Country:	**the Republic of Zambia**
Project Title:	**Integrated Land Use Assessment (ILUA) II**
Project Symbol:	**GCP/GLO/194/MUL (FIN) ILUA II**
Government/Partner Agency:	**Ministry of Tourism, Environment and Natural Resources**
Duration:	**four years**
Starting Date:	**January 2010**
Completion Date:	**31 December 2013**

FAO/ Government Cooperative Programme – (GCP)

PROJECT AGREEMENT

1. Upon request from the Government of **the Republic of Zambia** (the Government), and within the framework of its agreement with the Government of **Finland** (the Donor Government), the Food and Agriculture Organization of the United Nations (FAO) will supply assistance for the execution of the following Project once it is also accepted by the Donor Government.

Project Title: Support to "Phase II of Integrated Land Use Assessment (ILUA) in the Republic of Zambia" ("the Project"), within the GCP/GLO/194/MUL "Strengthening Forest Resources Management and Enhancing its Contribution to Sustainable Development, Land Use and Livelihoods

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

A detailed description of the Project, including background, rationale, project framework, implementation and management arrangements as well as oversight, monitoring, management information and reporting, is provided in the attached Project Document.

FAO OBLIGATIONS

2. FAO shall be responsible for the recruitment, international travel, salaries and emoluments of the international personnel scheduled in the Project Document. The candidatures of these international staff shall be submitted to the Government for clearance following FAO's procedures. FAO shall also be responsible for the recruitment, salaries and emoluments of the national experts, national consultants, and national personnel as scheduled in the Project Document, except for counterpart personnel assigned by the Government.

3. FAO will procure, in accordance with its rules and regulations, the equipment and supplies described in the Project Document. The equipment will remain the property of FAO for the duration of the Project. Its ultimate destination shall be decided by FAO in consultation with the Government and with the Donor Government.

4. FAO will arrange for periodic technical supervisory, support or review missions to the Project, with the full costs to be financed from the Project's budget.

5. All FAO's obligations arising under this Project Agreement shall be subject to: (i) the decisions of its Governing Bodies and to its constitutional, financial and budgetary provisions; and (ii) the receipt of the necessary contributions from the Donor Government. All financial accounts and statements shall be expressed in United States Dollars and shall be subject exclusively to the internal and external auditing procedures laid down in the Financial Regulations, Rules and directives of FAO. Any obligations assumed by FAO may, at any time, be taken over by the Donor Government.

6. FAO may, in consultation with the Government, execute part or all of the Project by subcontract. The selection of the subcontractors shall be made, after consultation with the Government, in accordance with FAO's procedures.

GOVERNMENT OBLIGATIONS

7. The Government shall take all necessary measures to facilitate the execution of the Project and to assist the FAO staff in obtaining such services and facilities as they may require to fulfil their tasks. The Government shall apply to FAO, its property, funds and assets, its officials and to the persons performing services on its behalf in connection with the Project: (i) the provisions of the Convention on Privileges and Immunities of the Specialized Agencies; and (ii) the United Nations currency exchange rate.

8. The Government shall deal with any claims brought by third parties against FAO, its personnel or other persons performing services on its behalf in connection with the Project, except when it is agreed by FAO and the Government that such claims arise from gross negligence or wilful misconduct of such persons.

9. The Government shall be responsible for the recruitment, salaries and social security measures of its own national staff assigned to the project. The Government shall also provide as and when required for the Project, the facilities and supplies indicated in the Project Document.

10. The Government shall grant to the staff of FAO and of the Donor Government and to persons acting on their behalf, access to the Project site and to any material or documentation relating to the Project, and shall provide any relevant information to such staff or persons.

11. The Government shall be responsible for the cost of import and customs clearance of the Project's equipment, its transportation, handling, storage, and related expenses within the country; its insurance, safe custody, and maintenance, after delivery to the project site, as well as replacement if necessary.

REPORTING AND EVALUATION

12. FAO will report to the Government (and to the Donor Government) as scheduled in the Project Document.

13. The Government shall agree to the dissemination of information, like descriptions of the project and of its objectives and results, for the purpose of educating public opinion.

14. The Project may be subject to independent evaluation according to the arrangements agreed to between the donor, recipient government and FAO. The evaluation report will be treated as confidential with restricted access by parties not directly involved in the Project. However, FAO is authorized to prepare a brief summary of the report for the purpose of disseminating broadly its main findings, issues, lessons and recommendations as well as to make judicious use of the report as an input to evaluation synthesis studies.

CLAIMS, AMENDMENTS AND TERMINATION

15. Any dispute, controversy or claim arising out of or in connection with this Agreement or any breach thereof, shall, unless it is settled by direct negotiation, be settled by arbitration in accordance with the UNCITRAL Arbitration Rules in force on the date when this Agreement takes effect. The parties hereto agree to be bound by any arbitration award rendered in accordance with this Section as the final adjudication of any disputes.

16. The present agreement shall be governed by general principles of law, to the exclusion of any single national system of law.

17. Nothing in or related to any provision in this Agreement shall be deemed a waiver of the privileges and immunities of FAO.

18. This Project Agreement may be amended or terminated by mutual consent. Termination shall also take effect sixty days after receipt by either party of written notice from the other party. In the event of termination,

the obligations already assumed by the Government shall remain in force to the extent necessary to permit orderly withdrawal of the funds and assets of FAO, and of personnel performing services on its behalf.

19. This Project Agreement shall enter into force upon signature by both parties.

On behalf of: The Government of the Republic of Zambia	On behalf of: The Food and Agriculture Organization of the United Nations
Name:	Name: **Mr Noureddin Mona**
Title:	Title: **FAO Representative**
Date:	Date:

Attachment: Project Document with
Annex 2 Logical Framework
Annex 3 Work Plan

Executive Summary

Zambia Integrated Land-use Assessment (ILUA) project was implemented by the Government of the Republic of Zambia through the Forestry Department of the Ministry of Tourism, Environment and Natural Resources (MTENR) in 2005–2008. Technical and financial assistance was provided by the UN Food and Agriculture Organization (FAO). The main purpose of ILUA was to build up forest related land use resource inventories, support national planning capacity and contribute to formulating development policies. ILUA is based on FAO National Forest Assessment and Monitoring System (NFMA) methodology, but additionally it has aimed at in-depth analysis and policy dialogue between stakeholders across inter-sectoral variables that cover resource data on forestry, agriculture and livestock and their use.

Based on the discussion with stakeholders, a proposal on the continuation of ILUA with an extension was proposed in March 2009 to the Government of Finland for financing. Since the Environment and Natural Resources Management and Mainstreaming Programme (ENRMMP) has been launched to bring improved coordination and implementation capacity to the environment and natural resource management sector in Zambia, the proposed project is designed to be implemented during 2010-2013 under this Programme, with Technical Assistance from FAO. This document covers the first two years of 2010-2011, and the detailed Work Plan for 2012-2013 will be planned during the first 18 months of the project.

The main stakeholders of the project are: MTENR and different departments and institutions with which it collaborates, Ministry of Finance and National Planning, Ministry and Agriculture and Cooperatives, Central Statistical Office (CSO), Ministry of Lands, National Remote Sensing Centre (Ministry of Science and Industrial Research), University of Zambia (UMZA), Copperbelt University, Center for International Forestry Research (CIFOR), National Institute for Scientific Research (NISA), Zambian Agricultural Research Institute (ZARI), other national and international education and research institutes, small holder farmers, NGOs and civil society, UN-REDD and other projects, FAO and other Cooperation Partners (CPs).

The beneficiaries of the project can be summarized as follows: policy and decision makers at all levels, forest industries with an interest in timber and non-timber forest products from forest areas, the international community and international organizations requiring reliable information on the natural environment, NGOs, academia and grass roots organizations with interests in forest resource management, environmental protection, timber trade and extension.

In line with the overall policy of the Government of Republic of Zambia, the impacts of this project are that *benefits of sustainable forest management (SFM) are increased and mainstreamed in national economy and policies, supporting sustainable development of environment and rural livelihoods, meeting the Millennium Development Goals (MDGs) in a changing climate*.

The project main outcome is *strengthened capacity in planning and implementation of SFM and REDD through better information, capacity building dissemination of information, and improved multisectoral dialogue*. The three main outputs of the project are identified as follows: 1) Effective means of dissemination and utilisation of the information for multisectoral dialogue; 2) Improved methodological and human capacity in collecting and analyzing forest resource information for Sustainable Forest Management, REDD monitoring and carbon inventory and 3) Implementation of ILUA II - Mapping and Field Survey.

The budget of the project for the years 2010–2011 is EUR 1 953 096 and for 2012–2013 EUR 2 000 000 (tentatively).

ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
C	Carbon
CC	Climate Change
CCFU	Climate Change Facilitation Unit
CIFOR	Center for International Forestry Research
CP	Cooperation Partner
CSO	Central Statistical Office
DBMS	Database Management System
ECZ	Environmental Council of Zambia
ENR	Environment and Natural Resources
ENRMMP	Environment and Natural Resources Management and Mainstreaming Programme
FAO	Food and Agriculture Organization of the United Nations
FD	Forestry Department
FMU	Forest Management Unit
FNDP	Fifth National Development Plan
FRA	Forest Resources Assessment
GIS	Geographic Information Systems
GPS	Global Positioning System
HIV	Human Immunodeficiency Virus
HTML	HyperText Mark-up Language
ICT	Information and Communication Technology
ILUA	Integrated Land Use Assessment
IPCC	Intergovernmental Panel on Climate Change
IPF	Intergovernmental Panel on Forests
JSC	Joint Steering Committee
LiDAR	Light Detection and Ranging
MAC	Ministry of Agriculture and Cooperatives
MDG	Millennium Development Goal
MoL	Ministry of Lands
MRV	Monitoring, Reporting and Verification
MS	Microsoft
MTEF	Medium-Term Expenditure Framework
MTENR	Ministry of Tourism, Environment and Natural Resources
NDVI	Normalized Difference Vegetation Index
NFA	National Forest Assessment
NFMA	National Forest Assessment and Monitoring System
NGO	Non-governmental Organization
NPC	National Project Coordinator
NPE	National Policy on Environment
NRSC	National Remote Sensing Center
OS	Open Source
PHP	Hypertext Preprocessor

PID	Planning and Information Department
PMT	Project Management Team
PSRP	Public Service Reform Programme
PTF	Project Task Force
REDD	Reducing Emissions from Deforestation and Forest Degradation
RS	Remote Sensing
SDI	Spatial Data Infrastructure
SFM	Sustainable Forest Management
TA	Technical Assistance
TCP	Technical Cooperation Programme
ToR	Terms of Reference
UNCBD	Convention on Biological Diversity
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Climate Change Convention
UN-REDD	United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries
ZAWA	Zambia Wildlife Authority
ZDHS	Zambia Demographic and Health Survey
ZFAP	Zambia Forestry Action Programme

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1 BACKGROUND

1.1 General Context

Zambia is a land locked country in Southern Africa surrounded by Congo DR, Tanzania, Malawi, Mozambique, Zimbabwe, Botswana, Namibia and Angola. There are two main routes to the sea, the South African ports to the south and the port of Dar es Salaam to the Northeast. The country belongs to a number of regional political and economic groupings such as the African Union (AU), the Southern African Development Community (SADC) and the Common Market for East and Southern Africa (COMESA).

Zambia is regarded as one of the highly forested countries in Southern Africa with a forest cover about 66 percent[1] of the total area of 752 600 km^2 most of which is administered traditionally under customary law. Gazetted forest reserves occupy about nine percent of the total land area and national parks another nine percent. The importance of forests and woodlands to the development of the country is widely acknowledged. There are over 55 000 ha of industrial forest plantations in the country. The planted species have mainly been *Pinus* sp. (79 percent) and *Eucalyptus* sp. (20 percent). During the last decade the area of commercial plantations has gone down, as there has not been enough replanting and/or expansion, although timber is increasingly needed for the mining industry, and the forest plantations can reduce the pressure on indigenous forests.

Zambian forests are vulnerable to factors such as extensive practices of shifting cultivation and slash and burn; ever-increasing demands for wood-based energy (firewood and charcoal); unsustainable commercial utilization of indigenous tree species; over-grazing; and forest fires. In particular, the low productivity of small scale agriculture and degraded agricultural soils create pressure to expand land use for agriculture in forested areas.

The number of population is 10.9 million (2007), with increase rate more than 150 percent during last 37 years[2]. The country is sparsely populated, varying from 63.5 inhabitants per km^2 in Lusaka Province to 4.6 persons per km^2 in North-Western Province. The country faces several challenges on its way to the development and raise people's quality of life: emerging issues are such as HIV/AIDS pandemic, poverty, early marriage and child bearing age of Zambian women, environmental hazards, and a high rate of unemployment. Zambia has also accommodated substantial number of refugees from neighbouring countries.

Currently 67 percent of Zambians are poor[3]. Rural poverty in Zambia is high, even by African standards: it is estimated that 83 percent of the rural population, mainly comprised of semi subsistence farmers, live in poverty. The correlation between poverty and deforestation and forest degradation is high in Zambia, especially in areas near urban centres, and is likely to occur in both directions: a scarce and dwindling natural resource base will be a

[1] The estimate is a result from ILUA, following FAO's definition for forest, which refers to areas where crown cover is greater or equal to 10 percent of the land cover, with land areas over 0.5 ha and the average height of the trees greater than or equal to 5 meters.
[2] UN Population Division Statistics. 2007.
[3] National Population Policy. 2007. Ministry of Finance and National Planning. 18 p.

major contributor to poverty in areas where this is an important element of peoples' livelihoods, and poverty may encourage activities that threaten the natural resource base.

Several challenges are affecting Zambian public sector, as inadequate resources, brain drain, skill shortages, gender imbalances, HIV/AIDS pandemic, rapidly changing technology and various expectation from the public. In addition, Zambia's international commitments and impacts of the climate change (CC) add new demands for effective governance, public services and capacity for changes.

The Government of the Republic of Zambia through the Ministry of Tourism, Environment and Natural Resources (MTENR), in its effort to reduce poverty, promote economic growth, fill existing human capacity gaps and fulfil its international commitments, has requested United Nations (UN) Food and Agricultural Organization (FAO) technical and financial assistance to design and implement an extension of the Integrated Land Use Assessment Project (ILUA II). The main purpose of ILUA II is to build up forest related land use resource inventories in Zambia, support implementation of the Sustainable Forest management (SFM) and REDD through better information, capacity building, dissemination of information, and improved multisectoral dialogue.

This project document is prepared under "FAO - Government of Finland Cooperation Programme", which is a contribution by the Government of Finland to FAO Programme "Strengthening Forest Resources Management and Enhancing its Contribution to Sustainable Development, Land use and Livelihoods" (GCP/GLO/194/MUL). The financed module is "Sustainable Forest Management in a Changing Climate". FAO - Government of Finland Cooperation Programme aims to promote sustainable forest management, build capacity, test and develop methodologies, deliver good practices and methods at the national level. The Programme will be based on FAO's core competence in supporting member countries in establishing national forest assessment and monitoring systems (NFMA), in developing and implementing of National Forest Programmes and in deriving and implementing good practices guidelines on forest management. The budget of the Programme is estimated at €14 million for four years that will be used for strengthening the FAO resources and capacity at the HQ and the participating countries.

1.2 Sectoral Context

1.2.1 ILUA

ILUA was initiated in 2005 through a Technical Cooperation Program (TCP) project, and was completed with additional funding from the FAO-Netherlands Partnership Program (FNPP), governmental counterpart funds and the Finnish Government. FAO's Forestry and Agriculture Departments collaborated in the design and planning of ILUA, building upon an approach developed for National Forest Assessments (NFA). The field data collection was implemented from 2006 to 2008 by the Forestry Department (FD) of MTENR. All information was entered into the ILUA database, which forms the foundation of data analysis. Variables related to sectors beyond forestry (cropping, livestock, and environment) were included in the assessment. Consequently, information was obtained beyond the forestry sector in order to give a wider perspective and therefore potential insight into the causes of

land conversion, deforestation and forest degradation in Zambia. Establishing a monitoring system that captures livelihood needs beyond the forests is critical to designing well-targeted and innovative policy solutions that can support and promote sustainable resource management.

1.2.2 ENRMMP

The Environment and Natural Resources Management and Mainstreaming Programme (ENRMMP) is an initiative of THE GOVERNMENT OF THE REPUBLIC OF ZAMBIA that aims to bring improved coordination and implementation capacity to the environment and natural resource management sector. It was formulated under the guidance of a Joint Task Force led by MTENR. The task force included representatives from MTENR departments and statutory bodies and Cooperating Partners (CPs) interested in a joint mechanism for supporting the sector (Finland, Denmark, Norway and United Nations Development Programme (UNDP)). MTENR intends to use the ENRMMP as the umbrella vehicle for all CP intervention in the Tourism, Environment and Natural Resources sector, and it is anticipated that other CPs seeking to participate in this sector may provide funding through ENRMMP, including for example for climate change interventions. ENRMMP is planned to cover the following 4 years.

ENRMMP contains two main components: 1) a Capacity Development Component will build the internal capacity of MTENR to lead policy development in environment and natural resource (ENR) sector and will support mainstreaming of ENR in other government bodies; 2) support to the development and first four years of operation of an Interim Environmental Fund that will finance key environmental investments.

The entry point of the programme will be the Planning and Information Department (PID) in MTENR. Therefore the designed inception phase of ENRMMP (July-December 2009) especially aims to give support in building PID's capacity to coordinate national policy making and to provide the information which others will need for evidence based policy development. The work plan contains investments e.g. for ICT infrastructure and support to establish an Information and Knowledge Management Center at PID. In addition, ENRMMP aims to support the development of a new Forest Research and Extension Master Plan, designed to be ready till the end of 2009.

1.2.3 REDD

Globally, deforestation is estimated to account for one fifth of human induced emissions of carbon dioxide. Hence, there is political interest to seek incentives to reduce deforestation and forest degradation. Within the United Nations' Framework Convention on Climate Change (UNFCCC) circles there has been considerable discussion on developing a performance-based incentive system for countries to reduce the rate of emissions from deforestation and forest degradation, known as REDD (Reducing Emissions from Deforestation in Developing Countries), which may provide financial incentives to developing countries to reduce deforestation and forest degradation.

In September 2008, the global UN REDD Programme was launched aiming to assist tropical forest countries with establishing a fair, equitable and transparent REDD regime. Zambia has been selected as one of the nine pilot countries for the initial 'Quick Start' phase[4]. The quick start will be funded by the Government of Norway as part of Norway's International Climate and Forest Initiative. The implementing UN agencies are UNDP, UNEP and FAO. The mandate of UN REDD is to support the Zambian government to be REDD ready by 2012 by having established a REDD program that effectively addresses deforestation and forest degradation with significant additional co-benefits.

The national coordination in REDD is not clear as the Government of the Republic of Zambia is still discussing how a REDD mechanism would be arranged. So far the coordination has been taken by the Forest Department, but this can be seen as an initial setup as in future a National REDD Secretariat including a sub Technical Committee within the MTENR has been discussed.

The National REDD Strategy would be part of the National Strategy on Climate Change currently being drafted by the newly (4/2009) formed Climate Change Facilitation Unit (CCFU). The main duty of the unit is to coordinate CC activities and formulation of policies and legal framework within MTENR and between ministries. The unit also aims to operate and assist in implementation of National Adaptation Programme of Action (NAPA) and REDD in the country. CCFU has currently four officers in duty (6/2009).

Monitoring, Assessment, Reporting and Verification (MARV) are a key component in building and implementing REDD strategy. These arrangements of UN-REDD fall under the responsibility of FAO who is charged with facilitating the development of the Reduced Emissions Level (REL) as well as providing support to the development of a permanent forest monitoring system for Zambia that will be able to track forest carbon (C) emission changes over time. FAO is therefore responsible for ensuring that Zambia is, to the best of its abilities, compliant with UNFCCC carbon reporting.

1.2.4 NAPA

MTENR, with the aid of the United Nations Development Programme (UNDP) and the Global Environment Facility (GEF), has formulated the National Adaptation Programme of Action (NAPA) on Climate Change in 1997. This programme complements the Fifth National Development Plan (FNDP) and it aims will steer the country forward in adapting and ameliorating problems related to climate change. More specifically, NAPA will complement the efforts of the Government of the Republic of Zambia through the following: 1) contributing to the security of the vulnerable Zambians; 2) ensuring that the livelihoods of the most vulnerable households are secured against the adverse effects of climate change and their basic needs assured; 3) vulnerable groups are protected from the worst impacts of risks and shocks as a result of climate change; and 4) creating public awareness of

[4] The proposed objective of the UN-REDD programme for Zambia is "to assist the GRZ in achieving REDD readiness". Therefore, the UN-REDD scoping mission visited Zambia between 4-8 May 2009, in order to identify and agree upon areas of Zambia's REDD Readiness Plan and determine the next steps in finalizing the National Joint Programme.

the adverse effects of climate change. The intended outcome of the NAPA process is to produce a list of priority activities which are amenable to Zambia's development goals and poverty reduction strategies. The NAPA Programme Document (1997) contains the following list of prioritized projects:

- strengthening of early warning systems to improve services to preparedness and adaptation to climate change in all the sectors (agriculture, health, natural resource, and energy);
- promotion of alternatives sources of livelihoods;
- adaptation of the Effects of Drought in the context of Climate Change in Agro-Ecological Region I of Zambia;
- management of critical habitats;
- promote natural regeneration of indigenous forests;
- adaptation of land use practices (crops, fish, and livestock) in light of climate change;
- maintenance and provision of water infrastructure to communities to reduce Human-Wildlife Conflict;
- eradication of Invasive Alien Species;
- capacity building for improved environmental health in rural areas;
- climate-proofing sanitation in urban areas.

1.3 Sectoral Policy and Legislation

Government's overarching policy vision, presented in "Vision 2030", is for Zambia to "become a prosperous middle income country by 2030". The Fifth National Development Plan (FNDP) 2006-2010, and the associated Medium-Term Expenditure Framework (MTEF), provides the link between "Vision 2030" and the annual activity plans and budgets. FNDP is thus Government's comprehensive medium-term planning framework, which ensures that sectoral strategic plans are well coordinated, interlinked, and prioritised based on assessments of resource ceilings as set out in MTEF. It defines Government's vision, goals, and programmes for each sector and cross-cutting and thematic area to achieve Vision 2030.

Zambia's body of laws relating to the management of the Environment and Natural Resources sector is spread over more than 20 international treaties and over 30 Acts of Parliament and responsibility dispersed amongst at least ten line ministries. The sectoral legislation or regulations include the following key acts: Pollution Control Act (1990), Wildlife Act (1998), Forests Act (1999), Forest Act (1999), Water Act (2001), Energy Act (1994), Lands Act (1995), Mining and Minerals Act (1995), Environmental Protection and Pollution Control Act (1990), Land Survey Act (1995), and National

Heritage Conservation Commission Act. At the policy level, Zambia through the Lands Act of 1995 has recognised customary land as eligible for state registration and thus one can get leasehold title on customary land. This has empowered peasant farmers and women with security of tenure to land.

In 1995 the Zambia Forestry Action Programme (ZFAP) planning process was launched in response to the FAO tropical Forestry Action Plan of 1987. ZFAP was undertaken as an integral part of the National Environmental Action Plan process, which was developed to incorporate environmental issues into social and economic policy and development planning. The current National Forestry Policy (1998) and Forestry Act (1999) are outcomes from the ZFAP planning process. The Act was entered into the Government Gazette on October 1999 but has not been implemented yet, so the Forestry Act has been in abeyance for ten years[5]. At the moment the forestry sector, including the Forestry Department, needs deeply to get a new policy which will provide framework for restructuring FD and an enabling environment for new issues, as the National REDD readiness strategy.

Public Service Reform and Decentralization were initiated by the Government's Public Service Reform Programme (PSRP), which aims at improving the quality of service delivery in the public sector through three pillars: Decentralisation, Public Expenditure Management and Financial Accountability (PEMFA) Reform Programme; and Public Service Management (Right Sizing and Pay Reform). According to the ENRMMP Programme Document, it is evident that the PSRP has significant bearing on environment and natural resources management in that improved service delivery through decentralisation, right sizing, pay reform and financial accountability in the ENR sector will subsequently contribute to the sustainable management of ENR on which a large part of the population relies on for economic and social wellbeing. Of particular importance among the PSRP pillars, the National Decentralisation Policy aims to devolve service delivery from central government to the 72 districts.

Gender equality is a key area of national policy. The Government adopted the National Gender Policy in 2000 and launched the strategic plan of action (2004 to 2008) in 2004, and new vision of 'Gender equity and equality in the development process by 2030' was launched in the Fifth National Development Plan. The National Gender Policy of Zambia highlights a number of policy areas. In addition to the Policy, the Government has developed Guidelines and Checklist for Mainstreaming Gender into the Public Sector. The Guidelines and Checklists have been distributed to all Government ministries and stakeholders to ensure that gender issues and concerns are incorporated into their respective polices, programmes and activities. Gender participation has also been taken into account in the Zambian Forestry Action Plan.

[5] The Permanent Secretary of MTENR has stated during the UN-REDD workshop (5/2009) that the approval of a new act would be put forward during the fall 2009. UNDP is supporting the review of the Act.

2 RATIONALE

2.1 Issues to be Addressed

The ILUA Phase I was initially planned with limited mobilized resources, and its results have not yet fully met all expectations of the different information users for both domestic and international level reporting. Still, there is a need to improve the quality, scope and dissemination of information. The key areas that need attention are:

(i) Human capacity and resources of FD in MTENR to implement and maintain continuous NFA is limited. Under the current situation FD is looking forward to a new forestry act, forest policy and restructuring of forest administration, and thus the capability of FD to act efficiently is partly halted.

(ii) Low spatial intensity of the collected field data for rare events. Interpolation or extrapolation of results down to the province and district levels has been limited because the initial intention of ILUA was to obtain national-level data. Since that point, it has become clear that more provincial/district level data is needed in order to use as a planning tool;

(iii) Benefits of using ILUA data and results for land-use planning and pro-poor activities have not been demonstrated/realized because of its original scope of obtaining national-level data;

(iv) Data collection needs to encompass more REDD-pertinent parameters including carbon pools (above and below ground) and integrate them into the ILUA general approach;

(v) Improved quality of Remote Sensing (RS) products (e.g. image mosaic) and land-use maps;

(vi) Limited skills in analysis of ILUA data. Stakeholder benefits of ILUA data have been relatively few outside of those working most closely on ILUA;

(vii) Limited skills in using RS data and techniques in support to the field data collection;

(viii) Dissemination of ILUA data and results has not been planned or organized.

Some of the cross-cutting issues that will be addressed and incorporated as integral activities into the project are those related to gender and HIV/AIDS. In situations of extreme poverty, the situation for women and children is particularly acute. Gender equality is a key area of national policy: the Government of the Republic of Zambia adopted the national gender policy in 2000 and launched the strategic plan of action (2004 to 2008) in 2004, and the vision of 'Gender equity and equality in the development process by 2030' was launched in the Fifth National Development Plan. The national

gender policy of Zambia highlights a number of policy areas, and gender participation has also been taken into account in the Zambian Forestry Action Plan.

Inhabitants of Zambia have been affected by the HIV/AIDS pandemic. According to the HIV/AIDS data from the 2007, 15.2 percent of Zambians age 15-49 are HIV positive[6]. HIV prevalence ranges by provinces, being the highest in Lusaka Province (21 percent), and lowest in Northern Province (7 percent)[7]. HIV is most common among people at age 30-34 for woman (26 percent), and at age 40-44 for men (24 percent). As a result of high HIV prevalence, the state organizations and companies have experienced reduced productivity due to:

(i) loss of human resources through deaths;

(ii) absenteeism arising from sickness, attending funerals and nursing sick relatives;

(iii) poor work performance as a result of sickness; and

(iv) financial resources has been shifted from productive activities into meeting expenses for the HIV/AIDS related costs, as medical, burial, recruitment and replacement costs.

Other consequences have been high staff turn over and loss of knowledge, skills and expertise. In addition, in some cases there has been a work overload for remaining staff due to difficulties to replace the deceased staff.

2.2 Stakeholders and Target Beneficiaries

The main stakeholders of the project are:

- MTENR (including Forestry Department, Environment and Natural Resources Department, Planning and Information Department, Department of Human Resources and Administration, Environmental Council of Zambia, Zambia Forestry College) is the primary stakeholder organization and is also in charge of ILUA data input, maintenance and development of country-wide ILUA II approach.
- Ministry of Finance and National Planning;
- Department of Agriculture (Ministry and Agriculture and Cooperatives);
- Central Statistical Office (CSO);
- Survey Department (Ministry of Lands);
- National Remote Sensing Centre (Ministry of Science and Industrial Research);
- Environmental Council of Zambia (ECZ);

[6] UNAIDS/WHO, 2008.
[7] Zambia Demographic and Health Survey (ZDHS) 2007. HIV prevalence. Paper published by the Central Statistical Office of Zambia.

- University of Zambia (UMZA), Copperbelt University;
- Center for International Forestry Research (CIFOR);
- National Institute for Scientific Research (NISA), Zambian Agricultural Research Institute (ZARI);
- Other national and international education and research institutes;
- Communities and/small holder farmers;
- NGOs and civil society;
- UN-REDD and other projects;
- FAO and other CPs.

Zambia has signed several international commitments, which require the government to deliver information on the natural environment, including forest lands. Zambia has commitments in international processes and with international organizations, such as the FAO Forest Resource Assessment (FRA), the Convention on Biological Diversity (CBD), the United Nations Convention to Combat Desertification (UNCCD), UNFCCC, the expected post Kyoto Agreement on REDD etc. To fulfill these commitments, quality information is required.

The beneficiaries of the project can be summarized as

- policy and decision makers;
- forest industries with an interest in timber and non-timber forest products from forest areas;
- the international community and international organizations requiring reliable ENR data;
- NGOs, academia and grass roots organizations with interests in forest resource management, environmental protection, timber trade and extension;
- general public. Basic statistics and maps are needed for public use, for instance in schools;
- rural communities and small holder farmers.

2.3 Project Justification

Communities living in rural areas are closely involved in the use of forest resources. Therefore, the forest policies and decisions made at the central, provincial, district and community levels directly and indirectly affect people's everyday subsistence and lives. Better information will most likely lead policy and decision makers to make better decisions on, for example, community based forest management, and thus improve people's living conditions. And the only way for any policies to succeed is if they are based on a thorough understanding of local people's livelihood strategies and help to create viable livelihoods while conserving the natural resource base.

The ILUA project (2005-2008) produced a remarkable set of information not only on forest resources, but also on local communities and their use of the resource. The ILUA database with derived informative products, such as statistics and maps, contain a valuable source of information for the government administration, NGOs and the public. The analysis of ILUA data and linking it to ancillary and other geo-spatial data, with special attention to pertinent socio-economic, agricultural and climate change issues in the country, can help to inform policy decision making and facilitate monitoring and evaluation of policy impacts. Still there are many improvements to be made in terms of filling the information needs for REDD monitoring and GHP reporting, dissemination and use of the information in the forestry and other sectors, stakeholder organizations and communities, especially at the province and district levels. Therefore the project aims to make information complete and available with information linked to large scale environmental reporting activities carried out by CSO, MTENR, ECZ, FAO and international organizations.

As stated in the Fifth National Development Plan 2006–2010, environmental and climate change issues are emphasized on the government's agenda and many internationally supported processes. the Government of the Republic of Zambia is a signatory to a number of international conventions and protocols on the protection of the environment and biodiversity conservation. These include Agenda 21, Convention on Biological Diversity, United Nations Convention to Combat Desertification, Forest Principles, the Convention on Climate Change and the Convention on International Trade in Endangered species of Flora and Fauna.

Adaptation to climate change in the forestry and agriculture sectors is critical in reducing the vulnerability of local communities and managing food security. The current programmes and processes, as REDD and GHP reporting, have created a considerable need for reliable information for gaining the REDD readiness and meeting the challenges of climate change. In the absence of the ILUA project, there would not be up-to-date information about forest resources in Zambia. The previous full national forest assessment was conducted in the 1960s. Specific parameters related to REDD include changes in forest area, growing stock, biomass and carbon stocks. ILUA has the potential to respond to this type of information. Hitherto, the IPCC Good Practice Guidance has been widely used for reporting on all forest carbon stocks, but in the longer run more accurate estimates for carbon balance accounting can be derived from ILUA database by improving the utilization of scientific information, by developing national or regional conversion factors and by using remote sensing technology.

REDD has potential to create new financing for sustainable development and to greatly improve livelihoods. Zambia's forest resources are the second biggest in Eastern and Southern Africa, although deforestation and degradation rates are alarming. The pressure on forests is, to a large extent, created by the low productivity and degraded soils of agricultural lands. To successfully apply REDD based opportunities, adequate capacity of the national administration is required with quality forest resource information and reliable national systems to monitor the changes of deforestation and degradation. Intensification is needed both in capacity building and use of new technology.

Stakeholder dialogue on key forest policy and land use issues is an important matter in Zambia and throughout the region. REDD and climate change issues are vaguely known in Zambia as well as in many other countries. Developing a database for use across all stakeholders and building of capacity towards REDD readiness and carbon inventory in Zambia are important areas to be strengthened at all levels of the land use, forestry, agriculture and environmental administration. Therefore, the project will be focusing on the continuation of policy dialogue, harmonisation and strategic advice, information sharing and capacity building. Needs for dissemination of data produced by ILUA and collection of new information are evident not only in forestry sector, but also in environmental and agricultural sectors, and in the wider Zambian economic spheres.

Monitoring of forest degradation and assessment of the changes in biomass and carbon stock of forests are new challenging elements for the REDD initiative and national forest inventories will place further emphasis on obtaining more accurate information in the future. Based on experiences from other countries, new high-resolution RS data analysis and LiDAR scanning are promising methods to accurately and cost-effectively assess some forest parameters. In the near future it is expected that delivery of new high resolution images will improve and that countries must have readiness for using them. This will give information about forest loss and changes in vegetation over a period of time. Hence, LiDAR technology, combined with information from other remote sensing methods (FRA RS Survey and high resolution satellite images), may provide a practical tool to collect more reliable information for planning, monitoring, and decision making of natural resources, particularly in difficult to reach locations that might otherwise be overlooked in field inventories. Moreover, LiDAR data will be useful in topographic mapping, locating body of water and mapping of watershed

areas, thus providing benefits for the Survey Department at the Ministry of Lands (MoL) in its work in building a Spatial Data Infrastructure (SDI) for Zambia. Testing and developing RS methodologies will serve not only Zambian needs by providing more cost-effective means of obtaining accurate land use data, but will also feed into international processes such as CC negotiations on REDD mechanisms and developing monitoring systems in other countries.

2.4 Past and Related Work

There have been a number of sectoral development programmes that have been developed in the country based on environmental principles in their formulation and implementation. These include e.g. Environmental Support Programme (ESP), Zambia Forestry Action Program (ZFAP) (2000-2020)[8], Provincial Forestry Action Program (PFAP and PFAP II) (2000-2007), and Community Based Natural Resources Management Program (CBNRM) (1999-2003).

Before ILUA, the available information on the extent, location, and condition of the forestry resources in Zambia were obtained from 17 surveys carried out between 1932 and 2004. The scale, extent and objectives of forest inventories have varied considerably between years, the latest forest resource inventory being the most comprehensive. The synopsis on the development of forest inventories over the period of past 77 years has been summarized in Table 1.

Table 1. Synopsis on the development of Zambian forest inventories 1932-2009.

Period	Inventory or activity
1932 – 1936	Sample plots established near Ndola to determine the productivity of miombo woodland.
1942 – 1944	The first large-scale forest inventory for locating and estimating the timber volume availability for the Copperbelt province mines.
1949 – 1951	Large-scale forest inventory for locating and estimating the timber volume for the Western province concession harvesting.
1952 – 1967	Large-scale inventory for District Forest Management Books.
1972	Copperbelt province woodland survey.

[8] ZFAP is a national initiative to assess Zambia's forest resources and the country's capability to manage the forests. The programme include a wide range of approaches for sustainable forest management taking into consideration holistic, inter-sectoral and iterative approaches, ecosystem approaches that integrate the conservation of biological diversity and sustainable use of biological resources adequate provision and valuation of forest goods and services. It includes components on Wood energy, Tree development, Biodiversity Conservation and Extension services.

1977	Timber and woodland survey of East Luangwa.
1984 – 1986	First estimate on Zambia woody biomass resource: Wood consumption and supply survey at National level.
1987	Second estimate on Zambia woody biomass resource: SADCC countries wood energy study based on large-scale satellite imagery.
1994 – 1996	Forest resources management study for Zambezi teak forests in South-Western Zambia in co-operation with Japan International Cooperation Agency (JICA)
1996	Third estimate on Zambia woody biomass resource: forest resource assessment.
1996 – 1998	Forest inventories in Copperbelt, Luapula and Southern Provinces under Provincial Forestry Action Programme, Phase I (PFAP).
1997	SADC estimate for Zambian forest area.
1999 – 2001	Forest inventories in Copperbelt, Luapula and Southern Provinces under Provincial Forestry Action Programme, Phase II (PFAP).
2000	FRA 2000 (FAO).
2001	Forest inventories in Central Province under Environment Support Programme (ESP).
2002 – 2003	Forest inventories in Copperbelt, Eastern, Luapula, Lusaka, Northern, Northwestern, Southern and Western Provinces under Forestry Support Programme (EU-FSP).
2004	Fourth estimate on Zambia woody biomass resource: Forestry Support Programme (EU-FSP).
2006 – 2008	Integrated Land Use Assessment – ILUA (FAO).

Source: Forestry Department of Zambia, and FRA Zambia 2004 Final Report.

ILUA was completed in December 2008, the outputs of which demonstrated that the vast majority of the country is under forests (66 percent) – which is considered by FAO definitions to represent areas where crown cover is greater or equal to 10 percent of the land cover, with land areas over 0.5 hectares and the average height of the trees greater than or equal to 5 meters. First time for over 30 years, the findings gave a general picture of the state of Zambia's forests and forest related resources – about their extent, volume, condition and use – and also information on other land uses and on livelihoods such as income level, land tenure, household composition, livestock, crop products, etc.

The National Remote Sensing Centre (NRSC) was established in 2008 and it is housed by the National Institute for Scientific and Industrial Research in the Ministry of Science and Technology. NRSC is still in its infancy stage at looking for finance and mobilising human resources to start its operations. Currently, the position of the Centre Manager has been filled. The mandate of the Remote Sensing Centre is to coordinate activities in Remote Sensing, ensure the acquisition, processing and delivery of remotely sensed data to educational, public and private institutions, including general public. NRSC is also looking for possibilities to build up a satellite data receiving station in Zambia.

Currently several departments and organizations aim to build their capacity in Geographic Information Systems (GIS) and RS, including FD, ECZ, ZAWA, Department of Agriculture (MAC), and Survey Department (in MoL). CSO is currently designing the 2010 Census starting on July-August 2010, with a strong emphasis to collect spatial information too. The observation/calculation unit is preliminary as follows[9]:

- In rural areas: 60–100 households, 300–500 inhabitants;
- In urban areas: 120–150, 600–800 inhabitants.

CSO aims to locate all villages using Global Positioning Devices (GPSs). In addition, CSO plans procure latest satellite images: on the rural areas the most appropriate data area either Ikonos or GeoEye, and on the urban areas SPOT 5 (in resolution of 2.5 m or 5 m). At the moment, CSO is looking for donors to help in procurement of images. The estimated costs are 1.7 million Euros.

2.5 FAO's Comparative Advantage

FAO is mandated to assist member countries build their capacity and transfer state-of-the-art knowledge and technology to provide a range of sustainable forest management tools, including conducting monitoring and assessment of forest resources and strengthening institutional capacity for policy dialogue. FAO's comparative advantage is seen in the breadth of its technical experience in designing and guiding forest inventories, policy processes and legislation. FAO also draws from an pool of experts who are able to assist in the implementation of the project. With the aid of the TA from FAO, Zambian ILUA has created a valuable baseline of information for policy makers, scientists and other end-users for development from an integrated perspective. Moreover, FAO offers an international forum for disseminating ILUA's results and offers linkages to on-going international processes, such as REDD, through its programmes. FAO is also actively participating in finding solutions to soil carbon mitigation challenges.

FAO Global Forest Resources Assessment 2010 (FRA 2010) includes a global remote sensing survey (RSS) of forests. This survey is aimed at substantially improving the knowledge on land use change dynamics over time, including deforestation, afforestation and natural expansion of forests. The FRA 2010 Remote Sensing Survey builds on the experiences from the remote sensing surveys of the tropical region undertaken as part of previous

[9] Mr Ivan Sikanyiti, GIS Officer, Central Statistical Office (CSO). In: Mission report by Finnish Land Surveyors, Draft Document (in Finnish). 6.5.2009.

global forest resources assessments and on recent advances in methodologies and availability of imagery. This methodology can be used in filling the information gaps and prepare Zambia for REDD mechanism.

FAO is a major actor in developing methodology for UNFCCC post Kyoto agreement on REDD. FAO also has a key normative role in forestry related issues and can therefore serve the counties in building systems and methods that also serve international reporting and potential needs in the future.

Zambia has been considered as a potential pilot country for FAO Forestry Department's Programme on Sustainable Forest Management in a Changing Climate funded by Finland. The programme is especially targeted within the new Strategic Framework for FAO to the strengthening the information base for sustainable forest management, which was defined by the Conference Committee in November 2008. The Programme will be based on FAO's core competence in supporting member countries in establishing forest assessment and monitoring systems (NFMA), in developing and implementing National Forest Programmes (NFP) and in deriving and implementing best practices guidelines on forest management. Special emphasis will be in providing tools and methods for REDD monitoring and climate change adaptation, supporting the collection of quality forest resources data on which to base policy decisions in forestry and establishing closer links between NFMAs and National Forest Programmes. The programme will have network other organizations, institutions and individual experts in SFM and cooperate closely with other development programmes and initiatives such as UN REDD, the Forest Carbon Partnership Facility (FCPF) and bilateral programmes on country level.

3 PROJECT FRAMEWORK

3.1 Impact

In line with the overall policy of THE GOVERNMENT OF THE REPUBLIC OF ZAMBIA, the impacts of this project are to:

Benefits of sustainable forest management increased and mainstreamed in national economy and policies, supporting sustainable development of environment and rural livelihoods, meeting the Millennium Development Goals (MDGs) in a changing climate.

3.2 Outcomes and outputs

The project main outcome is defined as follows:

Strengthened capacity in planning and implementation of SFM and REDD through better information, capacity building, dissemination of information, and improved multisectoral dialogue.

The three main outputs of the project are identified as follows:

Output 1: Effective means of dissemination and utilization of the information for multisectoral dialogue.

Output 2: Improved methodological and human capacity in collecting and analyzing forest resource information for SFM, REDD monitoring and carbon inventory.

Output 3: Implementation of ILUA II - Mapping and Field Survey

The project Work Plan is presented in Annex 3.

Output 1 (*Effective means of dissemination and utilization of the information for multisectoral dialogue*) is the result of the following activities during 2010-2011:

1.1 Consensus on data sharing policy to guarantee access to information.
1.2 Analysis on usability of socioeconomic and biophysical data in ILUA for various end-users and reporting (incl. REDD and GHG reporting), and identification of gaps and development needs.
1.3 Design and implementation of a multi-user database and interface.
1.4 Designing and setting up of functional ILUA portal which contains field data, and results in forms of documents, tables, statistics, charts and maps.
1.5 Preparation and information sharing in forms of printed material delivered for decision makers, institutes, schools, and for public in general.
1.6 ILUA Information published on CD/DVD as multimedia.
1.7 Training on ILUA data management and analysis for various stakeholders.
1.8 Seminars to inform stakeholders and development partners about the concept of ILUA, information services, and use of information for forest policy and planning processes.

Output 2 (*Improved capacity in collecting and analyzing forest resource and forest related information for SFM, REDD monitoring and GHG reporting*) is the result of the following activities during 2010-2011:

2.1 Analysis on expanded data needs, especially for drivers and monitoring of REDD, and GHG reporting, containing recommendations to develop/enhance the research and methods to assess forest biomass and carbon.
2.2 Analysis on expanded data needs pertaining to socio-economic aspects such as gender and HIV/AIDS
2.2 Mapping and analysis of existing research, data, models etc. concerning all carbon pools.
2.3 Special surveys and studies in biomass/carbon assessment, socioeconomic and other related issues studies.
2.4 Planning of alternative approaches and methodologies on field measurements including bio-physical and socio-economic data and RS to meet the national policy and planning needs, and international reporting requirements, incl. REDD and GHG reporting.
2.5 Procurement of equipment, RS and LiDAR data.
2.6 Field data collecting and ground truthing for RS data.
2.7 Processing and analysis of RS and LiDAR data.
2.8 Change detection from satellite images (wall-to-wall for pilot areas).
2.9 Planning and field measurements of intensification of permanent field sampling for data collection and improved measurements.
2.10 Planning of quality assurance.
2.11 Data entry and validation.
2.12 Data processing, analysis and reporting.
2.13 Stakeholder consultation on data needs (both biophysical and socio-economic), methodologies and design of the ILUA II.
2.14 Cooperation and contracting with national and/or international institutional partners for improved measurements for all pools.
2.15 Design of country-wide ILUA II.
2.16 Training of field teams, image and data analysts, and end-users.
2.17 Workshops and seminars.

Activities for aiming at **Output 3 (*Implementation of ILUA II - Mapping and Field Survey*)** will be implanted during 2012-2013. The detailed work plan for this period will be designed during the first 18 months of the project. The tentative list of activities is the following:

3.1 Procurement of equipment and RS data.
3.2 Land cover mapping.
3.3 Change detection from satellite images (wall-to-wall for the whole country).
3.4 Field survey.
3.5 Supervision and quality assurance.
3.6 Data entry, processing, analysis and reporting.

3.7 Building of ILUA II database.
3.8 Further training of national personnel - Database/data processing.
3.9 Reporting of ILUA II findings to national and international processes including GHG and REDD.
3.10 Workshop on project findings and outline of follow-up programme.

The project has strong emphasis on human capacity building. The actual training programmes and schedules will be designed by the project management team, but the following topics have been indentified necessary:

- Training on ILUA data analysis for forest inventory personnel.
- Training on ILUA data analysis for different stakeholder groups.
- Training on land use classification using RS materials.
- Training on using RS data to create a quality image mosaic for Zambia.
- Advanced training on land use classification and change detection using RS materials.
- Training on using ILUA data for thematic mapping.
- Training on using maps for participatory land use planning.
- Training on using ILUA data, maps and other ancillary data for hazard scenario modeling and prevention of damages.
- Basic training in soil, below ground and non-tree carbon assessment and data analysis.
- Training on soil carbon analyses.
- Training on field data collection.
- Training in management and maintenance of the Content Management System of the ILUA portal.
- Training in maintenance and utilization of collected LiDAR and RS data, and derived products.

3.3 Sustainability

ENRMMP's key priority is to support activities that address pro-poor and sustainable approaches to natural resources at the policy level. The project eventually aims to improve people's conditions of living by providing more reliable information for political decision making and to promote SFM.

Since ILUA was the first project in Zambia that conducted a comprehensive and spatially representative NFA since the 1960s', there was a high demand for this information. The project was led by the Zambian Forestry Department, who thus has gained experience in planning and implementing ILUA approach in all provinces. Existing methodology and data form a solid basis to continue the monitoring and assessment of ENR in Zambia. Therefore the extension phase of ILUA aims to strengthen coordination and co-operation between stakeholders and increasing potential impacts throughout the entire country. The project will continue the inter-sectoral multi-stakeholder process through involvement of non-forestry stakeholders in its implementation.

The project has strong focus on training, by arranging training sessions in order to make ILUA data and results more useful and usable for the beneficiaries, and to reinforce human capacity in ENR assessment and monitoring, analysing of data, and dissemination of information. Training will be conducted in various subjects, being targeted to people from various organizations at all levels.

The network of the systematic field sampling will be intensified to constitute new basis for reliable information on a variety of forest, land use and households parameters. The project will endeavour to strengthen the capacity of FD and of its sister institutions for long term field data collection process. The inter-institutional collaboration initiated under ILUA Phase I will be continued, broadened and consolidated under ILUA II for a lasting inter-sectoral dialogue on policy matters.

The dissemination and the web-based systems will be established at the Information and Knowledge Management Center at PID jointly with FD in collaboration and linked to CSO (e.g. ZambiaInfo database). The ultimate aim is keep data backups, and continuation of the information system and future inventory data to ensure the greatest amount of usability and long term impacts. The work will be supported by local consultants. The technical know-how of Zambian ICT companies will be utilized in designing and programming of some parts of the information system modules, and in documenting and formulating the system maintenance plans to secure the sustainability of results.

The project will utilise and test existing FRA RS Survey methodology, new advanced data collection methods (i.e. LiDAR) in selected test areas, and satellite images in change detection. The dissemination of results will be realized by traditional means (publications, printed maps) and via Internet (ILUA Portal). FRA RS Survey is supported by FAO and especially designed to use public domain platforms and free satellite images to ensure sustainability and open access to RS data.

The project aims to ensure applicability of the technology for Zambian National Forest Resource Assessment through a study, where information of new LiDAR data and ILUA database are linked with remote sensing data. The multi-purpose inventory method can provide more accurate information on natural resources and the status of the environment for decision-makers. The project aims at building local capacity in RS methodology, which will strengthen the sustainability of the approach.

3.4 Risks and Assumptions

the Government of the Republic of Zambia and the CPs have worked together to develop, and formulate the project starting with the expressed national need for ILUA information, capacity building and demonstration of interest of partners to support the project. The project was designed under the assumptions that:

1. National authorities are committed, reflected by provision of needed legal, institutional and financial support and follow up of implementation of policies and related programmes. In particular the Government of the Republic of Zambia works to:
   - link the project to the national policy processes (NAPA, sectoral policy, etc);

- ENRMMP mobilization proceeds as planned and it can provide the expected support to ILUA II
- build legitimacy (partners and stakeholders acceptance) for ILUA II, through wide participation during planning and implementation of the project;
- create synergies between the project and other related ongoing initiatives;
- ensure ILUA is institutionalized 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.

2. FD coordinates and supervises project activities. Particularly FD works to ensure timely inputs from all partners and stakeholders, and cost-effectiveness of the project activities. FD is committed to continue the inventory work according to set priorities.

3. Consensus is reached on a national list of forest, tree, socioeconomic and other variables, assessment approach and methods that will help generate the needed information to all users. Thus, ILUA II results and reporting can fulfill the requirements set for information by stakeholders.

4. PID in MTENR succeeds to establish an Information and Knowledge Resource Center, which can host ILUA information services.

5. Trained staff remains in service at least for a period long enough to transfer their know-how.

There are many risks that the project team and administrative units should be aware of and act to minimise them. The major risks are identified and put in the following matrix (Table 2).

Table 2. Risk analysis matrix.

Risk	Risk rating	Risk mitigation measures
Institutional risks		
Adequate and available capacity does not exist at the national level and provincial level in FD to coordinate and guide piloting and ILUA II activities.	H	New forestry strategy is under preparation, and FD aims to get support for its restructuring through the Ministry. The project will have strong focus on capacity building, within FD and other stakeholders, and focusing also on provincial staff.
ENRMMP mobilization will not proceed as planned and ILUA II implementation is dependable on it	M	Proper coordination and planning.
Suitable qualified staff is not available for training and to participate in subsequent activities.	S	Access of relevant stakeholders to attend in meetings, training and dialogue are secured. Quality of training will be secured by TA.
Selected pilot provinces/districts have a limited interest, resources, and capacity to participate in project activities	M	The project will facilitate introduction of the approach with involvement of all stakeholders.
Stakeholders have difficulties to understand the purpose of the project and to participate in its implementation	S	Stakeholders have been involved in project design and they are involved to participate in implementation of all project activities.
Brain drain of trained staff.	S	Trained staff can utilize acquired skills in their work.
Timing and availability of international technical consultants	S	FAO will secure availability of skilful consultants.
Technical risks		

Selected technology can not be adopted by stakeholders, or the project becomes a very technical or academic exercise and it does not benefit the beneficiaries.	H	Proper training; equal gender participation; selection of appropriate technology; target on practical results in special studies; dissemination of results at all levels.
Applied technology is not appropriate and sustainable.	H	Constant monitoring, feedback, participatory planning with stakeholders. A maintenance plan to secure ILUA portal's sustainability.
Limited capacities to use the equipment as intended.	M	Provision of equipment will be complemented with training sessions on its use and maintenance
Quality of input data.	H	Proper training and manuals. Checking, reviewing, and quality assessment.
Outputs from the project are perceived sufficiently innovative for publishing and dissemination.	S	All innovative activities of relevance to the target audience will be highlighted and reported.
Funding risks		
Funds are not available on-time and this effects to the progress and quality of the implementation process.	S	The funding is delivered on-time.
Accounting and financial reporting done properly.	M	Clear procedures, guidelines and timelines for financial reporting; training, guidance and monitoring of administrative staff.
Funding coming from two sources, using two cost norms: Financial management and reporting carried out properly.	S	Clear guidelines for accounting and reporting; training, guidance and monitoring of administrative staff.
Procurements and subcontracts conducted properly.	M	Following the rules of CPs; Auditing.
Coordination risks		

Level and performance of co-operation between FD, PID and other departments under MTENR, Ministry of Lands, Ministry of Agriculture and Cooperatives (MAC), CSO,, other institutes and NGOs, FAO and other CPs, and service providers.	M	National authorities committed, reflected by provision of needed legal, institutional and financial support and follow up of implementation of policies and related programmes. Open and constant information exchange policy, regular meetings; information dissemination of decisions.
Decision making regarding IT contracts, special studies and other services.	S	Open tender process, following the government rules; Participating of key stakeholders and consultants with high competences.
Results from ILUA (2006-2008) and implementation of project activities can not contribute on targeting at best practices for designing ILUA II.	S	Monitoring will be on a continuous basis, documenting all activity innovations, problems, and opportunities.

Note: S = small, M = medium, H = high

4 IMPLEMENTATION AND MANAGEMENT ARRANGEMENTS

4.1 Institutional Framework and Coordination

The ILUA II project is planned to be realized and coordinated by a Joint Steering Committee (JSC) within ENRMMP, with TA from FAO. ENRMMP is an initiative of the Government of the Republic of Zambia that aims to bring improved coordination and implementation capacity to the environment and natural resource (ENR) management sector. The Joint Steering Committee under the ENRMMP will oversee and provide guidance on the overall project implementation. The programme is based on the principles, priorities and objectives of Zambia's Fifth National Development Plan.

The project will be implemented within the Forestry Department of MTENR, and it will be streamlined to support planning and implementation by the ENRMMP. MTENR will be the national counterpart for the project. The implementation is carried out in close cooperation especially with PID of MTENR, and with other ministries and national institutions: Ministry of Agriculture and Cooperatives (MAC), Survey Department of MoL, CSO, Ministry of Finance and National Planning, National Remote Sensing Center (Ministry of Science and Technology), ECZ, ZAWA, UNZA, Copperbelt University, NISA, ZARI, CIFOR Zambia, and local authorities (Councils). The project's administrative chart is presented in Figure 1 on the next page.

The JSC will be highest responsible body for monitoring the project's progress, making major and overall policy and strategic decisions for project delivery in conformity with prevailing relevant national policies. The Project Director within the Forestry Department will report project progress to the JSC. The Ministry of Finance and National Planning (MOFNP), a member of the JSC, is the lead government ministry responsible for creating a conducive and enabling environment for international cooperation to take place particularly between the private sector, donor community, multilateral and bilateral partners. MOFNP also ensures that line ministries are working in cooperation with international development partners.

MTENR will use the Technical Committee (TC) composed of experts from different sectors with linkage to information provided by ILUA. If appropriate, TC can be divided into three thematic areas: 1) Dissemination of information, 2) ILUA II and soil carbon assessment, and 3) RS and mapping. The responsibility of TC will be to oversee and provide necessary requested technical input in the implementation of the project activities, and to facilitate inputs to the project in all phases. TC will be composed of representatives from MTENR (FD, PID, Environment and Natural Resources Department, Zambia Forestry College) and other relevant stakeholders such as the University of Zambia (School of Geography, School of Natural Sciences, School of Agricultural Sciences), Copperbelt University (School of Natural Resources), Ministry of Agriculture and Cooperatives, Ministry of Lands (Survey Department), National Institute for Scientific and Industrial Research (National Remote Sensing Center), Environmental Council of Zambia, Zambia Forestry and Forest Industry Cooperation, Zambia Wildlife Authority (ZAWA), Center for International Forestry Research (CIFOR Zambia), National Institute for Scientific Research (NISA), Zambian Agricultural Research Institute (ZARI), two NGOs, the FAO Representative and the Ministry of Finance and National Planning (Central Statistics Office).

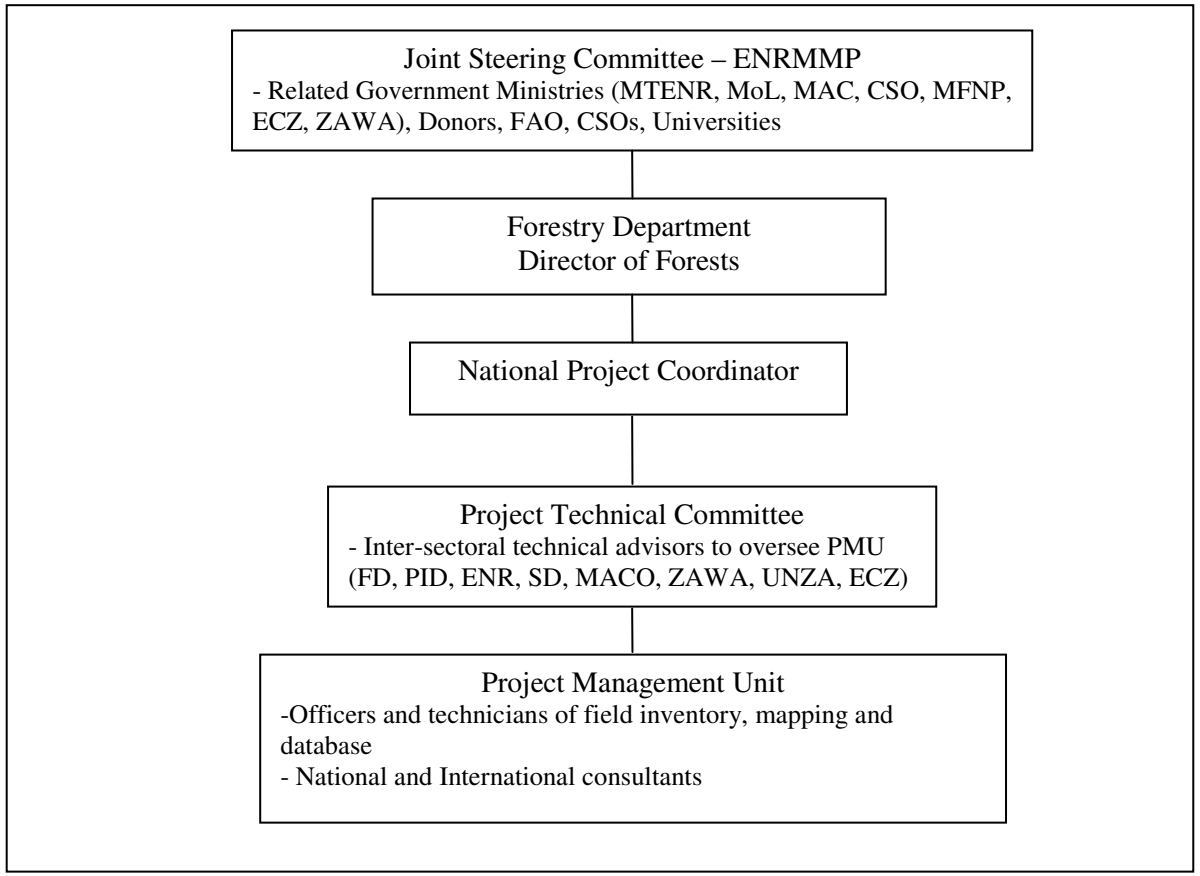


Figure 1: Administrative structure of ILUA II.

The National Project Coordinator (NPC) will coordinate the Project Task Force and Project Management Unit, and will provide the necessary guidance to both teams. NPC will report directly to the Project Director in order to monitor and report on the status of the project implementation. The Project Director will then relay this progress to the JSC under the ENRMMP.

The Forest Management Unit (FMU) is essential to the on-the-ground implementation of the project and will be coordinated by the NPC and will be composed of officers and technicians specialized in field inventory, land use/land cover mapping and database management. Additionally, it will be composed of national and international consultants who will be responsible for implementation of the project. The PMU will be focused solely on execution of ILUA II and therefore is required to be a separate unit from but closely linked to the exiting Forest Management Unit of the Forestry Department.

The ILUA information portal will be hosted and maintained by the Planning and Information Department (PID) in MTENR, in collaboration with FD who will be responsible for ultimately delivering the information to the Central Statistics Office. The content for the portal will be provided by FD, PID, Survey Department (in MoL), National Remote Sensing Centre, and consultants. The portal will follow the standards set by FAO's statistical framework 'CountrySTAT'[10].

4.3 Strategy

The overall strategy of the project is to work in collaboration between FAO, agencies under MTENR, MAC and MOL, other stakeholders and ENRMMP, to strengthen the national capacity of Zambia in developing, promoting and implementing SFM policy and REDD with emphasis on inter-sectoral coordination and co-operation. Through improving SFM, forestry can be mainstreamed within the national efforts to eradicate extreme poverty and hunger, achieve sustainable water and land use, mitigate climate change and achieve the Millennium Development Goals. The project strategy plans to make ILUA data and results to serve various sectors, to fill in gaps in information, to ensure technology transfer, and to build national capacity.

The project will be integrated into the sector programme (ENRMMP) to ensure that FAO can best assist the the Government of the Republic of Zambia in meeting its priorities in ENR and Monitoring, Reporting and Verification (MRV) in REDD, including meeting the MDG targets, while insuring coherence between the underlying national, regional, sub-regional and global priorities. The project strategy is also to contribute towards the international dialogue on forests, including implementation of the non-legally binding instrument (NLBI) endorsed by the United Nations Forum on Forests (UNFF).

The project aims at strengthening FD to enable it to carry out future updating of ILUA data, promote modern techniques and integrated approaches in data capture and analysis, support dissemination and sharing of information and expertise, insure transfer of technologies, provide training when required, and develop national capacity in biomass and carbon stock assessment and monitoring. Likewise, the project will cooperate closely with Zambian research institutes, and training and workshops will provide awareness of effectiveness of new methods in the decision making process.

The focus of the project will also be on continuing and strengthening national intersectoral dialogue and collaboration, and reinforcing cooperation with international partners. Involvement of the national stakeholders in the ILUA II Programme through ENRMMP, JSC, PMC and PTF will ensure a

[10] CountrySTAT is a statistical framework and applied information system for analysis and policy-making to organise, integrate and disseminate statistical data and metadata on food and agriculture coming from different sources. It gathers and harmonises scattered institutional statistical information so that information tables become compatible with each other at the country level and with data at the international level. CountrySTAT is available at http://www.fao.org/statistics/countrystat/

coordinated and participatory process for laying the foundation of widely agreed and stable information framework and long term resources monitoring approach.

One major output of the project will be a national ILUA database and a portal that will be established to host the field data, mapping data, and results of ILUA for future updating and dissemination. The project will work to ensure that the national database on the forestry resources is compatible with the existing databases, is accessible to all users and transparent, and is designed to respond to different users needs. In reaching this objective, this activity will be built on the experiences developed in ILUA Phase I and in other countries with FAO support. In addition, the project will look for opportunities for selection and implementation of cost effective software applications, including possibility to apply open source (OS) software for data storage, portal Content Management System and data analysis[11].

Gender equality and women's rights and empowerment issues shall be mainstreamed in the project. The benefits of ILUA results trough their impact into the national and lower level decision making, particularly in the land use planning, can be appreciated by both men and women. The project aims to ensure social equality in recruiting personnel, in organizing training, dissemination of information and materials, and in all other activities. The Zambia Gender Policy augmented by the FAO's Gender and Development Plan of Action for 2008-2013 will be the basis for mainstreaming gender issues and promoting gender equality in access to, control over, and management of forest and natural resources.

The project is aware of the current situation, existing guiding policy frameworks and it renders support to measures to promote awareness, control and management of HIV and AIDS through following principles[12]:

- The rights of individual shall be upheld regardless of their HIV status;
- Employees should be provided with information necessary to protect themselves from HIV;
- The project management should show support and commitment to help staff take HIV prevention as a priority;
- The project will promote distribution of HIV prevention materials during the field activities when contacting local communities.

4.3 Government Inputs

The inputs by the Government of the Republic of Zambia will be provided "in-kind" and in cash to be taken from the national budget allocated to the project under the ENRMMP and FAO. MTENR through FD will provide an office for the project. FD will also be able to organize vehicles for the field

[11] Supply of open source (OS) software is abundant: environments for programming (e.g. Java, PHP); database systems (e.g. MySQL, PostgreSQL); Content Management System (e.g. Joomla!); GIS tools (e.g. QuantumGIS, uDIG). The recommendation of applying OS software is expressed in the draft (unofficial) Information and Communication Policy Document (4/2009), to be prepared by PID for MTENR.

[12] HIV and AIDS Workplace policy 2007-2009. Ministry of Agriculture and Cooperatives. 9 p.

work during 2010-2011, communication means, and provincial inventory teams for implementation of the project, and the national counterpart staff at secretarial and professional level. FD and collaborating institutions will provide to the project the national and district personnel for field data collection, entry, processing and analysis.

During 2010-2011, the Provincial and District Offices will provide the staff to carry out the field survey in the selected areas over a period of 8-9 months. All involved institutions (forestry, Department of Agriculture, CSO, ZAWA, universities, local authorities, Survey Department, and others) will contribute the staff for the Project Task Force, and project activities (including complementary ILUA data capture, reassessments, pilot studies, special surveys, mapping, training and other activities).

MTENR through the Forestry Department will provide:

- Project Director
- National Project Coordinator (NPC), full time;
- Officers and technicians of field inventory, mapping and database to serve within the Project Management Unit
- Physical facilities (office, communication means);
- Available inventory data, maps, GIS and RS data;
- In-kind contribution to cover salaries of field crew members, personnel in charge of the ILUA database and part of fuel and maintenance of the project vehicles;
- Training and development activities shall primarily be financed trough the CPs;
- Support in getting official permits for LiDAR flights (with the assistance of the Survey Department /MoL);
- Smooth clearance of experts, custom clearance of equipment, tax-free local purchase of project equipment and supplies.
- Local transportation for the entire fieldwork (4 vehicles for 8 months over 24 months, 2010-2011).
- 4.4 Donor Inputs

The project's donor will provide the services as follows (2010-2011):

1. National experts:

Title	Months	Tasks
National Project Coordinator	24	Coordination, Management and

		Supervision, Reporting.
Field data collection and processing expert	22	ILUA II development, Field data capture and analyzing, Training
Consultant for Remote Sensing	8	Mapping, Analysis, Training.
Consultant for Web page design and communication	4	Dissemination of information.
Biometrician	6	Data capture and analyses, Special Surveys, Training.
ST Experts for Special Surveys	16	Special Surveys.

2. International experts:

Title	**Months**	**Activities supported**
Chief Technical Adviser (CTA)	24	Coordination, Supervision, Training, ILUA II development, Reporting.
DBMS Expert	2	Dissemination of information. Training.
Web publishing system expert	2	Dissemination of information.
Biometrician	1	Identification of development needs, Data analyses, Training.
ST Expert for Special Surveys	1	Special Surveys. Training.
Technical Support Services	6 missions	FAO Supervision.

In addition to these experts, FAO headquarters will provide technical backstopping and TA of various experts, e.g. Carbon Assessment Expert, ILUA DBMS Expert, Forest Inventory Expert and Remote Sensing Expert. This TA will be implemented under "FAO - Government of Finland Cooperation Programme" (GCP/GLO/194/MUL).

3. The needed national counterpart staff at the secretariat level for PMU and field activities will be organized through the Forestry Department in MTENR. The project's donor will provide financial resources for FMU staff to carry out mapping, data collection, data entry and processing.

4. Services to be procured:

The project shall work with or utilize the services of consultants and national experts to carry out research, training or ICT system development on its behalf. The staff of consulting institutions and companies shall be appropriately qualified and work closely with the PMU in carrying out activities to complement the project team. The foreseen activities to be outsourced are as follows:

- Development of a multiuser ILUA database;
- System development of ILUA portal and user interfaces;
- LiDAR data capture (flights), aerial photos, and reprocessing of data;
- LiDAR data interpretation (3D point data analysis for crown coverage, biomass and carbon by forest density classes);
- Training courses (part of courses).

5. Equipment/Materials to be procured:
- See Annex 1, Budget.

6. Activities
- See Annex 3, Work Plan.

4.5 Linkages / Technical Support

Linkages

The project is related to national development policies and strategies of the the Government of the Republic of Zambia through the Fifth National Development Plan, supporting the development objectives identified in the National Long Term Vision 2030 (NLTV) as well as progress towards meeting MDGs. 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. Thus the project is also related to the National Poverty Reduction Strategy, which is

meant to tackle the constraints manifesting poverty including governance, productivity and products marketing issues. The project also contributes to the Public Service Training and Development Policy from 2008 by allocating resources for training, thus developing competence of staff in different ministries and organizations. All these will contribute towards macro-economic stability.

It is acknowledged that the overall forest management needs follow the principles of SFM, and certainly the major decisions on forestry and land use issues has to base on fresh and reliable data and information. The priority of the project will be to develop the overall chain of forest land resources information framework – from field data trough analysis into utilized and shared results befitting all stakeholders.

Globally, the project is related to the FAO Programme: "“Strengthening Forest Resources Management and Enhancing its Contribution to Sustainable Development, Land use and Livelihoods" and particularly the sub-programme of "Sustainable Forest Management in a Changing Climate". The Government of Finland is the major donor of this programme.

The project contributes gaining the REDD readiness in Zambia. In UN-REDD, FAO is responsible for development of the Reduced Emissions Level (REL) as well as providing support to the development of a permanent forest monitoring system for Zambia, i.e. MRV. The completed ILUA data from 2006-2007 provides generic estimates on biomass and carbon stocks of forests and trees outside forests, giving Zambia an advantage in that it can eventually use these recent carbon stock estimations to calculate REL. The ILUA II can help to fine-tune much-needed carbon and volume coefficients to place Zambia in an advantageous position for forest carbon reporting. When a national REDD secretariat has been established, with responsibility of coordination of REDD initiatives in the country[13], the project needs to work in co-operation with the secretariat in developing forest and soil carbon related assessments, and the country-wide ILUA II particularly.

As the project will yield large amount of harmonized information, the results will be immediately usable by the country to report to the international conventions and forums including the global FRA, and reporting for UNFCCC on AFOLU. 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 specialized national and international experts to assist FD and implementing partners to carry out the project activities.

[13] UN-REDD Mission Memorandum, May 4-8, 2009. Lusaka.

4.6 Management and Operational Support Arrangements

The project will be managed by the National Project Coordinator (NPC) who will be supported by a Chief Technical Advisor (CTA) and other personnel at the PMU (Terms of Reference in Annex 4). The full-time NPC is an official focal point for FAO linkage to FD in the administrative and technical implementation of the project. 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 FD of the MTENR. NPC and CTA, and the Project Management Team will be stationed in FD in MTENR. Through the NPC, the FD will ensure the closest liaison with other Government departments and agencies 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 and interests of stakeholders.

The administrative and financial work will be carried out by the FAO Representation in close collaboration with CTA and NPC. FAO ZM provides the technical and administrative support to the overall implementation of the project and responsible to the donor on both technical and financial matters of the project.

NPC and CTA shall coordinate with FAO Representative in Zambia 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.

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 CTA. The international consultants assigned to the project, under the general supervision of the FAO Representative in Zambia and the respective Technical Division (Coordinator of the NFA Programme) in FAO headquarters and the Regional Operations Branch of the Regional Office for Africa, RAF (RAFR) and the Sub-Regional Office for Southern Africa (SFR) will ensure high quality of technical assistance and advice.

A close collaboration will be established with Forest Research of FD, University of Zambia (UNZA), Copperbert University, CIFOR, and other research institutions and departments of relevance to the project related to the field inventories and RS, ILUA II methodology development, training and special studies to be conducted. The Division of Forest Research of FD can also participate in the methodological development activities, when applicable.

The detailed of work programme, which will be formulated in details by NPC in collaboration with 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 the Republic of Zambia 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 will 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 the Republic of Zambia. The National Project Coordinator in coordination with CTA will prepare and submit a Project Performance Evaluation Report (PPER) to FAO, MTENR, and ENRMMP and 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 in cooperation with the FD and the Lead Technical Unit of the project at FAO HQs, in cooperation with FD shall be the focal point for monitoring project performance and assisting in meeting its implementation requirements.

Under ENRMMP, CPs and the Government of the Republic of Zambia have put in place a monitoring, coordination and communication system in the form of a Joint Steering Committee (JSC) that meets periodically twice a year or more frequently when needed.

The main responsibility of the project relies on NPC who assures the continuous monitoring of the project and the reporting to the Programme Management Committee through the Director of Forestry. On matters related to national and strategic implementation issues requiring intersectoral cooperation the Director of Forestry through the Programme Management Committee will report to the JSC.

FAO will channel its inputs to the project through the FD. The flow of information and reports on the project progress will go from FD to FAO 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 with FD will ensure the joint monitoring of the project on yearly basis through visits by its technical backstopping personnel from the Headquarters and the Sub-Regional Office.

Vis-à-vis JSC, NPC will be the responsible of direct monitoring of the project and of reporting on its progress, achievements and constraints. NPC will also interact with the Project Task Force on more frequent basis on the running of the project. NPC will receive information on the progress of the project from the different national and international experts and consultants serving within PMU. In the monitoring of the project and reporting on its progress, NPC will be assisted by CTA.

The Project Task Force works as arena for connection experts from various stakeholders, giving recommendations to the project, and distributing good practices and information into participating organizations.

5.3 Communication and Visibility

The project will organise four major events. A seminar will be organized at the onset of the project to inform all stakeholders about its objectives and expected outputs and the parties involved and their responsibilities, and to discuss about ILUA data sharing policy. The implementation of the project will be largely participative to ensure that it will address all pertinent issues, reinforce multisectoral dialogue, deliver the needed information at the suitable format that facilitates its uses in the country at all levels and for international reporting.

In addition, access to ILUA results will be provided through the Information and Knowledge Resource Center of PID. The project will publish ILUA results materials in forms of leaflets, articles, CD/DVD and maps. The project will take contact into potential beneficiaries of ILUA information through FD, PID, Project Working Groups and stakeholders. The materials are targeted to be available decision makers at all levels, national and international institutes, schools, NGOs and public in general.

The second major workshop will be organized after all LiDAR inventory results are available. This workshop can be organized jointly with another project (e.g. UN-REDD). The third workshop is about applying and integrating soil, below ground and above ground non-tree (shrubs, litter and dead wood) carbon measurements into ILUA in Zambia. This workshop can be organized jointly with another project (e.g. UN-REDD) or a national/international institute. One workshop will be held towards the end of 2011 to present, discuss and validate the results and agree on the way forward to strengthen the sustainability of the actions done and results.

NPC and CTA will report periodically on the performance of the project to the Director of FD and to FAO. NPC and the Director of the project will keep the Joint Steering Committee informed about progress and performance of the project. FAO will also keep the other CPs informed of the progress and performance of the project.

5.4 Reporting Schedule

The reporting will be conducted as follows:

1. An inception report will be provided by the CTA, six weeks after arrival to his duty station.

2. The National Project Coordinator with the assistance of the CTA will provide ENRMMP and FAO, through the FAO Office in Zambia, the Quarterly Project Implementation Reports summarizing the activities performed, the progress and outcomes of the project and, a revised work plan for the next period.

3. Technical Reports will be provided by CTA in collaboration with NPC on activities carried out by the project. These reports will follow the standards established by FAO for such reports.

4. Work Plan (WP) for the implementation of country-wide ILUA II will be prepared by FAO to the Government and ENRMMP latest 7/2011. It contains a full work plan with detailed budget for the implementation of ILUA II in 2012-2013. CTA in collaboration with NPC will send the draft WP report to FAO by end of June 2011, through the FAO Lead Technical Unit, for review and comments. FAO will finalize the WP for approval of MTENR till the end of April 2011. MTENR will submit the Work Plan to ENRMMP for consideration of further funding.

5. Terminal Report will be presented by FAO to the Government on conclusion of the project. These will be addressed to MTENR 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. CTA in collaboration with NPC will send the draft report to FAO, 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. The terminal report will include a technical synthesis of the various Consultants reports and summarize the main results and conclusions of the project. In addition, it will contain FAO´s recommendations to the Government and set indicators for a follow-up impact assessment.

6. 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.

7. At the end of every mission, the FAO officers providing supervisory and advisory technical services will prepare a technical report with results, conclusions and recommendations and conduct briefings with other FAO staff as necessary.

Annexes

Annex 2
Logical Framework

No of activities	*Results and activities*	*Indicators*	*Means of verification*	*Assumptions*
	Impact Benefits of sustainable forest management increased and mainstreamed in national economy and policies, supporting sustainable development of environment and rural livelihoods, meeting the MDGs in a changing climate.	1. Zambia has updated policies, strategies and legal framework based on ILUA results. 2. Data collecting, processing and sharing mechanisms are in function, supporting national decision making and Zambia's international commitments, incl. reporting in REDD. 3. Higher contribution of forest resources in national and local economies	1. National reports related to the state and usage of the resources, management of related information, indicators of MDS's. 2. Documents of new policy and strategy and other general management texts prepared in participatory way. 3. Reports and documents of parallel programmes. 4. Records of stakeholders' involvement.	1. National authorities committed, reflected by provision of needed legal, institutional and financial support and follow up of implementation of policies and related programmes.
	Outcome Strengthened capacity in planning and implementation of the SFM and REDD through better information, capacity building, dissemination of information, and improved multisectoral dialogue.	1. Functional ILUA database operating, applying common data transfer and delivery standards. 2. Improved national capacity to adequately collect, analyze, extract and share information. 3. National and provincial decision makers and stakeholders are aware of ILUA data and have access to the information through national reporting system. 4. Successful completion training courses and programmes. 5. Adequate equipment are	1. Documentation of regulation, procedures and agreements; 2. Records of minutes of the Steering Committee meetings. 3. Content and functionality of database and database services; 4. Reports on quantity and quality of data, maps and statistics; 5. Feedback from end-users of ILUA results; 6. Project reports about completed training courses, workshops and materials; 7. Progress reports; Disbursement and	1. ILUA results and reporting can fulfil the requirements set for information by stakeholders. 2. FD/MTENR is committed to continue the inventory work according to set priorities. 3. Trained staff remains in service at least for a period long enough to transfer their know-

No of activities	*Results and activities*	*Indicators*	*Means of verification*	*Assumptions*
		available.	audit reports	how to new staff.
1	**Output** Effective means of dissemination and utilisation of the information for multisectoral dialogue.	• Number of national workshops and technical meetings. • Number of participants involved from different sectors in workshops, seminars, training, or other project activities. • Number of publications, papers, articles, leaflets, maps and posters produced and printed. • Frequency of inter-sectoral dialogue integrating ILUA into policy processes. • User statistics of ILUA Portal.	• Progress reports and manuals. • Proceedings of meetings and workshops. • Regulations and other documentation. • Databases on-line in intranet/internet. • Materials produced. • Results and outcomes of ILUA used in policy reports, strategy papers, reports, training materials and public media.	• Willingness and resources for cooperation between participating departments and agencies exist. • Access of relevant stakeholders to attend in meetings and dialogue are secured. • PID/MTERN succeeds to establish an Information and Knowledge Resource Center, which can host ILUA information services.
1.1	Consensus on data sharing policy to guarantee access to information.	• ILUA data and result sharing policy agreed.	• Forest policy and strategy documents. • Minutes of meetings	• Agreements and responsibilities are clear for different units and stakeholders.

No of activities	***Results and activities***	***Indicators***	***Means of verification***	***Assumptions***
1.2	Analysis on usability of socioeconomic and biophysical data in ILUA for various end-users and reporting (incl. REDD and GHG reporting), and identification of gaps and development needs.	• Possibilities to extract gender specific information analyzed. • Current gaps in information analysed. • Usability of data for various purposes analysed. • Development needs analysed.	• Expert reports. • Materials produced. • Progress reports.	• Participation of experts from different backgrounds, working as groups.
1.3	Design and implementation of a multi-user database and interface.	• Interface enables easy access into ILUA data.	• Tailored software. • Interface integrated into a part of ILUA portal.	• FAO offers information about queries to be implemented, in co-operation with ILUA phase I experts. • Possible involvement of a capable ICT company.
1.4	Designing and setting up of functional ILUA portal which contains field data, and results in forms of documents, tables, statistics, charts and maps.	• ILUA data and result information collected into a uniform database management system. • Common data storing, transfer and delivery standards applied. • Easy direct access to information at the ILUA Portal implemented directly and through CSO's portal.	• Progress reports and manuals. • Databases on-line. • Portal Maintenance plan. • Number of users of portal (system statistics).	• Field data needs be geo-referenced, whenever applicable. • Local private service providers can be used in building up modules for the portal • ICT Resource Center at PID/MTENR provides the framework for the ILUA information services

No of activities	***Results and activities***	***Indicators***	***Means of verification***	***Assumptions***
1.5	Preparation and information sharing in forms of printed material delivered for decision makers, institutes, schools, and for public in general.	• Number of publications, papers, articles, leaflets, maps and posters produced and printed. • Number of stakeholders informed.	• Materials produced. • Progress reports.	• The project can identify potential beneficiaries also at the lower levels.
1.6	ILUA Information published on CD/DVD as multimedia.	• Number of CD/DVD media distributed. • Number of stakeholders informed.	• Materials produced.	• Production of multimedia format presentation can be contracted with a local service provider
1.7	Training on ILUA data management and analysis for various stakeholders.	• Number training modules. • Number of personnel trained. • Number of training days. • Number of participants from different organizations.	• Training materials. • Syllabuses. • Progress reports.	• Training needs analysis conducted by the participatory manner. • FAO ensures quality and relevance of training modules. • Training can be organized with national and/or international partners. In this case there need to be formal agreements with partners.
1.8	Seminars to inform stakeholders and development partners about the concept of ILUA, information services, and use of information for forest policy and planning processes.	• Number of participants from different sectors involved in the seminar.	• Proceedings of the seminars.	• Partners and stakeholders manifest interest in the project and become/stay proactive in its implementation.

No of activities	*Results and activities*	*Indicators*	*Means of verification*	*Assumptions*
2	**Output** Improved capacity in collecting and analyzing forest resource and forest related information for SFM, REDD monitoring and GHG reporting.	• Gaps in information analyzed. • Analysis of applicable methodologies conducted. • Development proposals, containing prioritization of actions, are prepared. • Socioeconomic aspect and gender recognized in particular studies. • Results in forms of statistics and digital maps presented. • Adequate skills and capacity of staff in the use of new tools and methods. • Equipment are in use and they meet actual demands. • Number of participating organizations and individuals in training, seminars and workshops.	• Project documents. • Proceedings from workshop. • Expert reports. • Manuals and guidelines. • Training materials. • Content in databases.	• The project co-operates with stakeholders, CPs, other projects, e.g. UN-REDD. • Partners and stakeholders manifest interest in the project and become/stay proactive in its implementation. • Procurement process follows the official procedures and rules. • Data collected in the project will be made available for special surveys and studies to be carried out by participating research institutes.
2.1	Analysis on expanded data needs, especially for drivers and monitoring of REDD, and GHG reporting, containing recommendations to develop/enhance the research and methods to assess forest biomass and carbon.	• Gaps in information analyzed. • Development proposal, containing prioritization of actions, is available. • ToRs for special surveys and studies	• Expert report. • ToRs, project documents.	• Wide attendance of relevant organizations expected.

No of activities	***Results and activities***	***Indicators***	***Means of verification***	***Assumptions***
2.2	Mapping and analysis of existing research, data, models etc. concerning all carbon pools.	• Existing information and data identified.	• Expert reports. • Articles.	• Work can be conducted as joint effort with a national/ international institute.
2.3	Special surveys and studies in biomass/carbon assessment, socioeconomic and other related issues studies.	• New estimates, volume and allometric equations, and conversion factors are available for assessment of GHG related variables. • Socioeconomic aspect and gender recognized in particular studies.	• Survey reports. • Wood density factors, Biomass expansion factors (BEFs), carbon conversion factors and parameters in reports and databases.	• Surveys can be conducted as joint research programmes between national/ international institutes.
2.4	Planning of alternative approaches and methodologies on field measurements and RS to meet the national policy and planning needs, and international reporting requirements, incl. REDD and GHG reporting.	• Analysis of applicable methodologies in Zambian context conducted. • Recommendations presented to apply selected monitoring and assessment methods.	• Project documents. • Proceedings from workshop.	• Wide attendance of relevant organizations expected. • Participatory planning process will be applied. • Need to evaluate the suitability of technologies to meet the reporting requirements of IPCC Tier 2/3 on forest lands.

No of activities	***Results and activities***	***Indicators***	***Means of verification***	***Assumptions***
2.5	Procurement of equipment, RS and LiDAR data.	• Installations completed. • Equipment are in use. • RS and LiDAR data are available for analysis and mapping. • Digital false-color aerial images are available for analysis.	• Progress reports. • Disbursement and audit reports.	• Existing RS data from ILUA I can also be utilized in studies and training. • Procurement process follows the official procedures and rules • LiDAR data capture to be procured from a service provider. • MoL and Dep. of Survey will assist in the process of acquiring necessary permits for flights. • Digital LiDAR DEM data and aerial images will be delivered to FD; NRSC, MoL and FAO. • Data archiving and backup arrangements will be agreed, can be organized e.g. through NRSC.
2.6	Field data collecting and ground truthing for RS data.	• Spatially accurate and unbiased field sample plots have been measured. • Data applicable for LiDAR data processing.	• Data archives. • Progress reports. • Disbursement and audit reports.	• Data from ILUA tracks/plots will be utilized as much as possible.

No of activities	***Results and activities***	***Indicators***	***Means of verification***	***Assumptions***
2.7	Processing and analysis of RS and LiDAR data.	• Key features (biomass, carbon) estimated for the pilot areas spatially explicitly. • Results in forms of statistics and digital maps presented. • Reliability estimates of results presented.	• Progress reports. • Final map products. • Progress reports.	• Biomass and carbon stock analysis using LiDAR 3D data to be procured from a service provider.
2.8	Change detection from satellite images (wall-to-wall for pilot areas).	• Results in forms of statistics and digital maps presented.	• Final map products. • Survey reports.	• Further utilization of results will be carried out e.g. within REDD/MRV.
2.9	Planning and field measurements of intensification of permanent field sampling for data collection and improved measurements.	• Soil and below-ground carbon stock assessments integrated into field data capture. • Socioeconomic and gender specific data integrated into field data capture.	• Progress reports. • Survey reports.	• Logistics and equipment are available. • Staff is trained properly.
2.10	Planning of quality assurance.	• Quality assurance guidelines prepared.	• Progress reports. • Manual and guidelines.	
2.11	Data entry and validation.	• Validated data entered into database.	• Progress reports. • Databases.	• Adequate software and equipment are available. • Staff is trained properly.

No of activities	***Results and activities***	***Indicators***	***Means of verification***	***Assumptions***
2.12	Data processing, analysis and reporting.	• Data processed and analysis conducted. • Report published.	• Progress reports. • Survey report.	• Data will be made available for special surveys and studies to be carried out by participating research institutes. • YASSO model will be applied to integrate results into a country-wide soil carbon scenario model.
2.13	Stakeholder consultation on data needs, methodologies and design of the ILUA II.	• Number of organizations contacted.	• Progress reports. • Minutes of meetings.	• Wide attendance of relevant organizations expected.
2.14	Cooperation and contracting with national and/or international institutional partners for improved measurements for all pools.	• Manuals and guidelines prepared.	• Manuals and guidelines for ILUA II assessment. • Project documents.	• Co-operation especially with experts from agricultural sector.
2.15	Design of country-wide ILUA II.	• Data collection plan and manuals produced. • Socioeconomic and gender specific data integrated into field data collecting. • Staff trained to master their duties. • Work plan in FD to implement ILUA II inventory.	• Progress reports and documents. • ILUA II manuals and guidelines. • Work plans.	• Methodology consistent with IPCC and REDD/MRV. • Awareness and confidence exist to apply the selected monitoring and assessment methodologies for GHG reporting and REDD.

No of activities	*Results and activities*	*Indicators*	*Means of verification*	*Assumptions*
2.16	Training of field teams, image and data analysers, and end-users.	• Number of trained personnel. • Number of training courses. • Adequate skills and capacity of staff in the use of new tools and methods.	• Progress reports describing the status of the personnel and their skills. • Disbursement and audit reports. • Training materials. • Syllabuses.	• Training for end-users organized for participants from different stakeholder organizations.
2.17	Workshops and seminars.	• Number of participating organizations and individuals.	• Proceedings. • Project reports.	• Possible co-operation with other projects, e.g. UN-REDD.
3	**Output** Implementation of ILUA II - Mapping and Field Survey.	• Land cover map covering the entire country. • Change maps for whole country. • Databases set up or updated. • Field data and maps digitised and stored in database. • Number of participating organizations and individuals in workshops and seminars.	• Maps and databases. • Reports and manuals. • Materials produced. • ILUA II report.	• FD/MTENR is committed to continue the inventory work according to set priorities. • ILUA II methodology is consistent with GHG reporting and REDD/MRV. • The project can identify beneficiaries for results also at the provincial and district levels.
3.1	Procurement of equipment and RS data.	• Installations completed. • Equipment are in use. • RS are available for analysis and mapping.	• Progress reports. • Disbursement and audit reports.	• Procurement process follows the official procedures and rules. • Dep. of Survey /MoL will provide maps materials.

No of activities	***Results and activities***	***Indicators***	***Means of verification***	***Assumptions***
3.2	Land cover mapping.	• Land cover map covering the entire country.	• Maps and databases.	• The project defines specifications of maps with other users.
3.3	Change detection from satellite images (wall-to-wall whole country).	• Results in forms of statistics and digital maps.	• Final map products. • Survey reports.	
3.4	Field survey.	• Number of field sample plots visited, number of interviews carried and field forms received with field data, checked and validated.	• Field forms received with field data.	• Logistical support provided and supervision done in systematic way as to harmonise data collection between field crews.
3.5	Supervision and quality assurance.	• Number of field sample plots revisited.	• Project reports.	• Quality assurance guidelines available.
3.6	Data entry, processing, analysis and reporting.	• Number of national personnel trained for data entry and validation.	• Reports and manuals. • Progress reports. • Final report of the project results and findings.	• Technical Working Group and stakeholders participate actively in scoping project results. • FD works to involve qualified personnel for project results analysis. • FD involves wide range of stakeholders for results validation.

No of activities	***Results and activities***	***Indicators***	***Means of verification***	***Assumptions***
3.7	Building ILUA II database.	• Databases set up or updated. • Field data and maps digitised and stored in database.	• Report describing structure of database	• MTENR prioritises ILUA database and recognise its importance for easy retrieval and use of information by users and for future updating.
3.8	Further training of national personnel - Database/data processing.	• Number of trained personnel assigned permanently to database management.	• Number of national personnel trained.	
3.9	Reporting of ILUA II findings.	• Number of publications, papers, articles, leaflets, maps and posters produced and printed. • Number of stakeholder organizations informed.	• Materials produced. • ILUA II report.	• PID/MTENR, with FD, provides the framework for dissemination of ILUA II results and information services. • The project can identify potential beneficiaries also at the provincial and district levels.
3.10	Workshop on project findings and outline of follow-up programme.	• Number of participating organizations and individuals.	• Proceedings. • Project reports.	

Annex 3

Work plan

	ILUA II	Year 1												Year 2											
		Month																							
		M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24
Impact: Benefits of sustainable forest management increased and mainstreamed in national economy and policies, supporting sustainable development of environment and rural livelihoods, meeting the MDGs in a changing climate.																									
Outcome: Strengthened capacity in planning and implementation of the SFM and REDD through better information, capacity building, dissemination of information, and improved multisectoral dialogue.																									
1	**Output.** ***Effective means of dissemination and utilisation of the information for multisectoral dialogue.***																								
1.1	Consensus on data sharing policy to guarantee access to information																								
1.2	Analysis on usability of socioeconomic and biophysical data in ILUA for various end-users and reporting (incl. REDD and GHG reporting), and identification of gaps and development needs.																								
1.3	Design and implementation of a multi-user database and interface.																								
1.4	Designing and setting up of functional ILUA portal which contains field data, and results in forms of documents, tables, statistics, charts and maps.																								
1.5	Preparation and information sharing in forms of printed material delivered for decision makers, institutes, schools, and for public in general.																								
1.6	ILUA Information published on CD/DVD as multimedia.																								
1.7	Training on ILUA data management and analysis for various stakeholders.																								
1.8	Seminars to inform stakeholders and development partners about the concept of ILUA, information services, and use of information for forest policy and planning processes.																								

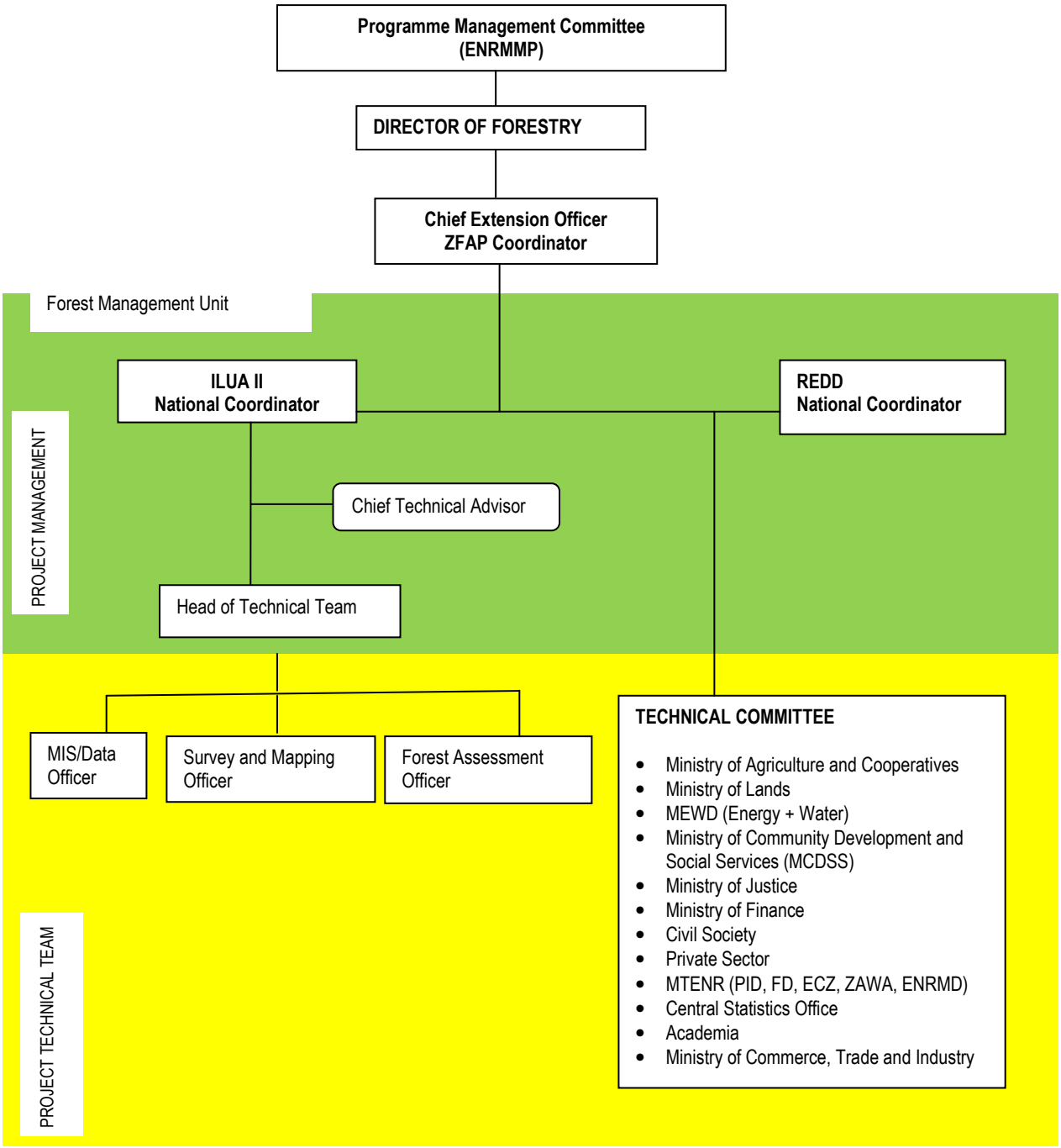
		Year 1												Year 2											
		Month																							
		M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24
2	**Output.** ***Improved capacity in collecting and analyzing forest resource and forest related information for SFM, REDD monitoring and GHG reporting.***																								
2.1	Analysis on expanded data needs, especially for drivers and monitoring of REDD, and GHG reporting, containing recommendations to develop/enhance the research and methods to assess forest biomass and carbon.																								
2.2	Mapping and analysis of existing research, data, models etc. concerning all carbon pools.																								
2.3	Special surveys and studies in biomass/carbon assessment, socioeconomic and other related issues studies.																								
2.4	Planning of alternative approaches and methodologies on field measurements and RS to meet the national policy and planning needs, and international reporting requirements, incl. REDD and GHG reporting.																								
2.5	Procurement of equipment, RS and LiDAR data (pilot sites)																								
2.6	Field data collecting and ground truthing for RS data																								
2.7	Processing and analysis of RS and LiDAR data																								
2.8	Change detection from satellite images (wall-to-wall, pilot areas)																								
2.9	Planning and field measurements of intensification of permanent field sampling for data collection and improved measurements																								
2.10	Planning of quality assurance																								
2.11	Data entry and validation.																								
2.12	Data processing, analysis and reporting.																								
2.13	Stakeholder consultation on data needs, methodologies and design of the ILUA II																								
2.14	Cooperation and contracting with national and/or international institutional partners for improved measurements for all pools																								
2.15	Design of country-wide ILUA II																								
2.16	Training of field teams, image & data analysers, and end-users																								
2.17	Workshops and seminars																								

		Year 3												Year 4											
		Month																							
		M25	M26	M27	M28	M29	M30	M31	M32	M33	M34	M35	M36	M37	M38	M39	M40	M41	M42	M43	M44	M45	M46	M47	M48
3	**Output.** ***Implementation of ILUA II - Mapping and Field Survey***	***These activities will be planned during the first 18 months. The timing of activities is tentative.***																							
3.1	Procurement of equipment and RS data																								
3.2	Land cover mapping																								
3.3	Change detection from satellite images (wall-to-wall whole country)																								
3.4	Field survey																								
3.5	Supervision and quality assurance																								
3.6	Data Entry, Processing, Analysis and Reporting																								
3.7	Building ILUA II database																								
3.8	Further training of national personnel - Database/data processing																								
3.9	Reporting of ILUA II findings																								
3.10	Workshop on project findings and outline of follow-up programme																								

	Description	Year 1												Year 2											
		Month																							
		M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24
	Consultants and Experts																								
Int.	Chief Technical Adviser (CTA) (IE-1)																								
Int.	DBMS Expert (IE-2)																								
Int.	Web Publishing System Expert (IE-3)																								
Int.	Biometrician (IE-4)																								
Int.	ST Expert for Special Surveys																								
Nat.	National Project Manager (NC-1)																								
Nat.	Field data collection and processing expert (NC-2)																								
Nat.	Consultant for Remote Sensing (NC-3)																								
Nat.	Consultant for Web page design and communication (NC-4)																								
Nat.	Biometrician (NC-5)																								
Nat.	ST Experts for Special Surveys																								
	Supporting staff, PMU																								
Nat.	Project Coordinator (NS-1)																								
Nat.	Accountant / Secretary (NS-2)																								
Nat.	Secretary (NS-3)																								
Nat.	Driver (NS-4)																								
Nat.	Field workers																								

Annex 4

Terms of Reference for International and National Personnel



TERMS OF REFERENCE (TOR) FOR INTEGRATED LANDUSE ASSESSMENT (ILUA) II PROJECT TECHNICAL UNIT (PTU)

1 BACKGROUND

The Integrated Landuse Assessment (ILUA) phase II is a four-year project starting from 2010 to 2013 under the Forestry Department of the Ministry of Tourism, Environment and Natural Resources (MTNER). Strengthened capacity in planning and implementation of SFM and REDD through better information, capacity building, dissemination of information, and improved multi-sectoral dialogue.

The ILUA II project will be financed through the ENRMMP and was prepared under "FAO - Government of Finland Cooperation Programme", which is a contribution by the Government of Finland to FAO Programme "Strengthening Forest Resources Management and Enhancing its Contribution to Sustainable Development, Land use and Livelihoods" (GCP/GLO/194/MUL). The Food and Agricultural Organization (FAO) of the United Nations provides technical assistance in implementing the project. The ENRMMP is funded by the Government of Zambia and Cooperating Partners supporting the programme.

In order to ensure smooth coordination and implementation of project, the Project Technical Unit (PTU) under the Forestry Department is crucial. The PTU will be made up of Forestry Department staff in the Forest Management Unit responsible for specific tasks especially field work, forest assessment, MIS/Database, Survey and mapping. The PTU will be enhanced by mainstreaming the REDD initiative within the same FMU to ensure that there is harmonised approach, avoid overlapping and duplication of activities. The ILUA and REDD National Coordinators will be work together and report to the Chief Extension Officer, who is responsible for overall supervision for Sustainable Forest Management (SFM)

2 MAIN OBJECTIVE

The main objective of the ILUA II - PTU is to coordinate, execute and monitor field activities and the components of the project at National level.

3 SCOPE OF WORK

PTU shall ensure that there are mechanisms for effective participation of all key institutions that have direct valuable input in ILUA II and REDD design and implementation. The Unit shall also develop collaboration with relevant national projects involved in assessment and monitoring to enhance networking, coordination and use of the findings. PTU work will be mainstreamed within the existing structure of the Forestry Department. In order to ensure that outputs of ILUA II are achieved, the National Coordinator will be specifically responsible for ILUA II while the Head of the Technical Team will be responsible for field operations. This will allow the ILUA II Coordinator to concentrate on his/her designing, facilitating, coordinating and monitoring duties.

MTENR will use the Technical Committee composed of experts from different sectors with linkage to information provided by ILUA. The responsibility of PTC will be to oversee and provide necessary requested technical input in the implementation of the project activities, and to facilitate inputs to the project in all phases. The Technical Committee will provide a general guidance on the implementation of ILUA II and REDD. The Technical Committee, where necessary will recommend the setting up of work groups to deal with specific needs which may require specific expertise.

The Chief Technical Advisor will report to the ILUA National Coordinator. The role of the CTA will be to provide advise assist in capacity development.

3.1 PTU specific tasks

PTU shall perform the following specific tasks but not limited to:

a) Analyze and adapt the sampling design, inventoried variables and definitions.
b) Ensure good coordination with forest related initiatives as defined in the ENRMMP, REDD and NAPA to avoid duplication of activities
c) Facilitate and conduct training for field teams

d) Through the Technical Committee, review the implementation and progress of the project
e) Mobilize all necessary resources needed for the execution of the project (e.g. procurement of vehicles, equipment etc)
f) Plan, organize and coordinate fieldwork among district authorities and field teams
g) Monitor and backstop fieldwork in terms of technical and logistics
h) Control and validate field forms
i) Conduct data control and quality evaluation for accuracy
j) Compile forest assessment data and information into the database
k) Conduct data processing and analysis
l) Report progress to the National Steering committee through the Director of Forestry
m) Prepare reports on regular basis and disseminate the project results
n) Perform any other duties to ensure successful implementation of the project.

3.2 Composition of PTU[14]

ILUA II is composed of the following three major project components:

a) Dissemination and utilisation of the information for multi-sectoral dialogue
b) methodological and human capacity in collecting and analyzing forest resource information for SFM, REDD monitoring and carbon inventory Developing national database
c) Surveying and Mapping

PTU will be comprised of sub-units or group of officers and professionals in three levels to ensure:

I. Daily project management and administrative duties
II. Provision technical expertise on project components
III. Consultancy support on specific project.

Management and Administration of PTU will consists of the following members

(i) Chief Extension Officer
(ii) ILUA II National Coordinator
(iii) REDD National Coordinator
(iv) PTU head
(v) Chief Technical Advisor

Project Technical Team will comprise:

(i) Forest Assessment Officer and Technician(s)
(ii) Database Officer and Technician(s)
(iii) Forest Survey and Mapping Officer and Technician(s),
(iv) National and International Consultants
(v) Technical Committee

3.3 Specific Tasks of PTU Members

3.3.1 National Coordinator (NC)

The National Coordinator (NC) will assume managerial responsibility of the project, facilitate its smooth implementation. The NPC will report to Director of Forestry through the Chief Extension Officer of the Forestry Development.

The main tasks of the NPC will be to:

a) Promote, liaise and maintain close working relationships with the national institutions and regional/district Forestry office to ensure wide participation of the implementation of the project activities.

[14] Composition of PTU members may be reviewed when found necessary

b) Prepare and update in conjunction with the CTA and Technical Committee detailed work plan for project implementation. Detailed work plans will be prepared at least annually and more often as may be advised by the Steering Committee.
c) Implement the work plans in accordance with the project requirements and ensure timely delivery of equipment, recruitment, placement of consultants and reporting by them, selection of personnel for training courses[15], study tours and other training activities, arrangement and fieldwork activities and project reporting.
d) 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.
e) Plan and supervise the planning, implementation and monitoring processes of project activities.
f) Ensure that all Government facilities and inputs to the project (e.g. office accommodation and administrative assistance, equipment, training and personnel) are maintained and availed when required for use by the project according to government regulations.
g) Facilitate and coordinate travel arrangements for international training and study tours according to NFA project document.
h) Facilitate internal travel in Zambia for international experts and their counterparts to the regions in accordance with the project needs.
i) Liaise with other projects that are active in the implementation of the national forestry development programme.
j) Arrange and supervise all workshops, training courses, seminars and fieldwork that are required for project implementation.
k) Assume responsibility for the submission of all project reports to the Programme Management Committee in a timely manner.
l) Prepare periodic reports for the Programme management Committee and the Joint Steering Committee, including a terminal report.
m) With the national ST consultant, prepare a complete "ILUA Information Dissemination Plan" which contains identification of potential recipients and beneficiaries of ILUA materials in ministries, organisations, provinces and districts (e.g. schools, NGOs), budget, and timetable.

3.3.2 REDD National Coordinator

REDD Coordinator will work in collaboration with Officers and National Consultants of the PTU to ensure that the information provided by ILUA II is coordinated with Technical Committee under the implementation of REDD and that it is compliant with ongoing carbon monitoring, livelihoods and land management initiatives. He/she will report to the Chief Extension Officer. The tasks include:

a) Ensure that the information provided by ILUA II can be used optimally in the anticipated REDD mechanism.
b) Work closely with other PTU members to implement the project activities as planned;
c) Ensure coordination of ILUA II activities and REDD activities to avoid overlaps and gaps.
d) Participate in planning, running and servicing forums as planned in the project;
e) Provide recommendations to the ILUA National Coordinator on establishing the National approach and long term monitoring process of REDD.
f) Ensure that the MARV system developed meets both international and local level forest management and stakeholder's needs.

3.3.2 PTU Head

[15] They have to be aligned and harmonised with overall Forestry Department training plan/ programme

PTU Head will be responsible for executing the project work plan and channelling the inputs to the activities. He/ she will provide the training, logistical support and supervision to the field (forest inventory) and office (mapping and database) personnel. He/ she will facilitate, coordinate and participate in both office and fieldwork activities to ensure NAFORMA is implemented as agreed. He/ she will report to ILUA National Coordinator.

The specific tasks vested to the PTU-head include:

a) To prepare project annual work-plan and budgets for implementation of the agreed activities together with consultants.
b) To plan, run and service forums as planned in the project document;
c) To facilitate the implementation of office and in field activities.
d) To ensure the quality and consistency of the data produced by the fieldwork,
e) To develop training programme for the national staff.
f) To facilitate training of the field crews and database personnel through the planned workshops and courses;
g) To work with the professionals from the different sectors and scientists, and in close collaboration with the Technical Committee reach a consensus on the forest and landuse assessment approach and long term monitoring.
h) To facilitate procurement of both office and field tools and equipment for the project;
i) To supervise other PTU members and the field crews during the implementation of the project.
j) To prepare project monthly, quarterly and annual reports
(i) To perform any other duties which may be assigned

3.3.3 Forest Assessment Officer

The Forest Assessment Officer will report to PTU–Head and will be responsible for the following tasks:

a) Provides information for the preparation and up-dating of detailed work plan for the project.
b) Works closely with other officers and consultants to implement the project activities as planned;
c) Supports the PTU head in the elaboration of the training programme to the national staff assigned for the implementation of the field activities.
d) Participates in planning, running and servicing the forums as planned in the project;
e) Advises the PTU head on establishing basis and national consensus on the NFA approach and long term monitoring process;
f) Assists in the selection of equipments and supplies to procure for the forest inventory component;
g) Assists the PTU head in the organization and supervision of the fieldwork;
h) Elaborating tasks to be done in the sampling areas.
i) Assists in the selection of equipments and supplies to procure for the forest inventory component;
j) Facilitating and organizing fieldwork and field crews
a) Monitors and provides backstopping in the fieldwork including field reports checks, in order to ensure data quality and homogeneity among field teams;
b) Controls collection process and validation of field forms;
c) Controls data and quality valuation;
k) Controls data processing and analysis;
l) Any other project related activities as required by the PTU head.

3.3.3 Forest Survey and Mapping Officer

The Forest and Land Use Mapping Officer will report to the PTU–Head and will be responsible for:

a) Provides information for preparation and up-dating of detailed work plan for the project.
b) Work closely with consultants implement the project activities as planned;
c) Participates in the implementation of the field activities.
d) Participate in planning, running and servicing the forums as planned in the project;
e) Participate in the preparation of mapping manual for the interpretation of the satellite images in collaboration with the national consultant on mapping.
f) Participate in collaboration with consultants on mapping and Forestry Department personnel, in preparation of the national land cover and land use classification in accordance with the agreed strategy for producing a harmonized classification system.
g) Work, in collaboration with consultants of mapping and other Forestry Department personnel, to define specifications of the land use map and any additional thematic maps to be produced and the mapping method.
h) Assist in the assessment of capacity building needs for the mapping activity of the project;
i) Assist in organizing the mapping work and oversee the interpretation of satellite images in the office based the harmonized legend and its checking in the field;
j) Participate in field validation of the interpretation results and final map production;
k) Elaborating tasks to be done in the sampling areas.
l) Assists in the selection of equipments and supplies to procure for the forest inventory component;
m) Assists the PTU head in fieldwork organization and supervision;
d) Monitors and provides backstopping in the fieldwork including field reports checks, in order to ensure data quality and homogeneity among field teams;
e) Controls collection process and validation of field forms;
f) Controls data and quality valuation;
n) Controls data processing and analysis;
o) Any other project related activities as required by the PTU head.

3.3.5 Data processing and database management officer

Under the direct supervision of PTU - head will work together with Consultant Database to provide information and support as requested for the implementation of ILUA II. The tasks include:

a) Provide information for preparation and up-dating of detailed work plan for the project.
b) Work closely with other PTU members to implement the project activities as planned;
c) Support the PTU head in elaborating the training programme to the national staff assigned for the implementation of the office and in field activities.
d) Participate in planning, running and servicing forums as planned in the project;
e) Ensure that ILUA II database is compatible with other system and where necessary review and development compatible system.
f) Participate in the review of existing volume tables and other functions for computations in the database.
g) Participate in encoding and validating the field data,
h) Participate in training on data processing, analysis and preparation of data processing manual.
i) Participate in the sorting and processing of the collected data to meet the needs of the FBD and generate the expected results.
j) Participate in development of ILUA II database, entering/ storing the field data, data processing and reporting.

g) Monitors and provides backstopping in the fieldwork including field reports checks, in order to ensure data quality and homogeneity among field teams;

3 TIME FRAME AND REPORTING

It is planned that, the Project Technical Unit will serve for the entire project life time of four years.

There should be periodic reporting on Monthly, Quarterly, Semi – and Annual basis to assess the progress of the project implementation at different levels of implementation and administration. Specific reporting requirements may be needed depending on specific needs and nature of the assignment among members of PTU.

4. ORGANIZATION OF ILUA II PTU

PTU will be mainstreamed within the Forestry Department of the Ministry of Tourism, Environment and Natural Resources (MTENR). Forestry Department is the national executing institution in Zambia and has the overall responsibility of the project. Forestry Department will collaborate with FAO in its quality of implementing agency of the project and with the related international development partners (donors) and organizations.

Terms of Reference

Chief Technical Advisor

The CTA will provide the technical assistance and support to Forestry Department and other stakeholders in the areas of capacity building, institutional strengthening, planning and implementation of the ILUA II project. He will report to the ILUA National Coordinator and the main tasks will be to:

1. Assist in the recruitment of the national and international staff and their deployment within the project and oversee their activities.
2. Support the NPC in preparing updated detailed work plan for the project
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 full scale ILUA II (2012-2013) based on the approach to be designed during the inception phase, and taking into consideration the applied methodology in ILUA (2005-2008) in Zambia.
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 FD for future monitoring of the resources and information management.
7. Assist FD in planning, running and servicing the workshops and seminars planned in the project (informative seminar, project pilots and special studies, workshops on the ILUA approach, information and capacity building needs, project findings, etc).
8. Assist in securing wide consultation to establish national consensus on the ILUA approach and long term monitoring process.
9. Assist in selecting and procuring equipments and supplies 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 surveys 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. Support the NPC in preparing periodic progress reports as required including the Terminal report of the project.

Duration: 24 months, with possible extension of 24 months.

Duty Station: Lusaka, and travel inside the country.

Qualification: The Expert should have advanced University Degree in Forestry or related field, at least 7 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.

Terms of Reference

Database Management System Expert (IE–2)

Zambia Integrated Land-use Assessment (ILUA) project was implemented by the Government of the Republic of Zambia (THE GOVERNMENT OF THE REPUBLIC OF ZAMBIA) through the Forestry Department of the Ministry of Tourism, Environment and Natural Resources (MTENR) in 2005–2008, with technical and financial assistance provided by FAO. The main purpose of ILUA was to build up forest related land use resource inventories, support national planning capacity and contribute to formulating development policies. ILUA is based on FAO NFMA methodology and aimed at in-depth analysis and policy dialogue between stakeholders across inter-sectoral variables that cover resource data on forestry, agriculture and livestock and their use.

The ILUA II Project (2010–2013) is an extension phase for ILUA, financed by the Government of Finland through the Environment and Natural Resources Management and Mainstreaming Programme (ENRMMP) with Technical Assistance from FAO. The leading agency is the Forestry Department (FD) in MTENR.

Under the direct supervision of the FAO Representative in Lusaka as budget holder and guidance provided by the Lead Technical Officer (LTO) at FAO Headquarters, in coordination with the CTA and NPC, **Database Management System Expert** will provide the technical assistance and support to the Planning and Information Department and the Forestry Department in MTENR in the areas of capacity building, multi-user database development, data sharing and data processing. The main tasks of the Expert are to:

1. Review the existing ILUA database structure (MS Access) and develop multiuser database for web portal compatible with it.
2. Review existing data sharing standards within the Environmental Council of Zambia.
3. Provide training to the national team in maintenance of the database and formulating SQL queries.
4. Prepare a database maintenance manual.
5. Report any technical problems related to the data and database to the CTA and the NPC.
6. 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

Duration: 2 months, with 2 missions.

Duty station: Lusaka.

Qualifications: At least B.Sc. in Information Technology or Computer Science. The consultant should have a strong background in information system development, database management, statistical analysis and be familiar with MS Access and MySQL database applications. At least 10 years of relevant working experience is required.

Language: English.

Terms of Reference

Web Publishing System Expert (IE–3)

Zambia Integrated Land-use Assessment (ILUA) project was implemented by the Government of the Republic of Zambia (THE GOVERNMENT OF THE REPUBLIC OF ZAMBIA) through the Forestry Department of the Ministry of Tourism, Environment and Natural Resources (MTENR) in 2005–2008, with technical and financial assistance provided by FAO. The main purpose of ILUA was to build up forest related land use resource inventories, support national planning capacity and contribute to formulating development policies. ILUA is based on FAO NFMA methodology and aimed at in-depth analysis and policy dialogue between stakeholders across inter-sectoral variables that cover resource data on forestry, agriculture and livestock and their use.

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Under the direct supervision of the FAO Representative in Lusaka as budget holder and guidance provided by the Lead Technical Officer (LTO) at FAO Headquarters, in coordination with the CTA and NPC, **Web Publishing System Expert** will provide the technical assistance and support to the Planning and Information Department and the Forestry Department in MTENR in the areas of the ILUA Web Portal development, capacity building, and data sharing. The main tasks of the Expert are to:

1. Prepare ToR and arrange tender process with CTA for selection of a local ICT Service Provider.
2. Build up a Content Management System (using e.g. Joomla! or other applicable software in co-operation with PID) for the portal.
3. Build queries into a multiuser ILUA database, using as a model the FAO CountrySTAT framework.
4. To provide guidance and training to the staff in MTENR in the Content Management System and maintenance of the portal.
5. To provide guidance and training to the project stakeholders with the national consultants.

Duration: 2 months, with 2 missions.

Duty station: Lusaka.

Qualifications: At least B.Sc. in Information Technology or Computer Science. The consultant should have a strong background in information system development, database management, statistical analysis and be familiar with Joomla!, HTML, PHP programming, CSS, JavaScript, XML and MySQL applications. At least 5 years of relevant working experience is required.

Language: English.

Terms of Reference

Biometrician (IE–4)

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1. In co-operation with national experts and CTA, prepare ToRs for Special surveys.
2. Conduct analysis of information needs for Zambia to meet the reporting requirements of IPCC Tier 2/3.
3. Conduct analysis of gaps in biometric information. Prepare a work plan, with prioritization of actions.
4. In co-operation with FAO HQ experts, national consultants and national institutes, design of studies aiming to fill in gaps in information to meet the reporting requirements of IPCC Tier 2/3. The topics can cover the following subjects (but not limited): wood density factors, volume equations, biomass expansion factors, root/shoot factors, carbon conversion factors for Zambian native trees species by ecological zones.
5. Provide guidance and 1 day training to the national stakeholders.

Duration: 1 month.

Duty station: Lusaka, and a field visit to provinces.

Qualifications: At least M.Sc. in Forestry, Biology, or Natural Sciences. The consultant should have a strong background in forest biometry and statistics. At least 7 years of relevant working experience is required.

Language: English.

Terms of Reference

Field data collection and processing expert (NC-2)

Zambia Integrated Land-use Assessment (ILUA) project was implemented by the Government of the Republic of Zambia (THE GOVERNMENT OF THE REPUBLIC OF ZAMBIA) through the Forestry Department of the Ministry of Tourism, Environment and Natural Resources (MTENR) in 2005–2008, with technical and financial assistance provided by FAO. The main purpose of ILUA was to build up forest related land use resource inventories, support national planning capacity and contribute to formulating development policies. ILUA is based on FAO NFMA methodology and aimed at in-depth analysis and policy dialogue between stakeholders across inter-sectoral variables that cover resource data on forestry, agriculture and livestock and their use.

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Under the direct supervision of the FAO Representative in Lusaka as budget holder and guidance provided by the Lead Technical Officer (LTO) at FAO Headquarters, in coordination with the CTA and NPC, **Field data collection and processing expert** will provide the technical assistance and support to the Forestry Department in MTENR in the areas of collecting data, data entry, quality control, analysis, reporting, special studies, and training. The main tasks of the Expert be to

1. Assist short-term international and national experts to carry out their field work activities.
2. Assist CTA and ST experts in preparing 'Quality assurance plan' for ILUA II.
3. Assist FD to organize training for field crews.
4. Provide guidance and training to the staff in MTENR and other project stakeholders.
5. Provide assistance in LiDAR pilot study, in co-operation with other consultants and the Survey Department (Ministry of Lands).
6. Supervise field data collecting, data entry, validation and quality of data.
7. In co-operation with CTA, carry out data analysis and reporting of results.

Duration: 20 months.

Duty station: Lusaka, and travel in the country.

Qualifications: At least M.Sc. in Forestry. The consultant should have a background in field inventories, and participatory community forestry in Zambia. Experience in ILUA Phase I is preferably. At least 5 years of relevant working experience is required.

Language: English.

Terms of Reference

Consultant for Remote Sensing (NC-3)

Zambia Integrated Land-use Assessment (ILUA) project was implemented by the Government of the Republic of Zambia (THE GOVERNMENT OF THE REPUBLIC OF ZAMBIA) through the Forestry Department of the Ministry of Tourism, Environment and Natural Resources (MTENR) in 2005–2008, with technical and financial assistance provided by FAO. The main purpose of ILUA was to build up forest related land use resource inventories, support national planning capacity and contribute to formulating development policies. ILUA is based on FAO NFMA methodology and aimed at in-depth analysis and policy dialogue between stakeholders across inter-sectoral variables that cover resource data on forestry, agriculture and livestock and their use.

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Under the direct supervision of the FAO Representative in Lusaka as budget holder and guidance provided by the Lead Technical Officer (LTO) at FAO Headquarters, in coordination with the CTA and NPC, **Consultant for Remote Sensing** will provide the technical assistance and support to the Forestry Department in MTENR in the areas of GIS, mapping and Remote Sensing analysis. The main tasks of the Expert be to

1. Review the existing RS materials in different Ministries, and in MTENR especially.
2. Collect available RS materials and organize achieving and safety copies of materials in MTENR, in co-operation with the National Remote Sensing Center.
3. Recreate a good quality image mosaic (Landsat ETM images) for Zambia.
4. Conduct change detection analysis using temporal RS image materials.
5. Prepare of materials (thematic maps, composite images, statistics) for ILUA Information CD and Web portal, incl. new false colour images (with different band combinations), and Normalized Difference Vegetation Index (NDVI) images (by provinces and country-wide).
6. Provide guidance and training to the staff in MTENR and other project stakeholders.
7. Provide assistance in LiDAR related pilot studies, and co-operation with FD, other consultants and the Survey Department (Ministry of Lands).

Duration: 8 months.

Duty station: Lusaka, with possible field validation visits to the provinces.

Qualifications: At least M.Sc. level in Geography, Forestry, or Natural Sciences. The consultant should have a strong background in Remote Sensing analysis using satellite image data. At least 5 years of relevant working experience is required.

Language: English.

Terms of Reference

Consultant for Web page design and communication (NC–4)

Zambia Integrated Land-use Assessment (ILUA) project was implemented by the Government of the Republic of Zambia (THE GOVERNMENT OF THE REPUBLIC OF ZAMBIA) through the Forestry Department of the Ministry of Tourism, Environment and Natural Resources (MTENR) in 2005–2008, with technical and financial assistance provided by FAO. The main purpose of ILUA was to build up forest related land use resource inventories, support national planning capacity and contribute to formulating development policies. ILUA is based on FAO NFMA methodology and aimed at in-depth analysis and policy dialogue between stakeholders across inter-sectoral variables that cover resource data on forestry, agriculture and livestock and their use.

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Under the direct supervision of the FAO Representative in Lusaka as budget holder and guidance provided by the Lead Technical Officer (LTO) at FAO Headquarters, in coordination with the CTA and NPC, **Consultant for Web page design and communication** will provide the technical assistance and support to the Planning and Information Department and the Forestry Department in MTENR in the areas of capacity building, ILUA Web Portal development, dissemination of information and data sharing. The main tasks of the Expert are to:

1. Review of existing ILUA materials (data, reports, maps, photos, etc).
2. Processing of materials (photos, maps, documents, statistics, and other materials) for the ILUA Information CD and Web Portal in co-operation with the international experts and a local ICT Service Provider.
3. Processing of materials to be printed (posters, leaflets, etc).
4. With NPC, prepare a complete "ILUA Information Dissemination Plan" which contains identification of potential recipients and beneficiaries of ILUA materials in ministries, organisations, provinces and districts (e.g. schools, NGOs), budget, and timetable.
5. Assist the Planning and Information Department (PID) in MTENR, in co-operation with the international experts to design visually attractive and functional user interface and content for ILUA Portal and for ILUA Information CD/DVD (also a cover page for ILUA CD/DVD).
6. Co-operate with the technical ICT Service Provider in all technical matters concerning the development of the portal and multimedia-CD/DVD.
7. To provide guidance and training to the staff in MTENR, and to the project stakeholders.

Duration: 4 months.

Duty station: Lusaka.

Qualifications: At least B.Sc. level in Information Technology or Computer Science. The consultant should have a proven experience in digital publishing, Web page visual design with an applicable software, and be familiar with HTML, CSS, and preferably also with PHP, JavaScript and MySQL. At least 3 years of relevant working experience is required.

Language: English.

Terms of Reference

Biometrician (NC–5)

Zambia Integrated Land-use Assessment (ILUA) project was implemented by the Government of the Republic of Zambia (THE GOVERNMENT OF THE REPUBLIC OF ZAMBIA) through the Forestry Department of the Ministry of Tourism, Environment and Natural Resources (MTENR) in 2005–2008, with technical and financial assistance provided by FAO. The main purpose of ILUA was to build up forest related land use resource inventories, support national planning capacity and contribute to formulating development policies. ILUA is based on FAO NFMA methodology and aimed at in-depth analysis and policy dialogue between stakeholders across inter-sectoral variables that cover resource data on forestry, agriculture and livestock and their use.

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6. In co-operation with international experts and CTA, prepare ToRs for Special surveys.
7. Conduct analysis of information needs for Zambia to meet the reporting requirements of IPCC Tier 2/3.
8. Conduct analysis of gaps in biometric information. Prepare a work plan, with prioritization of actions.
9. In co-operation with international experts and national institutes, design and conduct studies aiming to fill in gaps in information to meet the reporting requirements of IPCC Tier 2/3. The topics cover the following subjects (but not limited): wood density factors, volume equations, biomass expansion factors, root/shoot factors, carbon conversion factors for Zambian native trees species by ecological zones.
10. Report outcomes and findings in national/international series, workshops and seminars.
11. Provide guidance and training to the staff in MTENR and other project stakeholders.

Duration: 6 months, with visits to the provinces.

Duty station: Lusaka.

Qualifications: At least M.Sc. level in Forestry, Biology, or Natural Sciences. The consultant should have a strong background in biometry, statistics, sampling and related subjects. At least 5 years of relevant working experience is required.

Language: English.