

LAND RESOURCE SURVEY & INFORMATION CENTRE

Juba, Southern Sudan



OCTOBER ISSUE, 2010

Southern Sudan Forest Sector Programme

Support to a 4-year Forest Sector Programme for Southern Sudan started in September 2007 with financial support being provided by the Government of Norway.

Goal: To contribute to the rehabilitation and sustainable management of the forest resources in Southern Sudan

The Ministry of Agriculture and Forestry, GoSS is the key local partner while the Norwegian Forestry Group has the responsibility for implementation of the programme.

Tasks involved: establishing a Land Resource Survey and Information Centre;

- developing methodologies and systems for forest resource assessments;
- preparing guidelines for the development of concession agreements and land lease Arrangements;
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The Land Resource Survey and Information Centre is the corner stone in the Programme, which is comprised of four (4) units in addition to administrative staff:

1: Data Collection Unit to carry out fieldwork, interpret aerial photos and analyse satellite imagery;

2: Database Unit to document and store data and ensure standardisation;

3: Data Processing and Analysis Unit to produce *statistics*, *maps* and *reports*;

4: Information Unit to develop suitable and appropriate ways to provide information to the decision makers and other users;

Data collection

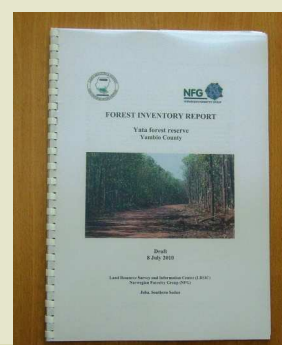


Data processing



Analysis

Presentation



Quoted from The President of the Government of Southern Sudan, H. E. Salva Kiir opening speech at the General Assembly,

"Improved Agriculture and Forestry Services shall become a driving force of our national socio-economic development. We shall work to improve the livelihood of rural Southern Sudan without compromising the sustainability of its natural resources for future generations".



Forest Assessment in Southern Sudan

In 2009, the Forest Sector Programme initiated activities with a forest inventory of the teak plantations in Imela Forest Reserve in Eastern Equatoria State (EES). Foresters at the Department of Forestry in MAF-EES were trained and together with Trainees with the Land Resource Survey and Information Center (LRSIC) and personnel from the Department of Inventory and Management Planning, MAF-GoSS, carried out the field work. Pilot inventories in Kagelu Forest Reserve, Central Equatoria State, Yata Forest Reserve, Western Equatoria State and Katire Forest Reserve in EES followed with the same combination of personnel from State and Central level.



Preparations for the field work

The Programme also conducted rapid forest assessments of the degraded Keijo Keiji and Kadule Forest Reserves in Central Equatoria.

Many of the teak plantations within the Central Forest Reserves have been degraded during the civil war by both the SPLA and the Sudan Armed Forces. Others, such as Yata, Imela and Katire, have only been subject to light harvesting. The reasons may be high risk of attacks, difficult transport to markets and that the



Amir Ramadan working on inventories

Mapping of the reserves and compartments was done by tracking with a handheld Geographic Positioning System (GPS) in the field. For Kagelu and Yata FR, satellite images were used to locate the plantations and delineate the perimeter of teak. Systematic sampling on sample plots distributed in a 100 x 100 m. grid system was carried out and data registered on record forms. The key variables were entered into a software program for calculating stocking levels, mean diameter, height and growing stock for each sub-compartment.

Since no professional management had taken place during the 20-year period of civil war, there is broad agreement that the growing stock of teak needs to be removed over a period of time and a new crop planted. Professionals agree that high quality teak must be produced from seeds or seedlings (stumps), but the current clear-felled government controlled plantations are coppicing due to a lack of silvicultural treatment. Coppice teak does produce pole-sized logs for the local market.

protection of the teak stands by the forest authorities. First established during the 1950s (some even earlier), the plantations assessed by our teams were well managed and even expanded during the peaceful period from 1970 until 1985.

The UN Mission in Sudan and various mine clearing organisations have provided important information about the presence of mines and other explosives in the Forest Reserves and surrounding areas. The local people are also well aware of the security situation. In our pilot assessments, the teams have used local villagers and forest guards as guides and field assistants. Lack of information regarding reserve boundaries and year of establishment of the compartments causes difficulties estimating site productivity and modeling for growth and yield.



Teak Stand in Kagelu Forest Reserve

Table of Key Findings

Forest Reserve	Gazetted Area (ha)	Area of Teak (ha)	Mean Volume o.b. (m ³ /ha)
Kagelu	968	845	144
Katire	Unknown	85,5	259
Imela	371	147	188
Yata	7331	325	283

For the continuation of the Programme in 2011, more plantation Forest Reserves will be assessed. LRSIC will continue to support the Department of Forestry in the States, with equipment, implementation of fieldwork and analysis of results. Support will also be provided to the States to prepare management plans tailored to their needs. Activities will be expanded to 1 or 2 more States and include a pilot assessment of natural forest.

By *Tormod Dale, NFG*

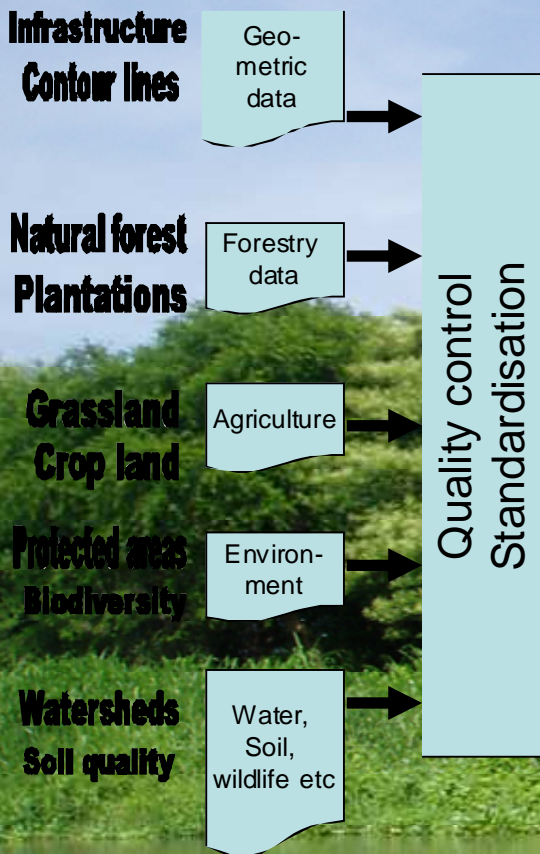


Inventory team, from the left: Simon Dralley, Kuku Sadic, Maku Charles, Ruba Candiga and Charles Paul Angelo

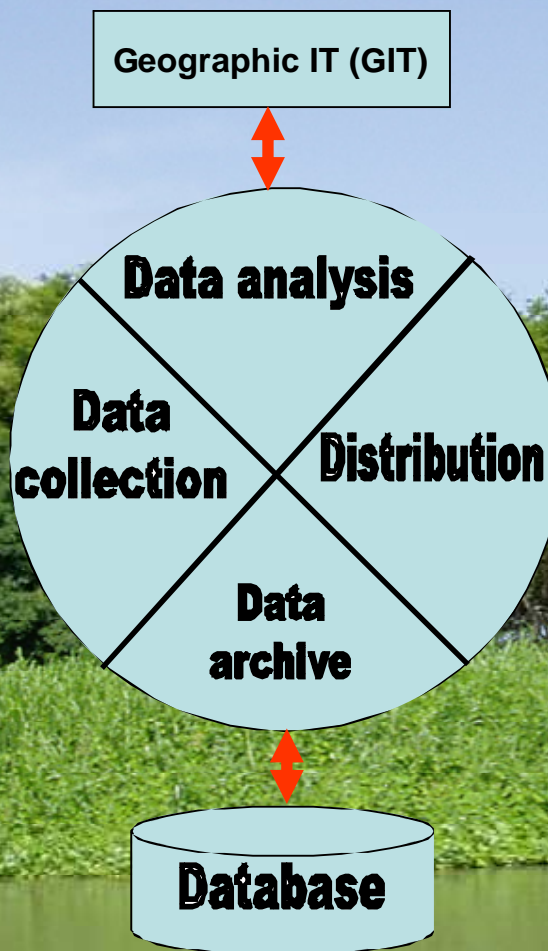


Land Resource and Survey Information Centre

Input



DATA

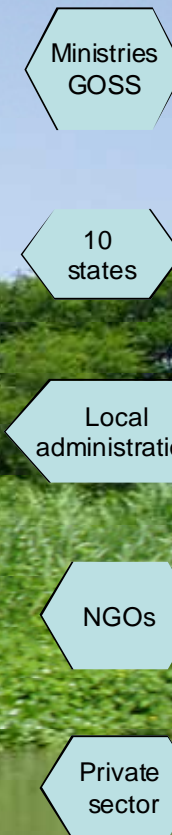


INFO

Output



Users



Data will be collected from existing sources, remote sensing and field inventories

Geographic Information System (GIS)



Southern Sudan Forest Sector Program 2007 - 2011

Collaboration between Ministry of Agriculture and Forestry (GOSS) and Norwegian Forestry Group (NFG)
Funded by The Government of Norway - Implemented by Norwegian Forestry Group



Geographic Information Systems (GIS) - LRSIC

GIS are a set of tools that captures, stores, analyses, manages, and presents data linked to specific **locations**. In the simplest terms, a GIS is the merging of cartography, statistical analysis, and database technology. GIS is used in cartography, remote sensing, land surveying, public utility management, natural resource management, precision agriculture, geography, urban planning, emergency management, navigation and more.

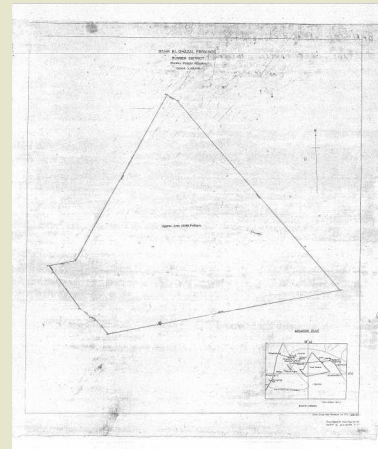
LRSIC will use GIS to embrace:

- **Data collection** - geo-referencing old scanned paper maps, digitizing scanned paper maps, import forest data from the field, and retrieve information by interpreting satellite images;
- **Data analysis** - selections, queries, statistics, replies to questions such as: "How many hectares of grassland are found in Yei county?" "What is the nearest town to Imela Forest Reserve and how far away is it", "What is the shortest route from the plantation to a forest enterprise?"
- **Data archive** - organising and maintaining the storage of all data collected (vector data, raster data, tables, etc.) including back-up routines;
- **Data distribution** - deliver and present reliable land resource data on time as maps, management plans, reports, tables and statistics. The data may be digital (files) or analogue (paper) depending on the needs of the decision makers, e.g. Ministries, other institutions such as the Southern Sudan Centre for Statistics and Evaluation and the Public (farmers, NGOs and forest management units).

The employees at the Centre have attended theoretical courses regarding the fundamentals of GIS, e.g. datum, projections, coordinate systems and Global Navigation Satellite Systems (GNSS)

to familiarise them with common technical terms within the various disciplines involved in GIS. The staff have been taught different methods for collecting data (digitising, interpreting satellite images, importing data from GPS-receivers, tables/databases) by using a variety of software. LRSIC accessed numerous old forest cover maps from the National Forest Corporation in Khartoum in order to improve on the plantation forest database. The staff have continuously expanded their ability to adapt and process the collected data and to carry out analyses to achieve "new" updated information based on the data collected in order to answer to certain questions. The Centre puts emphasis on the presentation of the collected and processed data in the form of maps that are easy to understand. Often a map, provided it follows certain cartographic rules, is easier to interpret than reading a table for example.

By Anne Nilsen, GIS Advisor NFG



Old map from National Forest Corporation (NFC) in Khartoum

Land Resource Survey and Information Centre LRSIC

Our Vision : To become a key information provider for the sustainable management of the land resources in Southern Sudan

The forestry and agriculture sectors in Southern Sudan are vital to the livelihoods of the rural population. Although the true value of forestry and agriculture for the economy and well-being of Southern Sudan have not been quantified in recent years, there is all reason to believe that both will play an important role in the revitalisation of the economy of Southern Sudan.

It is of crucial importance to the Central and State Authorities in Southern Sudan to have access to reliable data regarding the natural resources, forests and agricultural land. The Centre now under establishment plans to provide the Ministries in GoSS and the 10 southern States with information to make decisions that will en-

sure the sustainable management of agricultural and forest areas.

The GoSS Ministries and the Central Administration in the 10 States will need to make their plans based on decisions from readily accessible and reliable information. LRSIC will be one of the key institutions that can serve several Ministries with necessary information.

Modern management demands large volumes of information. To serve the agriculture, forestry, wildlife and environmental sectors with relevant, high quality information, LRSIC requires a highly competent staff including a number of specialists. LRSIC has started to build the organisation and through training has strengthened the three southernmost States to become information collectors and providers.

By Øystein Aasaaren, Director NFG

NFG



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