requested, if necessary, during the project implementation.

5.2 Monitoring and Knowledge Sharing

The FAO Representation, the Lead Technical Unit of the project at FAO HQs, in cooperation with FBD 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 Tanzania’.

Under the NFP and the NBKP, the MNRT has put in place a monitoring, coordination and communication system in the form of a multidisciplinary Steering Committee (SC) (see box 1 and figure 3), that meets periodically every three months or more frequently when needed. The SC is composed of wide range of stakeholders including development partners (donors and FAO). This existing SC will therefore monitor the NAFORMA and will work to insure broad awareness about the project and will act 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.

Box 1: Composition of the Steering Committee

- Ministry of Natural Resources and Tourism
- Vice President's Office -Environment
- Prime Minister's Office - Regional Administration And Local Government
- Ministry of Water and Livestock Development
- Ministry of Agriculture, Food Security and Cooperatives
- Ministry of Planning, Privatization and Empowerment
- Local and International Community
- Civil Society Organisations
- Teaching And Research Institutions
- Non Governmental Organisations
- Other Government Institutions e.g Tanzania Investment Centre, Survey and Mapping Division and National Land Use planning Commission
- Private Sector
- Embassy of Finland
- FAO

For the NAFORMA, the SC should be extended to Agriculture and Livestock, national statistics, etc.

The main responsibility of the project relies on the NPC who assures the continuous monitoring of the project and the reporting to the Director of the FBD and the NFP Steering Committee. Those two instances have the duty to report to the Minister of Natural Resources and Tourism.

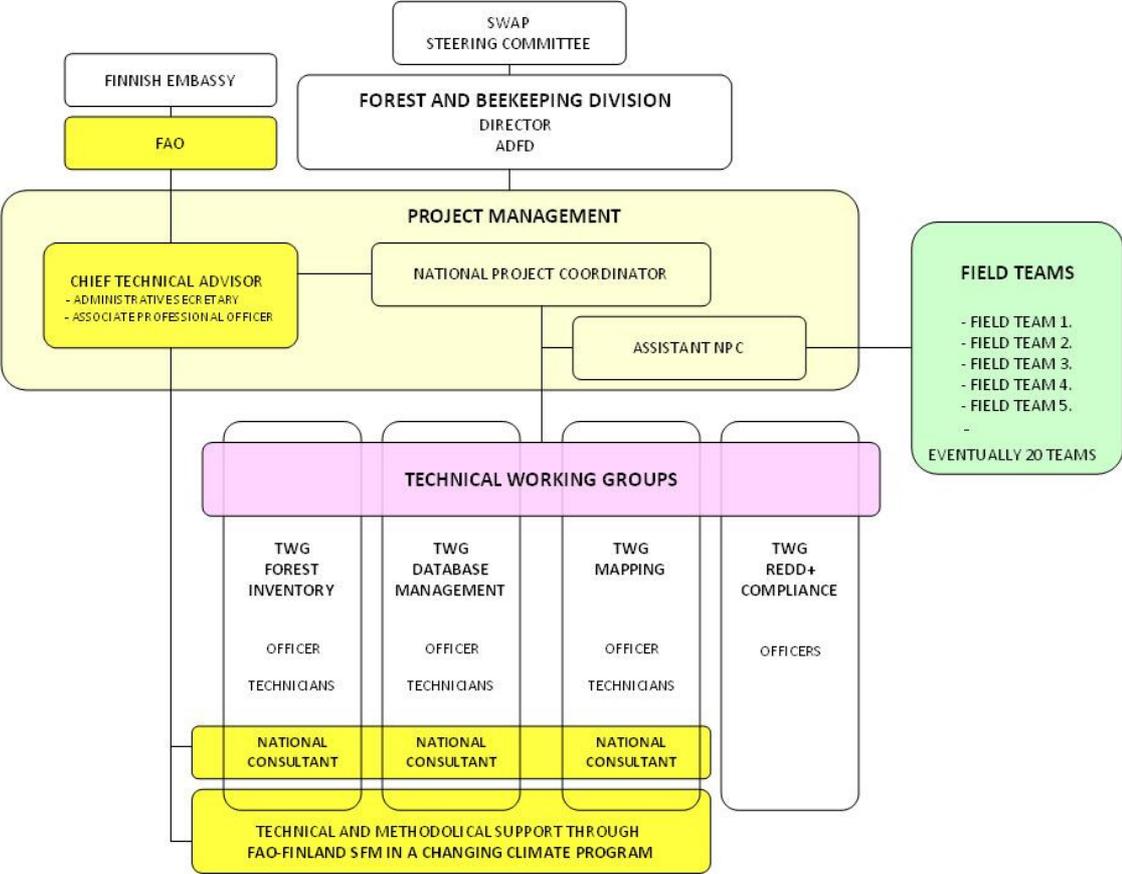
FAO will channel its inputs to the project through the FBD. The flow of information and reports on the project progress will go from FAO to the FBD and vice-versa. The Chief Technical Advisor who will be assigned to the project on permanent basis, will monitor the technical aspects of the project implementation. 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 Addis Ababa. clients

The project will also be directed and monitored at the field level by the existing Technical Committee³ of FBD.

Vis-à-vis the SC, the NPC will be the responsible of direct monitoring of the project and of reporting on its progress, achievements and constraints. The NPC will also interact with the FBD Technical Working Groups on more frequent basis on the running of the project. 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 his monitoring of the project and reporting on its progress, the NPC will be assisted by the Project CTA.

³ Coordination and Communication Process and Structures, National Forest and Beekeeping Programme - Sector Wide Approach in Forestry and Beekeeping, December 2005

Figure 2: Organisation and supervision of NAFORMA



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 CT A and the NPC.

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 that feeds 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 FAO to the networks of key partners around the world to assist in knowledge sharing and to provide guidance in similar projects.

5.3 Communication and Visibility

The project will organise two major events. A seminar 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 participative to ensure that it will address all pertinent issues; deliver the needed information at the suitable format that facilitates its uses in the country and for international reporting and to adopt a nationally accepted approach that meets best the country’s needs.

A workshop 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.

In addition to these events, the NPC and CTA will report periodically on the performance of the project to the Director of FBD and to FAO. The Director of FBD will keep the NFP Steering Committee informed about progress and performance of the project. FAO will keep the donor Government informed of the progress and performance of the project.

5.4 Reporting Schedule

1. Progress Reports will be submitted every six months by the CTA in collaboration with the NPC.
2. Technical Reports will be provided by the CTA in collaboration with the NPC on activities carried out by the project. These reports will follow the standards established by FAO for such reports.
3. Terminal Report will be presented by FAO to the Government on conclusion of the Project. This will be addressed to the MNRT and will aim to advise and guide the Government on major policy decisions needed for follow-up actions. The report will examine the project results and their significance to project objectives and base its recommendations on the outcome of this examination. The CTA in collaboration with the NPC will send the draft report to FAO, RAF, through the FAO Lead Technical Unit, three months before the end of the project, for review and comments. FAO will finalize the report for submission prior to the completion of the project.
4. Every consultant will submit his/her technical report in accordance with FAO rules and regulations at the expiry of his assignment. This will be submitted to FAO Programme Coordinator for clearance by FAO Lead Technical Unit and concerned technical units and submitted afterwards to the project management for discussion and implementation of relevant recommendations.

APPENDICES

Appendix 1: List of Equipment

Appendix 2: Budget

Appendix 3: Logical Framework

Appendix 4: Work Plan

Appendix 5: Terms of Reference for International and National Personnel

Appendix 6: NAFORMA Sampling Study

Appendix 1: List of equipment	Units	Quantity
1. Equipment and Supplies		

* Desktop computer	Unit	4
* 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
* Laptop computer	Unit	7
* Printer	Unit	1
* Satellite image (2 time series), GIS and Database software	Set	2
* Colour Plotter A0 format	Unit	1
* Various supplies and consumables (paper, ink, maintenance cartidges and printerheads)	Set	
* Servers (Mapping and Database)	Pcs	2
* External harddrives (1Tb)	Pcs	4
* External harddrives (0.5 Tb)	Pcs	1
* Software (Esri Arc Pad and ERDAS imagine)	pcs	15 + 3
* Mobile modems and prepaid airtime	pcs	11
2. Forest Inventory Equipment		
* Tree height and land slope measuring equipment E.g. Dendrometers Blume leiss	Unit	22
* Callipers	Unit	22
* 30-50m (Self-rolling) measuring tape or rope/ chain, marked at every 1-5 meters	Unit	22
* Measuring tapes 320cm / 10m	Unit	22
* Precision compasses	Unit	22
* Backpack	Unit	22
* GPS receiver (Geographic Positioning System) and extra batteries	Unit	22
* Cameras	Unit	22
* Coloured flagging tags (rolls)	Rolls	8000
* Uniforms	Unit	200
* Boots (rubber)	Unit	200
* Boots (leather)		200
* Spray paint for plot centre marking	Unit	200
* Phone cells and pre-paid cards	Unit	6
* Binoculars	Unit	21
* Machetes	Unit	21
* Topographic maps in hard copies	set	4
* Digital topographic maps when available	set	1
* Field manuals, forms and stationary, etc.	set	21
* Camping equipments (tents, cooking, repellents, illumination, etc)	set	21
* Soil sampling equipment	set	21
* High Precision GPSs with Omnistar correction signal	set	15
* VHF radios handheld	pcs	39
* VHF radios mobile	pcs	21
* HF radios mobile	pcs	21
* Vehicle borne first aid kits	Pcs	50
* personal first aid kits	Pcs	21
* Spherical densitometer	pcs	21
* Generators	pcs	21

Appendix 2: Budget

Items	ORIGINAL BUDGET					ADJUSTED BUDGET			Additional budget (UTF, FAO)	Reasons for change
	Units	Quantity	Unit cost (US\$)	UTF (FAO) Total (US\$)	Government Contribution (US\$)	Adjusted Quatity	AdjustedUnit cost (US\$)	Adjusted Total (US\$)		
1. Equipment and Supplies										Procurements more expensive due to larger number of field staff, more gear needed for field teams and higher requirements for precision (especially Hugh Precision GPSs are expensive)
Inventory Equipment	LS			45,000				75,000		
Camping Equipment	LS			30,000				30,000		
Computer equipment	LS			20,000				25,000		
Consumables	LS			30,000				30,000		
<i>Sub-Total</i>				125,000				160,000	35,000	
2. Training of local Staff										Need for more training due to increased scope of the project
2.1. In-country Training										
Training courses to NFA	Unit	4	6,000	24,000		4	6,000	24,000		
Training of Mapping personnel	Unit	1	10,000	10,000		1	10,000	10,000		
Training of GIS & Data Processing personnel		1	10,000	10,000		1	10,000	10,000		
<i>Sub-Total</i>				44,000				44,000	-	
2.2. International Training										
Short Courses/Seminars & Workshops	Unit	3	8,000	24,000		3	8,000	24,000		
Study tours	Unit	4	6,000	24,000		4	6,000	24,000		
<i>Sub-Total</i>				48,000				48,000	-	
3. In-country Seminars, Workshops and Meetings										
Seminars	Unit				3,000	5	2,000	10,000		
Workshops	Unit				15,000	8	6,250	50,000		
Meetings	Unit				10,000	10	1,000	10,000		
<i>Sub-Total</i>					28,000			70,000	70,000	
4. Mapping										Need for more hardware than foreseen in original Project Document (Servers and expanded storage capacity – more consumeables needed)
Procurement of satellites images	Unit	50	1,000	50,000		50	1,000	50,000		
Field reconnaissance prior to interpretation	LS			20,000				20,000		
Equipment and supplies	LS			20,000				60,000		
Interpretation satellite images (4 technicians x 12 months)	MM	48	300	14,400		48	300	14,400		
Field checking of interpretation	LS			10,000				10,000		
Air checking of interpretation (30 hours)	Hours	30	500	15,000		30	500	15,000		
Map production	LS			10,000				10,000		
<i>Sub-Total</i>				139,400				179,400	40,000	

5. Technical Assistance												
CTA and Forest Assessment Expert (P4)	M/M	36	13,000	468,000		44	13,000	572,000				
Land use mapping Expert (P4)	M/M	10	12,500	125,000		-	-	-				
Unspecified Consultants (P4)	M/M	4	12,500	50,000		4	12,500	50,000				
FAO Backstopping missions	M/M	3	12,500	31,250		3	12,500	31,250				
<i>Sub-Total</i>				674,250				653,250		-	21,000	
6. International Travel of International Experts												
CTA and Forest Assessment Expert (P4)		L. sum	12,000	12,000			12,000	12,000				
Land use mapping Expert (P4)		L. sum	12,000	12,000			12,000	12,000				
Unspecified Consultants (P4)		L. sum	18,000	18,000			18,000	18,000				
FAO Backstopping missions	Missions	9	7,000	63,000		9	7,000	63,000				
<i>Sub-Total</i>				105,000				105,000		-		
7. Local Consultants												
National Project Coordinator	W/M	36	2,500	90,000			-	-				
NFI Consultant	W/M	24	2,000	48,000		24	3,750	90,000				
Mapping Consultant	W/M	18	2,000	36,000		24	2,800	67,200				
Data processing Consultant (Biometrician)	W/M	10	2,000	20,000		10	2,400	24,000				
Performance Based Pay								120,000				
<i>Sub-Total</i>				194,000				301,200		107,200		
8. Transport												
Vehicles	Unit	18	35,000	630,000		14	48,000	672,000				
<i>Sub-Total</i>				630,000				672,000		42,000		
9. Salaries												
Senior Technicians Field Survey	W/M	210	300	63,000								
Technicians Field Survey	W/M	210	300	63,000								
Field Workers Field survey	W/M	420	100	42,000								
Technicians Mapping	W/M	72	300	21,600								
Technician Database	W/M	48	300	14,400								
Drivers Field	W/M	210	200	42,000								
				246,000								
10. Field Allowances												
Supervision - Field survey	W/D	1,200	60	72,000		450	80	36,000				
Supervision - Mapping	W/D	80	50	4,000		50	80	4,000				

Land Use Mapping Expert not to be recruited. Instead support will come from FAO Finland Forestry Programme and NAFORMA APO

Wage Level of National Consultancies and length of Mapping consultancy underestimated in original Project Document.

Unit costs of vehicles underestimated in original Project Document. Original Project Document did not include radios and special features for field performance. Consequently the project has procured fewer vehicles (14 rather than 18) at a higher unit cost.

The original Project Document was based on a sampling design that could provide national level data. The initial Information Needs Assessment demanded that NAFORMA

Senior technicians - Field Survey	W/D	5,040	35	176,400		9,450	42	396,900		provides useful information at Sub-National Level and information which will be forming the backbone of a possible REDD+ MRV and CC mechanism. This required a much more intensive field component than foreseen in the original Project Document.
Technicians - Field survey	W/D	5,040	35	176,400		45,000	41	1,845,000		
Field workers (2 per team x 10 months x 21 teams)	W/D	10,080	10	100,800		18,000	10	180,000		
Technician - Mapping	W/D	120	35	4,200		120	40	4,800		
Drivers Field	W/D					9,450	28	264,600		
Armed Guards	W/D					900	43	38,700		
<i>Sub-Total</i>				533,800				2,770,000	2,236,200	
12. Project Technical Unit personnel										Wage Level of National Support underestimated in original Project Document
Head PTU	W/M	36	600		21,600					
Mapping Officer	W/M	36	500		18,000					
Database Officer	W/M	36	500		18,000					
Forest Inventory Officer	W/M	36	500		18,000					
Database Technician	W/M	36	300		10,800					
Mapping Technician	W/M	36	300		10,800					
<i>Sub-Total</i>					97,200					
12. General Support Staff										
Secretary	M/M	36	500	18,000		36	1,000	36,000		
Administrative Clerk	M/M	36	400	14,400		24	400	9,600		
Drivers Project HQ	M/M	36	200	7,200		36	500	18,000		
<i>Sub-Total</i>				39,600				63,600	24,000	
11. General Operating Expenses										A number of running operational costs were not foreseen in original budget (eg. Need for mobile Modems due to bad internet connectivity, mobilephones for FAO staff, insurance of the 14 vehicles during project phase. Etc
Operation Cost of transport means, service and running costs)	Units	210	1,500	-	315,000			-	20,000	
Other project related General Operating Cost (furniture, photocopying, communication, electricity etc.)	LS	72	1,500	-	108,000			-	10,000	
<i>Sub-Total</i>				-	423,000			30,000	30,000	
12. Direct Operating Cost	LS			75,000				75,000		
13. Reporting	LS			20,000				20,000		
14. Evaluation Missions	Unit	2	21,000	42,000		2	21,000	42,000		
<i>Sub-Total</i>				2,670,050	794,200			5,233,450	2,563,400	
15. Operational Services Costs				347,107				680,349	333,242	
TOTAL Project				3,017,157	794,200			5,913,799	2,896,642	

Appendix 3 3: Logical Framework

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

<p>1.1 Approach to national forestry resources monitoring and assessment (NAFORMA) introduced and adapted on mutually consensual basis to meet specific needs of Tanzania for integration with national forest policy and planning development processes.</p>	<ul style="list-style-type: none"> ▪ Number of national workshops and technical meetings on forestry monitoring and assessment process. ▪ Number of participants involved from different sectors. ▪ Approach to NFA Tanzania issued in final version as working paper. ▪ Frequency of inter-sectoral dialogue integrating NAFORMA in policy harmonisation process. 	<ul style="list-style-type: none"> • Reports and proceedings of workshops and technical meetings. • Document describing NAFORMA approach. 	<ul style="list-style-type: none"> • FBD broaden participation of partners and stakeholders in development of NAFORMA process and reaching stable approach to long term forestry resources monitoring. • Partners and stakeholders work with FBD to reach/develop a consensual approach and process for NAFORMA.
<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"> • 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 	<ul style="list-style-type: none"> • Reports describing nationally agreed list of variables. • Proceedings of meetings and workshops. 	<ul style="list-style-type: none"> • 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.
<p>1.3 National experiences and skills in forestry resources monitoring, assessment and information management assessed. Gaps identified and training plans designed.</p>	<ul style="list-style-type: none"> ▪ Number of national personnel with skills and experiences in forest resources monitoring, assessment and information management. ▪ Number of training plans designed. • Number of trained personnel. 	<ul style="list-style-type: none"> • Reports describing the status of the forestry personnel and their skills. • Report describing training needs for NAFORMA. • Modules of training of the national personnel. 	<ul style="list-style-type: none"> • Tanzania institutionalise the NAFORMA process and provide it with financial and human resources to continue its mission beyond the end of the project.
<p>1.4 NAFORMA organised and made operational successfully with core trained personnel and necessary equipment, including creating and institutionalising a specialised unit within FBD.</p>	<ul style="list-style-type: none"> ▪ Structure and mandate of the NAFORMA unit. ▪ Number of trained personnel assigned to NAFORMA on permanent basis. • Government action to institutionalise NAFORMA within FBD. 	<ul style="list-style-type: none"> • Project records (reports and meeting minutes) • Government decision institutionalising NAFORMA 	<ul style="list-style-type: none"> • Government recognises the need for a permanent NAFORMA process. • Partners and stakeholders concur with establishing durable NAFORMA process and work for it.
<p>1.5 National forestry information framework – NAFOBEDA and results of NAFORMA - including forest related definitions and classifications harmonised with due consideration of relevant international, regional and</p>	<ul style="list-style-type: none"> ▪ Meetings for analysis and development of national forestry information framework. ▪ Meetings for conceptualising and developing NAFORMA database. • Meetings and workshops for forest related terms 	<ul style="list-style-type: none"> • Reports describing database for NAFORMA. • Project records on linking NAFORMA database with NAFOBEDA. • Project records describing harmonised 	<ul style="list-style-type: none"> • FBD acts to involve partners and stakeholders in the information framework harmonisation as to generalise the benefit from the project results.

national definitions and classifications.	and definitions and land use classification system harmonisation.	forest related terms and definitions and land use classifications.	<ul style="list-style-type: none"> Partners and stakeholders understand and recognise the utility of harmonised information framework.
1.6 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"> Database set up within FBD Number of trained personnel assigned permanently to database management Field data and maps digitised and stored in the database 	<ul style="list-style-type: none"> Report describing structure of database Number of national personnel trained 	<ul style="list-style-type: none"> FBD prioritise NAFORMA database and recognise it as important tool for easy retrieval and use of information by users and for future updating of the information.
1.7 Appropriate remote sensing data specified and procured, interpretation carried out and forest/land use map produced.	<ul style="list-style-type: none"> Manual for interpretation of satellite images. Number of remote sensing scenes procured. Number of national personnel trained in mapping using the remote sensing techniques. Forest and land use map covering the entire country. 	<ul style="list-style-type: none"> Reports and manuals. Number of national personnel trained. Forest and land use maps. 	<ul style="list-style-type: none"> Partners and stakeholders participate in harmonising the forest/land use classification system. FBD assign qualified personnel for the mapping. Mapping integrated in the NAFORMA process.
1.8 National forest and tree inventory planned and carried out and data collected from representative nationwide systematic sampling in all forest types, other wooded lands and other lands.	<ul style="list-style-type: none"> Sampling design. Number of trained personnel and number of field crews created. Organisation of the fieldwork, e.g. setting up field crews, logistics, supervision, and technical guidance. Number of field sample visited, number of interviews carried and field forms received, checked and validated. 	<ul style="list-style-type: none"> Reports describing approach and sampling design. Forest inventory manual. Field forms received from field crews. Reports of supervision personnel. 	<ul style="list-style-type: none"> Technical working Group of FBD participate actively in organising and supervising field survey. PTU designs plan for logistical support to field crews and their supervision. Supervision done in systematic way as to harmonise data collection between field crews.
1.9 Field data encoded in database and processed, results analysed and findings reported and validated.	<ul style="list-style-type: none"> Number of national personnel trained for data encoding and processing. Results from data processing and analysis. Workshop for presentation and validation of NAFORMA results and findings. 	<ul style="list-style-type: none"> Reports and manuals. Number of national personnel trained. Final report of the project results and findings. 	<ul style="list-style-type: none"> Technical working Group of FBD and stakeholders participate actively in scoping project results. PTU works to involve qualified personnel for project results analysis. FBD involves wide range of stakeholders for validation of results.

<p>1.10 Diagnosis prepared on state of the forest and tree resources, forest ecosystems, environment, and the ways these are managed and used by all parties and follow up actions defined and prioritised.</p>	<ul style="list-style-type: none"> ▪ Number of personnel involved in the exercise of diagnosis of the forestry sector and identification of follow up actions. • 1.10.2 Number of stakeholders informed on the results of the diagnosis and their views considered. 	<ul style="list-style-type: none"> • Reports and documents of validated diagnosis. 	<ul style="list-style-type: none"> • FBD involves partners and stakeholders in review and validation of the diagnosis. • Diagnosis is carried out in a participatory way.
<p>1.11 Specific/management oriented inventories in priority areas designed and project documents formulated for funding by development partners.</p>	<ul style="list-style-type: none"> ▪ Number of priority areas for detailed or specific inventories. ▪ Number of defined objectives of detailed/specific inventories. ▪ Number of inventory plans approved by FBD for immediate implementation. • Plan of work of the NAFORMA Unit to implement detailed/specific inventories. 	<ul style="list-style-type: none"> • Reports and documents describing specific and/or detailed inventories of forests, priority areas, specifications of inventory plans. • Reports of plan of work for following years of the NAFORMA Unit. 	<ul style="list-style-type: none"> • FBD engage different users of information (partners and stakeholders) in definition of country's needs of specific and/or detailed forest inventories. • Number of partners and stakeholders involved in identifying specific needs of information from forest inventory and in prioritising areas. • Development partners continue supporting FBD in its effort for information generation.
<p>Activities</p>			
<p>1.1.1 National seminar to inform stakeholders and development partners about the national forestry resources monitoring and assessment.</p>	<ul style="list-style-type: none"> • Number of participants from different sectors involved in the seminar 	<ul style="list-style-type: none"> • Proceedings of the seminar. 	<ul style="list-style-type: none"> • FBD secures participation of partners and stakeholders. • Partners and stakeholders manifest interest in the project and become proactive in its implementation
<p>1.1.2 Review and adaptation of approach to national forestry resources monitoring and assessment on mutually consensual basis to meet specific needs of Tanzania for integration with national forest policy and planning development processes.</p>	<ul style="list-style-type: none"> ▪ Number of technical meetings on forestry monitoring process ▪ Frequency of inter-sectoral dialogue integrating NAFORMA in policy harmonisation process 	<ul style="list-style-type: none"> • Reports and proceedings of technical meetings 	<ul style="list-style-type: none"> • FBD secures participation of partners and stakeholders in development of NAFORMA process and definition of stable approach to long term forestry resources monitoring • Partners and stakeholders work with FBD to develop a consensual process for NAFORMA

1.1.3 Workshop on NAFORMA methodology	<ul style="list-style-type: none"> Final version of NAFOAMA approach in Tanzania produced as working paper. 	<ul style="list-style-type: none"> Document describing NAFORMA approach. Working papers on introducing NAFORMA into policy and planning processes. 	<ul style="list-style-type: none"> FBD secures participation of partners and stakeholders in development of NAFORMA process and definition of stable approach to long term forestry resources monitoring Partners and stakeholders work with FBD to develop a consensual process for NAFORMA.
1.2.1 Survey of users (key line ministries, research institutions and other relevant partners) needs of information about forests and trees taking into account the country's obligation to report to the international processes, conventions and forums.	<ul style="list-style-type: none"> Number of stakeholders who participated in the survey of information needs. 	<ul style="list-style-type: none"> Report reflecting scope, format and gaps of existing information. 	<ul style="list-style-type: none"> Partners and stakeholders cooperate with FBD in the survey of national information needs.
1.2.2 National workshop for the definition of information needs on forests, trees and forestry ecosystems with focus on management, uses and users of resources and their economic, environmental, social and cultural functions.	<ul style="list-style-type: none"> Number of stakeholders participated in identifying information needs 	<ul style="list-style-type: none"> Reports describing nationally agreed list of variables; Proceedings of meetings and workshops. 	<ul style="list-style-type: none"> 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.
1.2.3 Review of national policy requirements from NAFORMA.	<ul style="list-style-type: none"> Number of inter-sectoral policy analysis carried out. 	Working papers on introducing NAFORMA into policy and planning processes.	<ul style="list-style-type: none"> Sectors work together in defining policy requirements from NAFORMA.
1.3.1 Assessment of the country's experiences and skills in forestry resources monitoring, assessment and information management. Identification of gaps.	<ul style="list-style-type: none"> Number of national personnel with skills and experiences in forest resources monitoring, assessment and information management. Number of training plans designed. <p>Number of trained personnel.</p>	<ul style="list-style-type: none"> Reports describing status of forestry personnel and their skills. Report describing training needs for NAFORMA. Modules of training of the national personnel. 	<ul style="list-style-type: none"> Tanzania institutionalise NAFORMA process and provide it with financial and human resources to continue its mission beyond the end of the project.
1.3.2 Design of training plans and preparation of didactic material in collaboration with teaching institutions	<ul style="list-style-type: none"> Number teaching institutions participated in the design of the training plans. 	<ul style="list-style-type: none"> Training materials e.g. documents 	<ul style="list-style-type: none"> Project team ensures wide consultation on the specifications of the training of the project personnel.

1.4.1 Definition of organisation and mandate of NAFORMA.	<ul style="list-style-type: none"> • Structure and mandate of the NAFORMA unit. • Government action institutionalising NAFORMA within FBD. 	<ul style="list-style-type: none"> • Government decision institutionalising NAFORMA. • Project records (reports and meeting minutes). 	<ul style="list-style-type: none"> • Government recognises the need for a permanent NAFORMA process. • Partners and stakeholders concur with establishing of lasting NAFORMA process and work for it.
1.4.2 Training of NAFORMA supervision personnel in the PTU.	<ul style="list-style-type: none"> • Number of trained personnel assigned to NAFORMA on permanent basis. 	<ul style="list-style-type: none"> • Project records. 	<ul style="list-style-type: none"> • Government assigns the required personnel.
1.4.3 Training of NAFORMA field crews personnel.	<ul style="list-style-type: none"> • Number of trained personnel. 	<ul style="list-style-type: none"> • Project records. 	<ul style="list-style-type: none"> • Government assigns the required personnel.
1.4.4 Training of NAFORMA mapping personnel	<ul style="list-style-type: none"> • Number of trained personnel. 	<ul style="list-style-type: none"> • Project records. 	<ul style="list-style-type: none"> • Government assigns the required personnel.
1.4.5 Training of NAFORMA database personnel.	<ul style="list-style-type: none"> • Number of trained personnel. 	<ul style="list-style-type: none"> • Project records. 	<ul style="list-style-type: none"> • Government assigns the required personnel.
1.4.8 Procurement and assignement project equipment.	<ul style="list-style-type: none"> • Equipment procured and assigned. 	<ul style="list-style-type: none"> • Project records. 	<ul style="list-style-type: none"> • Government facilitates procurements
1.5.1 Review of structure, and functionalities of NAFOBEDA and other forestry related databases.	<ul style="list-style-type: none"> • Meetings for review of NAFOBEDA. 	<ul style="list-style-type: none"> • Reports describing structure, and functionalities of NAFOBEDA. 	<ul style="list-style-type: none"> • FBD acts to harmonise national information framework.
1.5.2 Harmonisation of the national forestry information framework – NAFOBEDA and results of NAFORMA - including forest related definitions and classifications with due consideration of relevant national, regional and international definitions and classifications.	<ul style="list-style-type: none"> • Meetings for conceptualising and developing NAFORMA database 	<ul style="list-style-type: none"> • Project records on linkage of NAFORMA database with NAFOBEDA. 	<ul style="list-style-type: none"> • FBD acts to harmonise national information framework. • FBD acts to involve partners and stakeholders in the information framework harmonisation as to generalise the benefit from the project results.
1.5.3 National workshop on harmonisation of the national forestry information framework including forest related definitions and classifications.	<ul style="list-style-type: none"> • Meetings and workshops for forest related terms and definitions and land use classification system harmonisation. 	<ul style="list-style-type: none"> • Project records describing harmonised forest related terms and definition and land use classifications. 	<ul style="list-style-type: none"> • Partners and stakeholders understand and recognise the utility of harmonised information framework. • Partners and stakeholders participate in harmonising the forest/land use classification system.

1.6.1 Design and setting up of functional forestry database integrating geo-referenced field data of all variables following the data collection concept.	<ul style="list-style-type: none"> • Database set up within FBD. • Number of trained personnel assigned permanently to database management. • Field data and maps digitised and stored in database. 	<ul style="list-style-type: none"> • Report describing structure of database. • Number of national personnel trained. 	<ul style="list-style-type: none"> • FBD prioritise NAFORMA database and recognise its importance for easy retrieval and use of information by users and for future updating of the national forest assessment.
1.7.1 Selection and procurement of two time series remote sensing data (2007 and 1997) for mapping and forest cover change analysis.	<ul style="list-style-type: none"> • Specifications of the remote sensing data required for the project. • Number of remote sensing scenes procured. 	<ul style="list-style-type: none"> • Sets of remote sensing data for two time series. 	<ul style="list-style-type: none"> • FBD assigns personnel for the mapping.
1.7.2 Field reconnaissance, interpretation of remote sensing data, field and air checking of interpretation results and finalisation of the map.	<ul style="list-style-type: none"> • Manual for interpretation of satellite images. • Number of national personnel trained for the mapping using the remote sensing techniques. • Draft forest/land use map. 	<ul style="list-style-type: none"> • Reports and manuals. • Number of national personnel trained. • Forest and land use maps. 	<ul style="list-style-type: none"> • FBD assign qualified personnel for the mapping. • Mapping integrated in the NAFORMA process.
1.7.3 Production of forest/land use map.	<ul style="list-style-type: none"> • Forest and land use map covering the entire country. 	<ul style="list-style-type: none"> • Forest/land use map. 	<ul style="list-style-type: none"> • FBD define specifications of the map with other users.
1.7.4 Digitizing of the forest/land use map.	<ul style="list-style-type: none"> • Database incorporating mapping results. 	<ul style="list-style-type: none"> • Reports. 	<ul style="list-style-type: none"> • FBD work to geo-reference the forest and tree data.
1.8.1 Planning of the national forest and tree inventory.	<ul style="list-style-type: none"> • Sampling design. • Number of trained personnel and number of field crews created • Organisation of the fieldwork, e.g. field crews, logistics, supervision, and technical guidance. 	<ul style="list-style-type: none"> • Reports describing approach and sampling design. • Forest inventory manual. • Field forms received from field crews. • Reports of supervision personnel. 	<ul style="list-style-type: none"> • Technical working Group of FBD participate actively in organising and supervising field survey. • PTU design plan for logistical support to field crews and their supervision.
1.8.2 Implementation of the field survey and data collection on forests and trees from the representative nationwide systematic sample plots.	<ul style="list-style-type: none"> • Number of field sample plots visited, number of interviews carried and field forms received with field data, checked and validated. 	<ul style="list-style-type: none"> • Field forms received with field data. 	<ul style="list-style-type: none"> • Logistical support provided and supervision done in systematic way as to harmonise data collection between field crews.
1.9.1 Entry of field data in database, checking, cleaning and validation.	<ul style="list-style-type: none"> • Number of national personnel trained for data encoding, cleaning and validation. 	<ul style="list-style-type: none"> • Reports and manuals. • Number of national personnel trained. • Final report of the project results and findings. 	<ul style="list-style-type: none"> • Technical working Group of FBD and stakeholders participate actively in scoping project results. • PTU works to involve qualified personnel for project results analysis

			<ul style="list-style-type: none"> • FBD involves wide range of stakeholders for results validation.
1.9.2 Processing of field data, analysis of results, reporting	<ul style="list-style-type: none"> • Results from the data processing and analysis. 	<ul style="list-style-type: none"> • Reports. 	<ul style="list-style-type: none"> • FBD personnel involved in the analysis of the results.
1.9.3 Validation of NAFORMA findings.	<ul style="list-style-type: none"> • Workshop for the presentation and validation of the NAFORMA results and findings. 	<ul style="list-style-type: none"> • Final report of NAFORMA. 	<ul style="list-style-type: none"> • FBD involves large number of stakeholders in validation of NAFORMA results.
1.10.1 Diagnosis of the state of the forest and tree resources, forest ecosystem, environment, and the way these are managed and used, definition and prioritisation of follow up actions	<ul style="list-style-type: none"> • Number of personnel involved in the exercise of diagnosis of the forestry sector and identification of priority follow up actions. • Number of stakeholders informed on the results of the diagnosis and their views considered. 	<ul style="list-style-type: none"> • Reports and document of validated diagnosis. 	<ul style="list-style-type: none"> • FBD involves partners and stakeholders in review and validation of the diagnosis. • Diagnosis is carried out in a participatory way.
1.11.1 Definition of priority areas for detailed forest inventories including forest management oriented inventories.	<ul style="list-style-type: none"> • Number of priority areas for detailed or specific inventories. 	<ul style="list-style-type: none"> • Reports and documents describing priority areas. 	<ul style="list-style-type: none"> • FBD engage different users of information (partners and stakeholders) in definition of country's needs of specific and/or detailed forest inventories. • Number of partners and stakeholders involved in identifying specific needs of information from forest inventory and in prioritising areas. • Development partners continue supporting FBD in its effort for information generation.
1.11.2 Definition of objectives of detailed forest inventories e.g. timber concession management, community based management, timber exploitation, etc.	<ul style="list-style-type: none"> • Number of defined objectives of detailed/specific inventories. 	<ul style="list-style-type: none"> • Reports and documents describing specific and/or detailed inventories of forests. 	<ul style="list-style-type: none"> • FBD engage different users of information (partners and stakeholders) in definition of country's needs of specific and/or detailed forest inventories. • Number of partners and stakeholders involved in identifying specific needs of

			information from forest inventory and in prioritising areas.
1.11.3 Design and formulation of projects of detailed forest inventory for funding by development partners.	<ul style="list-style-type: none"> • Number of specified inventory plans. • Number of inventory projects approved by FBD for immediate implementation. • Plan of work of the NAFORMA Unit to implement detailed/specific inventories. 	<ul style="list-style-type: none"> • Project documents per objective. • Plan of work for following years of the NAFORMA Unit. 	<ul style="list-style-type: none"> • FBD engage different users of information (partners and stakeholders) in definition of country's needs of specific and/or detailed forest inventories. • Number of partners and stakeholders involved in identifying specific needs of information from forest inventory and in prioritising areas.

Appendix 4: Work Plan

Workplan form Original Pro Doc Main Activities	Months																																							
	M 1	M 2	M 3	M 4	M 5	M 6	M 7	M 8	M 9	M 10	M 11	M 12	M 13	M 14	M 15	M 16	M 17	M 18	M 19	M 20	M 21	M 22	M 23	M 24	M 25	M 26	M 27	M 28	M 29	M 30	M 31	M 32	M 33	M 34	M 35	M 36				
Phase I: Preparation, Training																																								
Nomination of NPC	■																																							
Launching of NAFORMA		■																																						
Recruitment of International and National Consultants		■	■																																					
Inception Report		■	■																																					
National seminar with partners and stakeholders																																								
NFP Steering Committee Meetings		■			■			■			■			■			■			■			■			■			■			■			■			■		
Procurement of NAFORMA Equipment		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
Analysis of existing expertise, identification of gaps and capacity Building Needs			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
National workshop of Information Needs Identification				■																																				
National workshop on methodology for NAFORMA					■																																			
National workshop on forest/land use classification						■																																		
Strengthening of NAFORMA unit of FBD	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
Training of NAFORMA staff: Supervision level			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
First training of Technicians (field staff)						■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
Second training of Technicians (field staff)																																								
Third training of Technicians (field staff)																																								
Procurement of satellite images & equipment			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
Training of Mapping staff																																								
Phase II: Mapping and Field Survey																																								
Mapping: field reconnaissance, interpretation manual																																								
Mapping - interpretation, field checking,																																								
Mapping: fianlisation and reproduction																																								
Field survey																																								
Supervision																																								

Phase III: Data Processing, Analysis and Reporting	
Building NAFORMA database compatible with NAFOBEADA	
Training of national personnel - Database/data processing	
Storage and reproduction of the map	
Data entry	
Data Processing	
Reporting of NAFORMA findings	
National workshop on project findings	
Diagnosis o forest sector	
Specific f. inventory priorities	
Workshop on project findings and outline of follow up programme	
Intervention of Consultants and Experts	
CTA&Assessment Expert	
Land use mapping Expert	
National Project Coordinator	
National Forest Inventory Consultant	
National Mapping and Remote Sensing Consultant	
National Forest Information System Consultant	
Biometrician Data Processing Consultant	
NFRA Expert	

WORK PLAN TWG MAPPING	2010	2011	2012	
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Tentative workplans for Mapping and Field Inventory work

ACTIVITIES MAY-2010-JANUARY 2013	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J				
	A	U	U	U	E	C	O	E	A	E	A	P	A	U	U	U	E	C	O	E	A	E	A	P	A	U	U	U	E	C	O	E	A				
	Y	N	L	G	P	T	V	C	N	B	R	R	Y	N	L	G	P	T	V	C	N	B	R	R	Y	N	L	G	P	T	V	S	N				
<i>FIELD MAP PRODUCTION AND PRINTING</i>																																					
<i>ESA IMAGES PROCUREMENT</i>																																					
<i>CHANGE AREA CALCULATION PLOTS OVERLAY</i>																																					
<i>PRINTING ESA COMPOSITES WITH PLOTS</i>																																					
<i>IMAGE CORRECTIONS-Geometric</i>																																					
<i>Radiometric</i>																																					
<i>IMAGE CLASSIFICATION -Unsupervised Classification</i>																																					
<i>TRAINING DATA ESTABLISHMENT AND LEGEND DEVELOPMENT-(FIELD DATA REQUIRED)</i>																																					
<i>LAND COVER MOSAICING</i>																																					
<i>VERIFICATION OF LAND COVER FROM ESA- (FIELD VISITS REQUIRED)</i>																																					
<i>PRINTING OF 2010 LAND COVER MAPS</i>																																					
<i>PROCUREMENT (LANDSAT-1990)*</i>																																					
<i>LAND SAT IMAGES CORRECTION Geometric corrections</i>																																					
<i>Radiometric corrections</i>																																					
<i>ESA-LANDSAT CROSS-REFERENCING Spatial resolution rectification-ESA</i>																																					
<i>ESA-Landsat cross-rectification</i>																																					
<i>DEVELOPING TRAINING SITES-(FIELD DATA REQUIRED)</i>																																					
<i>LANDSAT IMAGE CLASSIFICATION- SUPERVISED</i>																																					
<i>AREAS OF CHANGE IDENTIFICATION</i>																																					

FORESTS INVENTORY FIELD WORK PLAN

		Year 2010												Year 2011												Year 2012			
		5 teams, 1 QA				10 teams, 2 QA				15 teams, 2 QA				18 teams, 2 QA teams				9 teams in each zone, 2 QA teams											
Zone	Region	Cluster	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	TOTAL			
Eastern	Dar es Salaam	10						10																					
Eastern	Morogoro	292	60		160	72																							
Eastern	Pwani	125							125																				
Eastern	Tanga	114					114																						
	Total	541																											
Southern	Lindi	271								240	31																		
Southern	Mtwara	69									69																		
Southern	Ruvuma	271										271																	
	Total	611																											
Southern highlands	Iringa	275													275														
Southern highlands	Mbeya	228														228													
Southern highlands	Rukwa	223															223												
	Total	726																											
Western	Kigoma	136																		52	84								
Western	Tabora	236																144	92										
	Total	372																											
Northern	Arusha	137																	137										
Northern	Kilimanjaro	62																			62								
Northern	Manyara	143																		143									
	Total	342																											
Lake	Kagera	130																				130							
Lake	Mara	65																						65					
Lake	Mwanza	54																						54					
Lake	Shinyanga	157																						13	144				
	Total	406																											
Central	Dodoma	156																											
Central	Singida	195																					144	12					
	Total	351																											
Total Clusters		3,349	60	0	160	72	124	125			240	100	271			275	228	223	281	287	146		274	276	207	3349			

Appendix 5: Terms of Reference for International and National Personnel

Chief Technical Advisor and Forest Assessment Expert (IE – 1)

Terms of Reference

In 2001, the Forestry and Beekeeping Division of the Ministry of Natural Resources and Tourism (MNRT) prepared the national forest programme (nfp) in Tanzania for the period 2001 and 2010. The nfp encompasses four thematic areas (TA) or programmes that cover both the forest resources management as well as institutional and human resources development aspects. The forest resources conservation and management is one of these thematic areas. The objective is this TA is to secure sustainable supply of forest products and services to meet the needs at the local and national levels. Under this TA, the nfp contains a sub-programme related to forest resources information and management planning under which it was foreseen to: (i) carry out forest inventories and develop management plans together with the stakeholders in priority plantations and natural forest areas and (ii) conduct reconnaissance inventories, biological surveys, zonation and prepare low cost management plans.

To implement this sub-programme, the FBD identified, with the support by the Development Partners, the need for national forest assessment designed to generate knowledge about the full range of social, economic and environmental benefits of the forest and trees outside forest resources. A national forestry resources monitoring and assessment was designed with the support from FAO for implementation with funding by the Government of Finland and in-kind contributions from the Government of Tanzania.

Under the direct supervision of the FAO Representative in Dar Es salaam as budget holder and guidance provided by the Lead Technical Officer (LTO) at FAO Headquarters, in coordination with the NPC, the CTA and Forest Assessment Expert will provide the technical assistance and support to FBD in the areas of capacity building, institutional strengthening, planning and implementation of NAFORMA project. The main tasks of the Expert be to:

1. Assist in the recruitment of the national international staff and their deployment within the project and oversee their activities.
2. Prepare, in collaboration with the NPC, an updated detailed work plan for the project and submit it to the SC for review.
3. Work closely with the NPC and the other national counterpart personnel to implement the project activities as planned;
4. Work closely with the NPC to refine the approach to national forest and tree resources assessment based on the FAO approach to NFAs and taking into consideration the forest inventory methods applied in Tanzania.
5. Assist the NPC and the other national counterpart personnel in elaborating a training programme to the national staff assigned for the implementation of the office and in field activities.
6. Assist the national counterpart personnel and other national and international personnel to strengthen FBD for future monitoring of the resources and information management;
7. Assist FBD in planning, running and servicing the workshops and seminars planned in the project (informative seminar , workshops on the NFA approach, information and capacity building needs, land use classification system, project findings, etc);
8. Assist in securing wide consultation to establish national consensus on the NFA approach and long term monitoring process;
9. Assist in selecting and procuring equipments and supplies for the forest inventory component of the project;
10. Assist in organising and supervising the fieldwork for timely implementation of the activities;
11. Assist in supervising the mapping activities and deployment of the needed resources;
12. Assist in developing and setting up the national database and deployment of the resources.

13. Provide supervision to the field crews during the survey and provide technical guidance as to homogenise data collection and interpretation of variables and definitions. All teams will be closely followed during the start of the fieldwork;
14. Prepare in collaboration with the NPC periodic progress reports project for submission to FAO and the Government of Tanzania as well as the Terminal report of the project.

Duration: 36 months

Duty Station: Dar Es Salaam, and travel inside the country

Qualification: The Expert should have advanced University Degree in Forestry or related field, at least 10 years of relevant experience in the field of forest resources monitoring and assessment, relevant experience in developing countries, strong background in remote sensing, forest inventory design and planning and in forestry policies. He must be competent in forest information system development and information management and have confirmed experience in capacity building and project implementation.

Languages: English and limited knowledge of Swahili

Land Use Mapping Expert (IE – 2)

Terms of Reference

In 2001, the Forestry and Beekeeping Division of the Ministry of Natural Resources and Tourism (MNRT) prepared the national forest programme (nfp) in Tanzania for the period 2001 and 2010. The nfp encompasses four thematic areas (TA) or programmes that cover both the forest resources management as well as institutional and human resources development aspects. The forest resources conservation and management is one of these thematic areas. The objective is this TA is to secure sustainable supply of forest products and services to meet the needs at the local and national levels. Under this TA, the nfp contains a sub-programme related to forest resources information and management planning under which it was foreseen to: (i) carry out forest inventories and develop management plans together with the stakeholders in priority plantations and natural forest areas and (ii) conduct reconnaissance inventories, biological surveys, zonation and prepare low cost management plans.

To implement this sub-programme, the FBD identified, with the support by the Development Partners, the need for national forest assessment designed to generate knowledge about the full range of social, economic and environmental benefits of the forest and trees outside forest resources. A national forestry resources monitoring and assessment was designed with the support from FAO for implementation with funding by the Government of Finland and in-kind contributions from the Government of Tanzania.

Under the direct supervision of the FAO Representative in Dar Es Salaam as budget holder and guidance provided by the Lead Technical Officer (LTO) at FAO Headquarters, in coordination with the NPC, the Land use Mapping Expert will provide the technical assistance and support to FBD in the areas of capacity building, institutional strengthening, planning and implementation of NAFORMA project. The main tasks of the Expert be to:

1. Review and analyse the national and international land cover/land use classification systems and related definitions of relevance to the NAFORMA Project in terms of thematic details, dates and methods of production, precision, etc;
2. Prepare in collaboration with the national consultant on mapping a manual for the interpretation of the satellite images.
3. Prepare, in collaboration with the national consultant of mapping and FBD personnel, a national classification of land cover/ land uses in accordance with the agreed strategy for producing a harmonised classification system.
4. Define with the national consultant and FBD the specifications of the needed remote sensing data and assist in acquiring the satellite images;
5. Define, in collaboration with the national consultant of mapping and FBD personnel, specifications of the land use map to be produced and the mapping method.
6. Assess the capacity building needs for the mapping activity of the project and participate to train the national team;
7. Assist in organising the mapping work and oversee the interpretation of satellite images in the office based the harmonised legend and its checking in the field. This work should be closely coordinated with the national consultant;
8. Validate the interpretation results, produce a final map and generate the statistical results on areas of the different land use units;
9. Ensure that the FBD counterpart personnel fully understands all the work-processes related to the land cover/land use classification development, interpretation of satellite images, map production so that future repetitions will be possible with the FBD's own capacity.
10. Report any technical problems related to the mapping work to the CTA and the NPC.

11. Describe all the work performed in the form of a terminal report at the end of the recruitment period to be submitted to CTA and the LTO at the FAO Headquarters for technical clearance. The report should contain:
1. an ample description of the work process and;
 2. recommendations for possible improvements of the map;

Duration: 10 months

Duty Station: Dar Es Salaam with frequent travel inside the country

Qualifications: The Expert should have advanced University Degree in Forestry or related field, at least 10 years of relevant experience in the field of forest resources and land use mapping, relevant experience in developing countries, strong background in remote sensing, forest inventory and in forestry policies. He must be competent in forest information system and information management and have confirmed experience in capacity building and project implementation.

Language: Fluency in English is required.

National Project Coordinator (NC-1)

Terms of Reference

In 2001, the Forestry and Beekeeping Division of the Ministry of Natural Resources and Tourism (MNRT) prepared the national forest programme (nfp) in Tanzania for the period 2001 and 2010. The nfp encompasses four thematic areas (TA) or programmes that cover both the forest resources management as well as institutional and human resources development aspects. The forest resources conservation and management is one of these thematic areas. The objective is this TA is to secure sustainable supply of forest products and services to meet the needs at the local and national levels. Under this TA, the nfp contains a sub-programme related to forest resources information and management planning under which it was foreseen to: (i) carry out forest inventories and develop management plans together with the stakeholders in priority plantations and natural forest areas and (ii) conduct reconnaissance inventories, biological surveys, zonation and prepare low cost management plans.

To implement this sub-programme, the FBD identified, with the support by the Development Partners, the need for national forest assessment designed to generate knowledge about the full range of social, economic and environmental benefits of the forest and trees outside forest resources. A national forestry resources monitoring and assessment was designed with the support from FAO for implementation with funding by the Government of Finland and in-kind contributions from the Government of Tanzania.

Under the direct supervision of the Director of FBD, the National Project Coordinator (NPC) will assume managerial responsibility of the project, facilitate its smooth implementation and will report to FBD and coordinate the project activities with the CTA. The main tasks of the NPC will be to:

1. Promote, liaise and maintain close working relationships with the national institutions and regional/district Forestry and Beekeeping services to ensure wide participation of the implementation of the project activities.
2. Prepare and update in conjunction with the CTA a detailed work plan for project implementation. Detailed work plans will be prepared at least annually and more often if advised by the Steering Committee and the Director of FBD, or if required by FAO, MNRT or the Donor.
3. Implement the work plans in accordance with the project requirements. In close coordination with the CTA, the LTO at FAO Headquarters and the FAO/Dar Es Salaam, ensure timely delivery of equipment, recruitment, placement of consultants and reporting by them, selection of personnel for training courses, study tours and other training activities, arrangement and fieldwork activities and project reporting.
4. Facilitate the nomination of the national counterpart professionals to the international experts.
5. Supervise, guide and monitor all personnel, including experts and consultants, in the project implementation. Ensure that all reports, manuals and other documentation prepared by experts and their counterpart are of high quality.
6. Plan and supervise the planning, implementation and monitoring processes of project activities.
7. Ensure that all Government facilities and inputs to the project (e.g. office accommodation and administrative assistance, equipment, training and personnel) are available when required and are used by the project.
8. Arrange the travel and coordination arrangements for international training and study tours.
9. Arrange internal travel in Tanzania for international experts and their counterparts to the regions in accordance with the project needs.
10. Liaise with other projects that are active in the implementation of the national forestry development programme.
11. Arrange and supervise all workshops, training courses, seminars and fieldwork that are required for project implementation.

12. Assume responsibility for the submission of all project reports to FBD in a timely manner.
13. Prepare periodic reports for the Steering Committee, Tri-Partite Review Missions, MNRT and FAO as required by the Project Document, including a terminal report.

Duration of Assignment: 3 years.

Duty Station: Dar Es Salaam with travels in the country.

Qualifications: A university degree, preferably at Masters level, in forestry with experience of at least 10 years of practical experience in Tanzania in forest management, forest assessment/inventory, project management. The NPC must have an extensive knowledge of forestry and project management/administration.

Language: English.

Appointment: The National Project Coordinator will be selected and appointed by the Government and will work *Full Time* on the Project

National Forest Inventory Consultant (NC-2)

Terms of Reference

In 2001, the Forestry and Beekeeping Division of the Ministry of Natural Resources and Tourism (MNRT) prepared the national forest programme (nfp) in Tanzania for the period 2001 and 2010. The nfp encompasses four thematic areas (TA) or programmes that cover both the forest resources management as well as institutional and human resources development aspects. The forest resources conservation and management is one of these thematic areas. The objective is this TA .is to secure sustainable supply of forest products and services to meet the needs at the local and national levels. Under this TA, the nfp contains a sub-programme related to forest resources information and management planning under which it was foreseen to: (i) carry out forest inventories and develop management plans together with the stakeholders in priority plantations and natural forest areas and (ii) conduct reconnaissance inventories, biological surveys, zonation and prepare low cost management plans.

To implement this sub-programme, the FBD identified, with the support by the Development Partners, the need for national forest assessment designed to generate knowledge about the full range of social, economic and environmental benefits of the forest and trees outside forest resources. A national forestry resources monitoring and assessment was designed with the support from FAO for implementation with funding by the Government of Finland and in-kind contributions from the Government of Tanzania.

Under the direct supervision of the FAO Representative in Dar Es salaam as budget holder and guidance provided by the Lead Technical Officer (LTO) at FAO Headquarters and SFS in Harare, in coordination with the NPC, the National Forest Inventory Expert will provide the technical assistance and support to FBD in the areas of capacity building, institutional strengthening, planning and implementation of NAFORMA project. The main tasks of the Expert be to

- ✓ Prepare an inception report and submit it to CTA and the NPC.
- ✓ Work with the national team from FBD and CTA to set up the NAFORMA unit for which the mandate, organisation and needs will be defined. The mandate of NAFORMA include wide rage 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 closely with the CTA and the NPC to prepare a work-plan for implementation of the project activities following the participatory approach where professionals, scientists, and stakeholders from the different sectors must be involved.
- ✓ Work closely with the national personnel and international experts and provide inputs for the elaboration of the training programme to be given to the national staff involved in the project and assist FBD in implementing it;
- ✓ Participate in implementing the training programme to the field crews and database personnel through the planned workshops and courses;
- ✓ Assist FBD in planning and servicing the workshops throughout the project and securing wide participation of stakeholders from the different sectors.
- ✓ Work with the professionals from the different sectors and scientists, and in close collaboration with the CTA consultant, to reach a consensus on the NFA approach and long term monitoring.
- ✓ Assist in coordinating the efforts of FBD to define the information needs and harmonise the land use classification.
- ✓ Assist FBD in purchasing, installing and using the equipment and supplies foreseen for the project;

- ✓ In close collaboration with the international consultant/experts, prepare a plan of the project activities and identify timely inputs from the project and the Government;
- ✓ Organise the fieldwork including composition of the field crews, their assignment to their sampling areas with the transport, field equipment, field forms, etc, and provide the necessary logistical support.
- ✓ Provide supervision to the field crews during the survey and provide technical guidance as to homogenise data collection and best interpretation of variables and definitions. All teams should be closely followed during the start of the fieldwork;
- ✓ Assist in organising and filing field crew outputs.
- ✓ In close collaboration with CTA, assist in developing the national forest database, entering/storing the field data, preparing functions for data processing and be part of the data processing together with the Biometrician.
- ✓ Assist in data analysis and reporting of findings.
- ✓ Participate in preparing the project progress reports.

Duration: 24 months

Duty Station: Dar Es Salaam, with frequent travels inside the country

Qualification: The Expert should have advanced University Degree in Forestry or related field, at least 10 years of relevant experience in the field of forest resources monitoring and assessment, strong background in forest inventory design and planning and in forestry policies. He must be competent in forest information system development and information management and have confirmed experience in capacity building and project implementation.

Languages: English

Mapping Consultant (NC-3)

Terms of reference

In 2001, the Forestry and Beekeeping Division of the Ministry of Natural Resources and Tourism (MNRT) prepared the national forest programme (nfp) in Tanzania for the period 2001 and 2010. The nfp encompasses four thematic areas (TA) or programmes that cover both the forest resources management as well as institutional and human resources development aspects. The forest resources conservation and management is one of these thematic areas. The objective is this TA is to secure sustainable supply of forest products and services to meet the needs at the local and national levels. Under this TA, the nfp contains a sub-programme related to forest resources information and management planning under which it was foreseen to: (i) carry out forest inventories and develop management plans together with the stakeholders in priority plantations and natural forest areas and (ii) conduct reconnaissance inventories, biological surveys, zonation and prepare low cost management plans.

To implement this sub-programme, the FBD identified, with the support by the Development Partners, the need for national forest assessment designed to generate knowledge about the full range of social, economic and environmental benefits of the forest and trees outside forest resources. A national forestry resources monitoring and assessment was designed with the support from FAO for implementation with funding by the Government of Finland and in-kind contributions from the Government of Tanzania.

Under the direct supervision of the FAO Representative in Dar Es salaam as budget holder and guidance provided by the Lead Technical Officer (LTO) at FAO Headquarters and SFS in Harare, in coordination with the NPC, the National Forest Inventory Expert will provide the technical assistance and support to FBD in the areas of capacity building, institutional strengthening, planning and implementation of NAFORMA project. The main tasks of the Expert be to:

1. Review and analyse the national and international land cover/land use classification systems and related definitions of relevance to the NAFORMA Project in terms of thematic details, dates and methods of production, precision, etc;
2. Prepare, in collaboration with the International Land Use Mapping Expert and the national counterpart personnel, a national classification of land cover/ land uses for producing a nationally harmonised classification system.
3. Define in collaboration with the International Land Use Mapping Expert and FBD the specifications of the needed remote sensing data and assist in acquiring the satellite images;
4. Define in collaboration with the International Land Use Mapping Expert the specifications of the land use map and the mapping method.
5. Assess the capacity building needs for the mapping activity of the project a participate in training the national team;
6. Assist in organising the mapping team and oversee the interpretation of the satellite images in the office based on the harmonised legend and its checking in the field;
7. Validate the interpretation results, produce a final map and generate the statistical results on areas of the different land use units;
8. Ensure that the FBD counterpart personnel fully understands all the work-processes related to the land cover/land use classification development, interpretation of satellite images, map production so that future repetitions will be possible with the FBDs own capacity.
9. Report any technical problems related to the mapping work to CTA and to the LTO.
10. Describe all the work performed in the form of a terminal report at the end of the recruitment period — to be submitted to the CTA for technical cleared. The report should contain: 1. an ample descriptions of the mapping process to facilitate future repetitions of the work and; 2. recommendations for possible improvements of the map;

Duration: 18 months

Duty Station: Dar Es Salaam with frequent travel inside the country.

Qualifications: The Expert should have advanced University Degree in Forestry or related field, at least 10 years of relevant experience in the field of forest resources and land use mapping, strong background in remote sensing, forest inventory and in forestry policies. He must be competent in forest information system and information management and have confirmed experience in capacity building and project implementation.

Language: English.

Data processing Consultant (Biometrician) (NC-4)

Terms of Reference

In 2001, the Forestry and Beekeeping Division of the Ministry of Natural Resources and Tourism (MNRT) prepared the national forest programme (nfp) in Tanzania for the period 2001 and 2010. The nfp encompasses four thematic areas (TA) or programmes that cover both the forest resources management as well as institutional and human resources development aspects. The forest resources conservation and management is one of these thematic areas. The objective is this TA .is to secure sustainable supply of forest products and services to meet the needs at the local and national levels. Under this TA, the nfp contains a sub-programme related to forest resources information and management planning under which it was foreseen to: (i) carry out forest inventories and develop management plans together with the stakeholders in priority plantations and natural forest areas and (ii) conduct reconnaissance inventories, biological surveys, zonation and prepare low cost management plans.

To implement this sub-programme, the FBD identified, with the support by the Development Partners, the need for national forest assessment designed to generate knowledge about the full range of social, economic and environmental benefits of the forest and trees outside forest resources. A national forestry resources monitoring and assessment was designed with the support from FAO for implementation with funding by the Government of Finland and in-kind contributions from the Government of Tanzania.

Under the direct supervision of the FAO Representative in Dar Es salaam as budget holder and guidance provided by the Lead Technical Officer (LTO) at FAO Headquarters and SFS in Harare, in coordination with the CTA and the National Forest Inventory Consultant, Biometrician will provide the technical assistance and support to FBD in the areas of capacity building, institutional strengthening, database development and data processing. The main tasks of the Expert be to:

1. Prepare an inception report and submit to the CTA and NPC for comments
2. Review with the FAO backstopping experts the existing NAFOBEDA database structure and develop NAFORMA database compatible with it.
3. Work closely with the forest inventory consultant to review the existing volume tables and other functions for computations in the database
4. Assist in encoding and validating the field data,
5. Provide training to the national team in data processing and analysis
6. Prepare a data processing manual
7. Assist the national staff in sorting and processing the collected data to meet the needs of the FBD and generate the expected results.
8. Store all the findings in an easily retrievable format.
9. Ensure that the FBD counterpart personnel understand fully all the work-processes related to extracting, sorting, processing and analyzing the collected data so that repetitions will be possible in the future with the FBD capacity.
10. Report any technical problems related to the data and database to the CTA and the NPC.
11. Describe all work performed in the form of a terminal report at the end of the recruitment period — to be submitted to the CTA for technical clearance. The report should contain: 1. an ample descriptions data processing to facilitate future repetitions of the work and; 2. recommendations for possible improvements of the database application including a description of any technical problems and any ‘bugs’ encountered during the work
12. Help organise the final workshop.

13. Assist in any other tasks under the project at the instruction of the LTO and the FAO Representative.

Duration: 10 months.

Duty station: Dar Es Salaam

Qualifications The consultant should have a strong background in information system development, database management, statistical analysis and be familiar with MS Access database application at an advanced level. at least 10 years of experience are required.

Language: English.

Appendix 6: NAFORMA SAMPLING DESIGN STUDY

Separate file