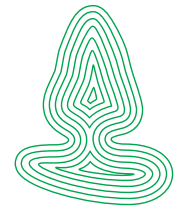


Oppdragsrapport
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SUDAN FORESTRY SECTOR PROGRAM 2008 GIS UNIT

Establishing the Land Resource Survey and
Information Centre

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Cover Photo:

From a field trip to the forest reserve Kagalu with both the Sudanese and the Norwegian project managers. Photo Ole Martin Garseg, Skog og landskap.

[Norsk institutt for skog og landskap, Pb 115, NO-1431 Ås](#)

SUMMARY

Our primary mission is to create an office in Juba with the necessary knowledge, computer equipment, GIS-software and the necessary satellite images. The office and its employees are going to be the independent land cover mapping authority in Southern Sudan.

4 persons from Norwegian Forest and Landscape institute had totally 11 stays in Juba in 2008. Our main task this year was to establish the office with equipment and expertise. The competence of the employees proved to vary a lot and in many cases to be inadequate. We started the transfer of knowledge on a very basic and simple level.

The first year was celebrated by making a simple map showing the location of the known Forest Reserves in Southern Sudan at that time. The office had produced their first official map.

Nøkkelord:

Opprette GIS-enhet/-kontor i Juba. Undervisning i Microsoft-programvare, GIS-programvare, bildetolking, bruk av GPS-mottaker, kartprojeksjon og datum. Digitalisering. Dataorganisering. Nettverksbygging.

Key word:

Establish a GIS-unit/-office in Juba. Training in Microsoft-software, GIS-software, image interpretation, using GPS-receiver, projection and datum. Digitization. Data organisation. Building network.

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1. Report from Year 1 - 2008

The contract between Norwegian Forestry Group (NFG) and Norwegian Forest and Landscape Institute (NFLI) was signed in January 2008.

The first trip to Juba took place in late January/beginning of February 2008. The participants from NFLI were project manager Tom Joar Kristiansen and IT-manager Ole Martin Garseg.

Establishing the Land resource and survey information centre (LRSIC) with an office and the necessary equipment was a natural starting point. Achieving a good cooperation with the Ministry of Agriculture and Forest (MAF) in Juba from the very beginning was also of great importance. NFG rented two rooms (one for the administration office, the other as a class room) at the Norwegian Church Aid (NCA) Compound, Juba.



NFG Project meeting at Rockshield in January 2008. From the left: Øystein Aasaaren, Chris Becker, Campbell Day and Tom Joar Kristiansen.



*Steering Committee Meeting, April 24th. 2008
From the left: Bullen, Campbell Day (NFG), Jaden Tongun Emilio, Julie, Bronika, Timothy, Isaac Lado, Hanne Gro Wallin (NFG) and Christopher B. Lemi.*

From the start it was an important goal for us to purchase as much equipment as possible from local dealers. The reason was partly to support local business development and partly to make it easier to receive support. NFG collected quotations from different providers of computers, software and



Christopher B.Lemi, Ole Martin Garseg and Barbi Nilsen in the office at NCA - April 2008.

furniture in Juba. The first impression was that the dealers in Juba were unprofessional. No one had actual equipment stored in the country, and the prices were between 1.5 and 5 times the prices in Norway.

It turned out that a lot of the equipment available in Juba was Chinese copies of poor quality. For example, when buying antivirus software, the Dealer provided a 30-day trial version, but requested full payment.

At the outset hardware was purchased from the bidder offering the lowest price. It turned out that the parts that were missing in the first delivery became a problem. It took us up to a year to get

the server cabinet delivered to Juba, and this only after we took charge of the transportation from Uganda ourselves.

Despite the first challenges, LRSIC chose "Nile Furniture" to provide office furniture and they proved to be reliable. In addition, some equipment was purchased from "Workshop 2" with success. Reliable computer dealers remain a problem. The strict rule of buying from local suppliers in Sudan has had to be softened in order to attain good quality equipment, but we still think it is important to use local dealers as far as possible in order to provide them with experience and develop the business community.

By late April 2008 the office was ready and our first employees were engaged. In addition the Ministry of Agriculture and Forestry provided the centre with three Trainees.

It soon became clear that the level of competence for computer software was low.

A major challenge was aligning the training to the right level. Training started with an introduction to the most common software on the computers, followed by courses in global positioning systems (e.g. GPS), geographical information systems (GIS) and remote sensing.

The office staff was later introduced to specialised software such as ArcView and IDRISI.



Training session in the use of IDRISI software November 2008

In order to have proper data to work with, several satellite images were purchased covering the areas with plantation forests. Image interpretation, different classification systems and various software were tested. Some software had to be excluded due to U.S. restrictions on use in Sudan.

The participants were given the opportunity to see the advantages of multiple surveys. Moreover, although GIS software has many similarities, each of them has special characteristics. Several training exercises for making maps were carried out in Juba.

Getting the Trainees engaged in the learning process has been a big challenge. Sometimes it is difficult to get their attention in the classroom and sometimes engaging them in solving practical tasks has proven challenging with some of the Trainees.

In November 2008, four persons from the LRSIC-office and one from MAF visited Norway. They attended a 3-day introduction course in the use of remote sensing and GIS, where external professional lecturers were brought in. Professor Øystein B. Dick was responsible for remote sensing and consultant Gunnar Tenge was in charge of the GIS lectures.



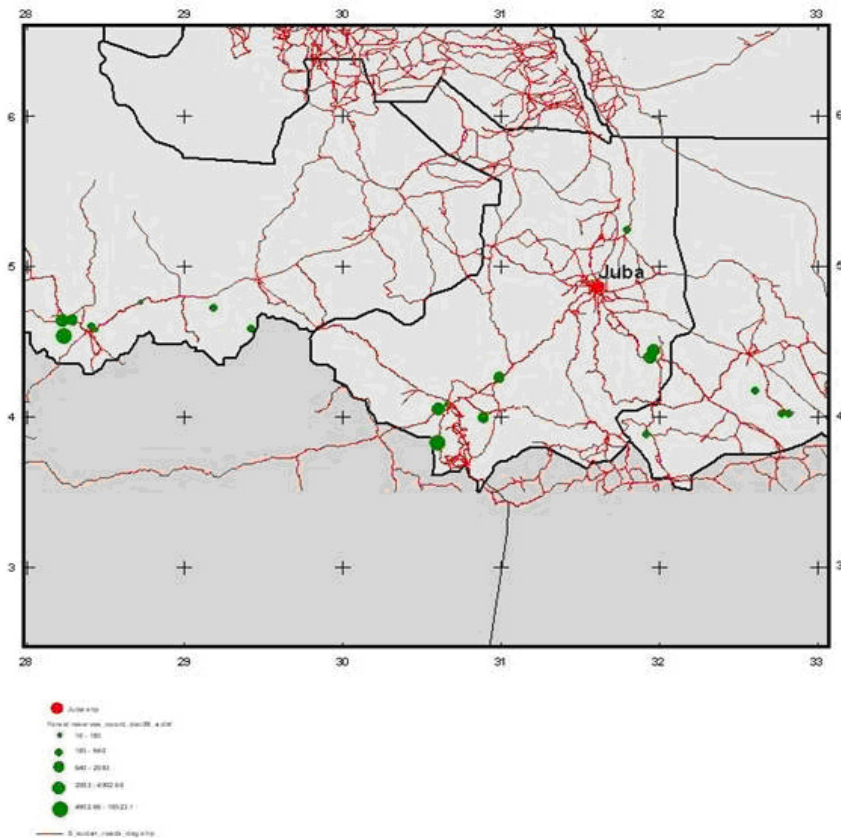
Participants from LRSIC in the Norwegian forest in November 2008. From the left: Jaden Tongun Emilio, Sami Zvikomborero, Ruba Candiga Amena, Abitimo Joan Okot Solomon, and Christopher B.Lemi.



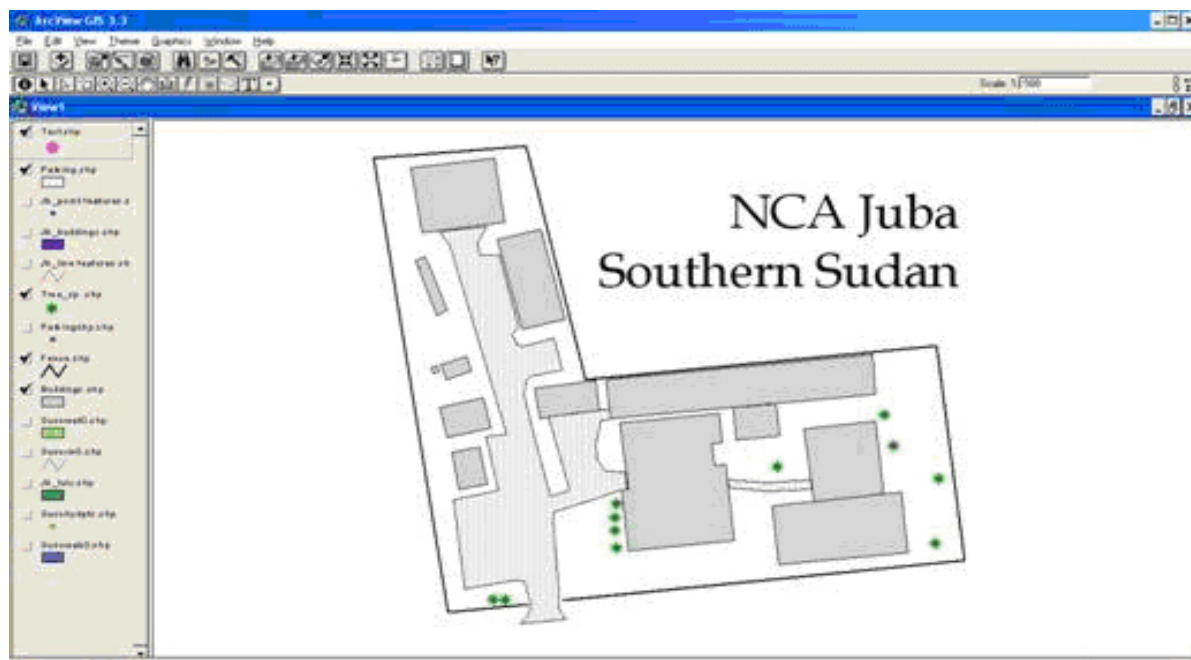
Eager students and teachers in Norway in November 2008. From the left: Barbi Nilsen, Christopher B.Lemi, Ruba Candiga Amena, Sami Zvikomborero, Gunnar Tenge and Abitimo Joan.

By the end of Year 1, the staff had completed a first map showing the location of the known (by December 2008) Forest Reserves in South Sudan. LRSIC produced their first official map.

Southern Sudan Forestry Reserves (Dec 2008)



An assignment for mapping the area within the NCA property was also carried out in order to provide practical experience with the newly acquired knowledge of GPS, coordinate systems and GIS-software. The result is shown in ArcView 3.3.



2. Task List with Results

Hire the core personnel to staff the unit;	<i>OK - April 2008</i>
Build or lease office facilities and furnish these;	<i>OK - June 2008</i>
Establish structures for a working relationship with MAF and other relevant authorities;	<i>Steering Committee and information trips for Jaden and Timothy in MAF</i>
Procure and install basic computer hardware, software and networks;	<i>OK - October 2008</i>
Establish a network and working relationship with other agencies and institutions involved in (land resource) mapping in Southern Sudan;	<i>Attended a GIS Users-meeting held by United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA); acquired Africover-maps from Bern University;</i>
Acquire or procure satellite, aerial photos and maps relevant to the forest cover to be studied;	<i>Purchased 2 satellite images (SPOT 5) with different resolution (2.5 m, 5 m and 10 m) covering 4 forest reserves near Yei; No aerial photos were accessible;</i>
Establish routines for maintenance of computer equipment - software and hardware;	<i>GIS/IT consultant in the office is responsible for a weekly check of the computers;</i>
Train staff in basic IT, GIS and (manual) remote sensing;	<i>Training was initiated at a very basic level for both IT and GIS;</i>
Test the methods for digitising and field control of land resource data on a pilot area close to Juba;	<i>A map over the NCA compound in Juba was made using a GPS and GIS software;</i>
Establish a first version of a nomenclature and guidelines for interpretation of selected land resources using aerial images, orthophotos and/or satellite images;	<i>A Classification System for interpretation was introduced using the European CLC system to provide a system having several levels;</i>
Carry out, evaluate, document and report on a pilot project for mapping plantation forests;	<i>Delayed due to slow implementation and planned for 2009;</i>
Prepare and have approved a Work Plan for Year 2;	<i>OK - December 2008</i>

3. Finances

The Norwegian Forest and Landscape Institute has a contract with NFG with a total value of NOK 2,085,900 of which NFLI will reimburse NFG a commission of 5 % on the consultant fee upon receipt of an invoice from NFG.

NFLI made 11 trips to Juba and was responsible for the training exercises carried out in Norway. NFLI was responsible for all purchases of satellite images and software for the project.

The result for NFLI in 2008 was NOK 2,140,074 less NOK 68,938 commission paid by NFLI to NFG. Details from the accounts are shown below.

Navn og periode		Sum driftsutgifter
O. M. Garseg 27.1-9.2.08		27 646
T.J. Kristiansen 27.1.-9.2.08		27 712
B. Nilsen 22.4-30.4.08		18 065
T.J. Kristiansen 23.4.-10.5.08		42 485
O. M. Garseg 23.4.-30.4.08		19 713
H.G. Wallin 22.4-30.4.08		20 273
H.G. Wallin		130
O. Balle 22.4.08 Oslo		308
B. Nilsen 20.5-29.5.08		12 241
Arb.giveravg.		6 624
Div. utlegg og lev.kjøp		63 490
B. Nilsen		5 018
T.J. Kristiansen 9.6.-21.6..08		30 235
T.J. Kristiansen		-8 840
B. Nilsen		3 216
Arb.avg.		661
Utlegg og kjøp hos lev.		12 185
T.J.Kristiansen 10.8-16.8.08		16 695
O. Eilertsen 25.8.-4.9.08		24 517
T.J.Kristiansen 27.8.-5.9.08		15 350
T.J. Kristiansen 7.10.-25.10.08		41 060
B. Nilsen 19.10-31.10.08		29 627
B. Nilsen 16.11-28.11.08		29 877
H.G. Wallin 16.11-28.11.08		29 272
T.J. Kristiansen 26.11-17.12.08		49 207
J.R. Elders		216
Arb.avg.		7 887
Div. utlegg og kjøp hos lev.		167 517
Totale driftsutgifter 2008		692 387

Timer i perioden 1.1. - 31.12.08	Antall timer	Kostnader
Hanne Gro Wallin	234	175 500
Ole Martin Garseg	149	111 750
Tom Joar Kristiansen	895	671 250
Barbi Nilsen	475	356 250
Odd Eilertsen	80	64 000
Totale timekostnader		1 378 750

I 2008 er det fakturert kr. 18 904 for mye driftsutgifter - må trekkes i 2010.

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