EASTERN NILE TECHNICAL REGIONAL OFFICE (ENTRO)

Resettlement Action Plan
Sudan

Final Report
October 2006

Ethiopia-Sudan Power System Interconnection ESIA

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SMEC

In Association with ASSOCIATED CONSULTANTS & PARTNERS Ltd, Sudan

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Cover Photo: Typical tukul with grass-woven fence, Sudan (Option C).

ABBREVIATIONS

AAOV	Annual Average Output Value
ADB	Asian Development Bank
BILDAT	Small-scale farm allotment
CBO	Community Based Organization
EEPCO	Ethiopian Electricity and Power Corporation
EMP	Environmental Management Plan
ENSAP	Eastern Nile Subsidiary Action Program
ENTRO	Eastern Nile Technical Regional Office
ESIA	Environmental and Social Impact Assessment
GRC	Grievance Redress Committee
HAFEER	Man-made dam constructed for storage of drinking water
IAPs	Interested and affected parties
IDEN	Integrated Development of the Eastern Nile
IMU	Internal Monitoring Organization
kV	kilo volt – 1,000 volts
NAZARA	Traditional (Native) Administration
NBI	Nile Basin Initiative
NEC	National Electricity Corporation, Sudan
NGO	Non Governmental Organisation
PAPs	Project Affected People
OP	Operational Policy of the World Bank
OMDA	Smallest Administrative Unit
RAP	Resettlement Action Plan
RFP	Request for Proposals (RFP No. ENTRO-IDF-003/04)
RP	Resettlement Programme
RoW	Right of Way
SAPS	Subsidiary Action Programmes
SVP	Shared Vision Programme
SHEIKH	Village Head
TOR	Terms of Reference
WB	World Bank
WALI	State Governor

EXECUTIVE SUMMARY

This document is a Resettlement Action Plan (RAP) for the construction of a power transmission link between Ethiopia and Sudan. The RAP has been developed to meet the requirements set out by the Government of Sudan and the World Bank for the Project in relation to resettlement and compensation. Separate RAP reports covering Project elements within Sudan and Ethiopia respectively, have been prepared at the request of the World Bank.

RAP is an information-gathering and analytical process that helps to design development that has least impact on affected communities. Its objectives are to evaluate all physical or economic impacts, displacement, or temporary or permanent loss of assets or facilities that may be experienced by Project-affected communities. It thus identifies people affected by the Project, the nature and degree of the impacts on them, measures taken to minimise the effects and compensation and other assistance to be delivered to affected people for unavoidable impacts.

The Ethiopia-Sudan Power System Interconnection Project

The Ethiopia-Sudan Power System Interconnection Project's long-term development objective is to promote regional power trade through coordinated planning and development of power generation and power interconnections of multi-purpose water resources development. The immediate objective is to facilitate cross-border trade between the two countries to optimize utilization of existing and planned generation capacity. The expected output is a high-voltage transmission line connecting the two countries. The Project is a part of the Strategic Action Program under the Nile Basin Initiative established to promote poverty alleviation, growth and improved environmental management.

The four main Project components have been identified:

- Construction of transmission interconnection between Ethiopia and Sudan: A 230 kV line, complete with terminal substations, a fibre optic telecommunications system and supervisory control and data acquisition (SCADA) – the subject of this RAP.
- An Environmental Management Plan: that will be designed in accordance with recommendations made by the ESIA.
- Institutional Strengthening and Capacity Building: The establishment of operating rules for the interconnected system and the training of personnel in power system and design, and interconnected system operation and regulation.
- Establishment of a Coordinated Unit for Power Trade: Transformation of the coordination unit established for the regional investment study into a regional power trade coordination unit.

The World Bank has classified the Project as a Category B project requiring a full Environmental and Social Impact Assessment (ESIA) and a Resettlement Action Plan (RAP) as a separate report.

Resettlement Action Plan

The Resettlement Action Plan is conducted to ensure that a systematic assessment of potential losses will be made and action taken to minimize damage or loss to affected people by the construction of the proposed transmission line. It considers loss of access to resources (dwellings, crops, woodlots, grazing lands, wells, businesses, cultural properties and social services) or temporary displacement due to construction (e.g. earth-moving, tower construction, the laying out of lines and other installation activities). Permanent resettlement may occur where transmission lines run above domestic dwellings or social services.

The RAP builds upon the following sources:

- Broad consultation with project stakeholders
- Rapid surveys of all route Options
- 100% household census of Option C
- General socio-economic survey of Option B

- General socio-economic survey of Option A
- Previous Study: IVO International Ltd. (1995) "Ethiopia-Sudan Power Systems Interconnection Study Project. Phase 1. Feasibility Study Update. Socio-Economic and Environmental Study Report." Report to Ethiopian Electric Light and Power Authority and National Electricity Corporation, Sudan
- Parallel Study: Fingrid Oyj, Hifaboy and Sogreah Consultants (2005) "Ethiopia-Sudan Power Systems Interconnection Project, Feasibility Study Update."
- Two-day Workshop on the Ethiopia-Sudan Power System Interconnection Project hosted by NEC, Khartoum (December 3-4, 2005)

Socio-Economic Profile of Project Affected Areas

The proposed transmission line routings run through the Al Qadarif (El Gedaref) and An-Nil al-Azraq (Blue Nile) States of Sudan. The ethnic profile of east central Sudan is extremely diverse. The two States are inhabited by a mix of sedentary agriculturalists, and nomadic or semi-nomadic pastoralists. Amongst the latter category are also the West Africa groups generically referred to as Felatta (including the Umbararo, the Ingessana and others), and the Dinka who, more recently, have sought refuge in the area from the war in southern Sudan. Although Sudanese Arabic is spoken by most people throughout these two States, the area is remarkable for its linguistic diversity. While the majority are adherents to Islam, Christianity and a range of indigenous spiritual traditions are also practiced.

The majority of Sudanese in the Project affected areas are dependent upon land as the basis of socio-economic subsistence.

The predominant agricultural practice in east central Sudan is rain-fed mechanized farming. This type of faming was introduced by the British in the mid-1940s and has continued to dominate agricultural production in the region. The investment requirements for mechanised farming favours prosperous cultivators, and most farms are operated by entrepreneurs from urban centres. Private companies have also been officially allocated land, and by the 1970s, state farms amounted to some 7.5% of all mechanized farming.

Cultivation practices have generally shaped the settlement profiles in the Sudan. The settlement profile in Sudan is determined largely by the commitment of large tracts of land to mechanized farming. Most people tend to live in villages or towns and commute to their lands or, if farm labourers, to their places of employment. Typically, smaller villages are provided with minimal health and educational services, while larger towns (e.g. Doka and Ed-Damazin) have a more developed services infrastructure. In general, however, the Project affected areas in both countries are exceptionally poorly serviced.

Scope of Land Acquisition and Resettlement on the Three Proposed Routes

The Resettlement Action Plan has focused on three potential routes that were identified for the Ethiopia-Sudan Power System Interconnection Project:

Option C: Metema - El Gedaref

The section of Option C within Sudan is located in eastern Sudan. The transmission line passes through the State of Al-Qadarif, commencing from the border town of Gallabat and passing near the villages of Atrab, Konnaina, Saraf Saeed, Tawareet, Alhamraa and Kagara before terminating at the substation in the town of El Gedaref. The total tie-line of Option C is 453.5 kms in length of which 157.5 km is in Sudan (See Appendix 1, Figure 3).

Within Sudan, the route runs mostly parallel with the Gedaref to Gallabat Highway. From Gedaref to near the Sudan/Ethiopia border the landscape is flat and land use is dominated by large scale mechanized rain-fed agriculture and, to a lesser extent, livestock grazing. From Konnaina village up to Metema the land becomes undulated and hilly with many wadis.

Option C has been recommended in the 'Ethiopia-Sudan Power System Interconnection Project Feasibility Study Update' (2005) as the preferred route based on technical and financial considerations.

In Sudan, a single circuit line is operative between El Gedaref and Doka only. Thereafter, while there is no local electricity supply, the erection of electricity poles indicates that NEC, together with local authorities, had embarked on a project to extend the line to Gallabat. Should route Option C be selected by the Proponent, the Consultant recommends that the local line be completed as a separate, but complementary Project process, thus ensuring that tangible benefits are delivered to local communities.

Option B (B1: Debre Markos (Ethiopia)-Border-Roseires & B2: Bahir Dar (Ethiopia)-Border-Roseires

The total length of B1 route from Debre Markos in Ethiopia to Roseires in Sudan is 448km of which 82km is in Sudan. The total length of B2 route from Bahir Dar in Ethiopia to Roseires in Sudan is 425km of which 82km is in Sudan. Both Options B1 and B2 share a common route in Sudan.

In Sudan, the line proceeds through sparsely populated terrain where minimal impact is anticipated. The challenge presented here, however, is that the area lacks an all-weather road infrastructure, thus restricting access for construction and maintance to the dry season only. Inaccessibility during the rainy season will present major challenges should repair work be necessary at this time. EEPCo has conducted a cadastral survey of this alignment which indicates that the line will run within proximity of the towns of Menza and Umjinigir.

Option A: Gedo-Assosa-Kurmuk (Ethiopia)-Roseires

Option A is regarded by the 'Ethiopia-Sudan Power System Interconnection Project Feasibility Study Update' (2005) as the least viable of the three proposed routes based on technical and financial criteria. This Option commences at the Gedo substation in Ethiopia and crosses the border at Kurmuk in Ethiopia and finishes at the Roseires substation in Sudan. The route has a total line length of 614 km of which 140km is in Sudan. Option A is therefore the longest route option, much of which passes through mountainous and heavily forested terrain that lacks an all-weather road infrastructure.

Summary of the Main Scope of Resettlement/Relocation Impacts

Because of the linear nature of a transmission line development, it is estimated that the Ethiopian-Sudan Power System Interconnection Project will have minimal impact on communities or persons, and on private or common property assets. However, compensation will be due where towers or Project right-of-way (RoW) affects residential dwellings or social services (which will pose health and safety problems); will fragment cultivated fields and compromise productivity and income; will involve the removal of fruit-bearing trees and other economically valuable natural resources, or may partially or totally disturb cultural properties such as churches, mosques, or archaeological sites. Although the Project will have minimal impact upon PAPs, site-specific relocation may have to occur where access routes, line corridors or transmission towers are to be located.

Project impact is anticipated to occur predominantly during the construction phase with the importation of skilled workers into the area, and the construction of work camps and temporary access roads. While major attention will be focused on loss of income due to temporary disturbance to crops or grazing areas, and on health conditions related to the influx of workers from outside the region (HIV/AIDS being the major concern), positive opportunities to PAPs may be presented in the form of temporary employment, as well as through income generated by the sale of food to immigrant workers. For the most part, however, compensation is expected to be characterized by a large number of small payments for the temporary loss of assets.

Recommendations

It is the opinion of the Consultant that Option C is the preferable route for the following reasons:

- Option C is the most cost effective of the three route options;
- The line is located in areas where there is scattered inhabitation and where there will be minimal impact to PAPs;
- In Sudan, local electricity supply is available to part of the proposed route. The Consultant recommends that the Project set aside some budget to see to the completion of the single line circuit, thus ensuring that local villages can benefit from the Project. This will link the project to the broader rural poverty alleviation programme in Sudan;
- The transmission line will build upon a comparable roads and local electricity infrastructure in Sudan, thus supporting the notion of an inclusive Project profile, built upon transboundary partnerships and exchange.

Poverty Alleviation

Sudan has one of the lowest levels of electricity generation per capita in the world. Electricity is thus essential to the development of agro-processing industries, commercial enterprises and irrigation facilities in the rural areas.

The Consultant believes that by providing local electricity to PAPs (either directly through the financing of local distribution lines, or indirectly, by reinvesting a proportion of the economic benefits of the Project into rural electrification), the Project will be enhancing overall poverty reduction and rural development efforts in the two affected countries.

Electricity supplied to rural towns would replace/reduce the consumption of woody biomass and petroleum products used for cooking, lighting, and motive power. It would support development in the agricultural sector (irrigation pumps, poultry, animal husbandry, preservation of products); in the commercial sector (shops, bars, and restaurants); to small and medium industries (flour mills, rural water supply installations, tanneries, and coffee processing plants), to the residential sector (lighting, heating, and cooking), to education (kindergarten, elementary schools, junior secondary schools, secondary schools and technical colleges), and to the health sector (pharmacies, clinics, health centers and hospitals). In brief, the Project would assist in the facilitation of economic growth in Project affected areas and create long-term employment opportunities for the poor, including women, thereby increasing income levels and reducing poverty.

Summary of Impacts

The following tables summarise the permanent and temporary Project impacts and the overall compensation cost estimates for the recommended route Option C.

COMPENSATION COSTS FOR OPTION C: GALLABAT – GEDAREF

Property	Type	Number	Unit costs (USD)	Total Cost for Compensation in USD
Compensation for agricultural land	Permanent	1,53 ha		Land for land
	Temporary	438 ha		Land for land
Loss of agricultural produce	Sesame	87.6 ha	530 /ton	23,214.00
	Sorghum	350.4 ha	235 /ton	65,875.20
Loss of residential dwellings	Tukul	18		1250.00
Loss of fences	Woven	50		278.00
	Thorny bush	7		97.00
Sub-total				90,714.20
Contingency (10%)				9,071.40
Total				**99,785.60**

MATRIX OF PROJECT IMPACTS: OPTION C

Country	Route Option	Line Length (km)	No. of Towers	No. of Permanently Affected Hectares (tower bases)	No of Temporarily Affected Hectares (RoW)	No. of Buildings within Residential Households to be Permanently Relocated	Main area of impact
Sudan	C	157.5 (109.5 km arable land)	312	1.53	430.0	24	Farmlands Houses Eucalytpus trees

ARABIC TRANSLATION OF EXECUTIVE SUMMARY

1 Introduction

1.1 Project Background

The Nile Basin Initiative (NBI), established formally in 1999, provides for an agreed basin-wide framework to fight poverty and promote socio-economic development in the ten Nile countries (Burundi, Rwanda, Uganda, Tanzania, Kenya, Sudan, Eritrea, the Democratic Republic of Congo (DRC), Ethiopia and Egypt – see Figure 1). The NBI is led by a Council of Ministers in charge of Water Affairs from the member states, (Nile-COM) with the support of a Technical Advisory Committee (Nile-TAC), and a Secretariat (Nile-SEC). A Strategic Action Program including both basin-wide projects (Shared Vision Program) designed to lay the foundation for cooperative action and two sub-basin programs (Subsidiary Action Programs) of investments, is established to promote poverty alleviation, growth and improved environmental management.

The Shared Vision Program (SVP) is a broad based program of collaborative action to exchange experience, create an enabling environment for investment, enhance capacity, and build trust. The SVP comprises seven projects ready for implementation that have been endorsed by the Nile-COM. These projects include: Trans-boundary Environmental Action; Regional Power Trade; Efficient Water Use for Agricultural Production; Water Resources Planning and Management; Confidence-Building and Stakeholder Involvement (Communication); Applied Training; and Socio-Economic Development and Benefit-Sharing.

The Subsidiary Action Programs (SAPs) are parallel, sub-basin investment programs, identified by sub-groups of the riparian countries. The Eastern Nile Subsidiary Action Program (ENSAP) currently includes the countries of Egypt, Ethiopia, and Sudan. The goal of the Eastern Nile cooperation is to develop the water resources of the Eastern Nile Basin in a sustainable and equitable way to ensure prosperity, security, and peace for all its peoples. Local and national programs will address what needs to be done at local and national levels, while sub-basin cooperation will address development opportunities with trans-boundary implications. Guided by a common understanding of basic principles, the program will initially focus on water and water-related resources in identified areas of cooperation, including: irrigation and drainage development, power development and trade; watershed management, sustainable management of lakes and linked wetland systems, river regulation, flood and drought management, pollution control and water quality management, water use efficiency improvement, and integrated water resources management. In the longer term, it is envisioned that water resources development and management will serve as a catalyst for greater regional integration, with benefits far exceeding those derived from the river itself.

The first ENSAP Program is the Integrated Development of the Eastern Nile (IDEN). The program has been prepared in conformity with the objectives and guiding principles of ENSAP. This program initiates a regional, integrated, multi-purpose program through a first set of investments which confer tangible, win-win gains and demonstrates joint action between the Eastern Nile countries. The IDEN project cycle comprises identification, preparation, design, appraisal, and negotiation prior to project effectiveness, and implementation.

The initial set of proposed projects within the IDEN framework is listed below. The Ethiopia-Sudan Power System Interconnection ESIA Consultancy relates to the first of the IDEN projects.

- **Ethiopia-Sudan Transmission Interconnection Project**
- Watershed Management Project
- Eastern Nile Power Trade Investment Program
- Eastern Nile Planning Model Project
- Baro-Akobo Multi-purpose Water Resources Development Project
- Flood Preparedness and Early Warning Project
- Irrigation and Drainage Project

1.2 Previous Studies

The 1982 Master Plan Study of power development for the Ethiopian Electric Light and Power Authority - EELPA (now EEPCO) first identified the possibility of a power interconnection between Ethiopia and Sudan. A feasibility study entitled "Regional Interconnection of Power Systems between Ethiopia and Sudan" financed by the Finnish International Development Agency (FINNIDA) was completed in February 1988. Although the study found the project to be technically and economically viable no further progress was made to implement the project until in 1994 EELPA and the National Electricity Corporation of Sudan (NEC) agreed to update the feasibility study with a view to proceeding to completing engineering design and preparation of tender documents.

Consultant IVO International Ltd was engaged to undertake the feasibility update and completed its report (Ethiopia-Sudan power Systems Interconnection Study Project: Phase I, Feasibility Study Update) in 1995. Unlike the initial investigation, this study update included an assessment of the socio-economic and environmental aspects of the project. A summary of the findings is presented in Section 6 of this Report.

The 1995 investigation recommended a 428km, 230kV single circuit transmission line with self supported lattice steel towers, upgrading/replacement of existing substations, a fibre optics telecommunications system and supervisory control and data acquisition. A further option of a 400/500 kV line was to be considered during final design. The investigation considered three alternative route options in detail.

- Option A: Ghedo-Nekemte-Ghimbi-Kurmuk-Roseires (614 km)
- Option B1: Debre Markos-Injibara-Roseires (425 km)
- Option B2: Bahir Dar-Injibara-Border-Roseires (405 km)

Option B1, with the lowest total cost and acceptable technical performance was recommended to be selected as the least-cost tie-line solution. An additional option, C, starting in Bahir Dar (Ethiopia) and continuing northwest, either passing Lake Tana on the eastern (Route C1) or western side (Route C2) and continuing to the border towns of Metema and Gallabat and then to the Sennar substation via El Gedaref in Sudan was only briefly considered because of its greater length and difficult terrain for line construction.

1.3 Present Study

Further progress with implementation of the project again stalled until it was taken on board by ENTRO and received donor financial support through the World Bank. The Ethiopian and Sudanese Governments agreed to implement the project and initially carried out line surveys for the Debre Markos to Roseires route which was the recommended route in the 1995 study. Following the line survey, the Ethiopian and Sudanese Governments appointed (through tender) consultants Hifab Oy and SOGREAH Consultants to prepare a feasibility study update which was commenced in January 2005. A draft Report was completed in May 2005 (Ethiopia-Sudan Power Systems Interconnection Project Feasibility Study Update, Draft Report, May 2005) which recommended Option C route include a new section from Bahir Dar to Gonder (Azezo) in Ethiopia. This new section was surveyed by EEPCO in early 2006. The report provides the most recent description of the proposed project and forms the basis of this ESIA/RAP Consultancy.

It was originally planned that the Feasibility Update Study and the ESIA/RAP studies would run in parallel with the latter providing input into the Feasibility Update Study. However, because of the delay in undertaking the ESIA/RAP, the Feasibility Study Update was finalised before the ESIA/RAP study is due for completion at the end of September 2006.

1.4 Contents of RAP Report

The World Bank has requested that separate RAP Reports be prepared for Sudan and Ethiopia although there will be only one ESIA Report covering both Sudan and Ethiopia. Both RAP Reports will include the following considerations with reference to all three Project Options for route sections within their respective countries.

- census and socio-economic survey information
- assessment of Project impacts, land acquisition and resettlement
- objectives, policy framework and compensation entitlement criteria
- framework for public participation, consultation and grievance redress
- relocation and rehabilitation options
- income restoration strategy
- institutional framework
- resettlement cost estimates and budget
- implementation arrangements and schedule
- monitoring and evaluation

1.5 Outline of RAP Report

This document is a Resettlement Plan (RAP) for the construction of a transmission link between Ethiopia and Sudan. The RAP has been developed to meet the Government Sudan and the World Bank's requirements for that part of the Project in Sudan in relation to resettlement and compensation. It identifies people affected by the project, the nature and degree of the impacts on them, measures taken to minimise the effects and compensation and other assistance to be delivered to affected people for unavoidable impacts.

The Resettlement Action Plan has been undertaken to ensure that a systematic assessment of potential losses is made and action is taken to minimize damage or loss to project affected people. RAP considers loss of access to resources (crops, woodlots, grazing lands, wells, businesses and services, etc.) or temporary displacement due to construction (e.g. earth-moving, tower construction, the stringing of cables and other installation activities). Although minimal, some permanent relocation may occur where transmission lines run above domestic dwellings or social services.

RAP is an information-gathering and analytical process that helps to design development that has minimal impact on affected communities. Its objectives are to evaluate all physical or economic impacts, displacement, or temporary or permanent loss of assets or facilities that may be experienced by project-affected communities.

The Report builds upon the following sources:

- Broad consultation with project stakeholders
- Rapid surveys of all route Options
- 100% household census of Option C
- Sample household and socio-economic surveys of Option B1 and B2
- General socio-economic survey of Option A
- Previous Study: IVO International Ltd. (1995) "Ethiopia-Sudan Power Systems Interconnection Study Project. Phase 1. Feasibility Study Update. Socio-Economic and Environmental Study Report." Report to Ethiopian Electric Light and Power Authority and National Electricity Corporation, Sudan.
- Parallel Study: Fingrid Oyj, Hifaboy and Sogreah Consultants (2005) "Ethiopia-Sudan Power Systems Interconnection Project, Feasibility Study Update."
- Two-day Workshop on the Ethiopia-Sudan Power System Interconnection Project hosted by NEC, Khartoum (December 2-4, 2005)

1.6 Report Framework

The Report framework has been informed by the following considerations:

- The legislative and administrative procedures regarding land tenure, land acquisition and use, and resettlement for Sudan.

- The presentation of informationis in two reports, one covering aspects of the Project in Sudan and the other for Ethiopia.

2 Project Objectives, Policy Framework and Entitlements

The resettlement and compensation plan outlined in this Report has been prepared in accordance with the requirements outlined by the Government of Sudan and the World Bank while acknowledging the requirements of the Ethiopian Government and the trans-boundary nature of the Project.

2.1 Resettlement Objectives

The Resettlement Plan aims to ensure that the losses incurred by affected people are redressed such that Project affected Persons (PAPs) share project benefits, are assisted to develop their social and economic potential in order to improve or restore their incomes and living standards to pre-project levels and are not worse off than they would have been without the Project.

2.2 Resettlement Principles

The World Bank's requirements regarding involuntary resettlement are detailed in Operational Policy (OP) 4.12. The directive outlines the following principles:

• Acquisition of land and other assets, and resettlement of people will be minimized as much as possible by identifying possible alternative project designs, and appropriate social, economic, operational and engineering solutions that have the least impact on populations in the Project area.

• The populations affected by the Project are defined as those who may stand to lose, as a consequence of the Project, all or part of their physical and non-physical assets, including homes, homesteads, productive lands, commercial properties, tenancy, income-earning opportunities, social and cultural activities and relationships, and other losses that may be identified during the process of resettlement planning.

• All PAPs who are identified in the project impacted areas as of the date of the updated census and inventory of losses, will be entitled to be compensated for their lost assets, incomes and businesses at full replacement cost and provided with rehabilitation measures sufficient to assist them to improve or at least maintain their pre-project living standards, income earning capacity and production levels.

• All affected populations will be equally eligible for compensation and rehabilitation assistance, irrespective of tenure status, social or economic standing, and any such factors that may discriminate against achieving the objectives outlined above.

• The rehabilitation measures to be provided are:

  - cash compensation for houses and other structures at replacement cost of materials and labour without deduction for depreciation or salvageable materials;
  - full title to replacement agricultural land for land of equal productive capacity acceptable to the PAP;
  - full title to replacement residential and commercial land of equal size acceptable to the AP or, at the informed decision of the PAP, cash for replacement land at replacement cost at current market value;
  - cash compensation for crops and trees at current market value; and

- relocation allowances and rehabilitation assistance.

• Sufficient time will be allowed for replacement structures to be built before construction begins.

• Temporarily affected land from the construction of access routes or earth-moving activities will be restored to pre-project conditions.

• The compensation and resettlement activities will be satisfactorily completed and rehabilitation measures in place and all encumbrances removed before the respective Governments and World Bank will approve commencement of civil works for that contract area.

• Existing cultural and religious practices shall be respected and, to the maximum extent practical, preserved.

• Adequate budgetary support will be fully committed and made available to cover the costs of land acquisition and resettlement and rehabilitation within the agreed implementation period.

• Special measures shall be incorporated in the RAP and complementary mitigation and enhancement activities to protect socially and economically vulnerable groups such as women-headed families, children and elderly people without support structures and people living in extreme poverty.

• Grievance procedures shall be established and in place and PAPs informed of them before any resettlement activities begin.

• Details of the RAP shall be distributed to the PAPs by the Client and placed in relevant stakeholder offices for the reference of PAPs as well any interested groups.

• Appropriate reporting, monitoring and evaluation mechanisms will be identified and set in place as part of the resettlement management system and an external monitor hired before commencement of any resettlement activities.

3 Methodology

3.1 General Considerations

Due to a delay in the commencement of the RAP, examination of the three route Options had to take place during the rainy season. This placed certain constraints on the field surveys, the most pressing being the inaccessibility of some parts of the routes due to poor road systems. In order to overcome this problem, the Consultant has applied a variety of methodologies to ensure that impact and compensation assessments are based on current and verifiable socio-economic and demographic information.

The Consultant has applied the following survey techniques:

Rapid surveys: used as an essential diagnostic tool to identify the respective alignment of power lines, intensity of impact, and sites of cultural significance. Rapid surveys have been useful particularly as a basis for the development of detailed survey methodologies. A socio-economic log profile of each route Option was compiled during the survey to provide basic impact assessment data.

Extensive field surveys: comprising detailed census/inventories with affected households as well as formal and semi-formal discussions with sample focus groups. Within this survey category, the following data collection techniques were applied:

- Maps (1:50 000 topographical maps, profile-, aerial- and land-use maps) were sourced to identify the alignment of transmission lines, land-use categories and common property resources, cultural property (graveyards, churches etc), road and transportation networks, the location of social services. Maps were also used to identify affected households, fields and natural resources and fixed assets.

- Population Census: An enumerated survey was conducted with affected communities on the entire Option C route according to the exact survey design for the transmission line as provided by NEC.

- Household, Livelihoods and Infrastructure inventories were used to assess: 1) land use categories and common properties; 2) an assets inventory (homestead, fences and out-buildings, trees, commercial properties etc.); and 3) social services infrastructure.

  The application of these surveys was determined by the availability of survey designs of the proposed transmission lines from NEC. Due to varying degrees of detail available for such baseline data, three levels of surveys were undertaken:

  - Where transmission line routes had been surveyed by NEC, and where tower benchmarks were specified, household surveys of 100% of affected houses were conducted.

  - Where no exact benchmark survey was available but alignments were marked on 1:50 000 topographical maps, sample surveys of the affected households were conducted;

  - Where no survey designs were available and the direction for the transmission line alignment was merely described (i.e. running parallel with a road system), a general socio-economic analysis was conducted.

- Socio-Economic Surveys were used to evaluate project impact and compensation parameters and to identify directly and indirectly affected persons. Socio-economic surveys were developed together with demographic information made available from local

administration offices, and from socio-economic indicators provided in relevant secondary sources.

- Discussion documents were designed to guide participatory discussions with:

  1) Focus groups (e.g. farmers' associations, women's groups, etc.) and
  2) Sector offices (e.g. district and/or regional administration offices, etc.)

Sudanese Surveys

One survey team was mobilized comprising a Senior Anthropologist Consultant, assistant junior faculty members from the Universities of Khartoum and Gedaref and members of the affected communities sourced through local administration offices. A 100% household survey was conducted on Option C, while Option B and Option A were more generally assessed. This was due mainly to constraints imposed by inaccessible road systems from the Roseries substation to the Ethiopian border.

3.2 Methodologies Applied on Three Route Options

3.2.1 Option C

3.2.1.1 Route Description

The survey team worked to a cadastral survey provided by the NEC. The alignment has been purposely positioned away from most areas of inhabitation, except in the towns of Gedaref and El-Gallabat. In Gedaref, the transmission line will run between two residential areas. However, this area has been ear-marked for residential development, and while no houses or public buildings have yet been constructed, plots have been formally allocated by the City Authority. The consultant recommends that the line be re-routed to avoid future impact on this area. Should this not be possible, a land-for-land compensation arrangement will have to be neogitated with affected people. In Gallabat, the alignment will impact upon a number of houses on the outskirts of the town.

3.2.1.2 Sources of Information

- interviews with representatives from institutions relevant to the Project
- preliminary site visit to sections of all three routes, and consultations with local officials and affected people
- detailed household survey from Gedaref to Gallabat in Sudan (100% affected households)
- interviews with governmental and non-governmental organizations relevant to the Project
- maps, secondary sources and related survey information

3.2.1.3 Survey Methodology

Focus group discussions
A template questionnaire was applied for discussions with PAPs, local village groups, public service workers (e.g. teachers and health care workers), NGOs and other relevant stakeholders.

Sector office discussions
A second questionnaire was applied for discussions with representatives of Regional Offices, (e.g. Omda in Sudan), focusing on demographic data, land use and management practices, human settlement, infrastructure, local compensation guidelines, and other relevant infrastructural information.

Inventories
100% Household, agricultural and infrastructural inventories were conducted of every dwelling and/or property that will be affected by the alignment.

- A Community Representative: a representative from each affected kebele was included in the team in order to secure local participation in the survey process, as well as to ensure that the owners of affected assets (land, tress and houses) were correctly registered.

The survey team comprised senior faculty members of the Department of Anthropology, Universities of Khartoum, junior faculty members of the Department of Anthropology at Gedaref University, a surveyor from NEC, and assistants sourced from the affected communities. The community assistants were employed as enumerators - filling in household, agricultural and social infrastructure inventory forms along the alignment. The assistant's role was also important to the inventory of affected assets since local participation in the survey process ensured that the owners of the affected assets (land, tress and houses) were more likely to be correctly registered.

3.2.2 Option B1 and B2

3.2.2.1 Route Description

In Sudan, Route B runs through sparsely populated terrain, which is flat and largely committed to mechanized farming.

3.2.2.2 Sources of Information

- preliminary site visits to sections of the route
- consultations with local officials and affected people
- general survey of the route
- interviews with representatives from institutions relevant to the Project
- interviews with governmental and non-governmental organizations relevant to the Project

While there is a survey design for the eastern Roseires alignment to the Sudan/Ethiopia border, no household surveys were conducted due to the inaccessibility of the area in the rainy season by road.

3.2.2.3 Survey Methodology

Focus Group Discussions
A template questionnaire was used as a framework for participatory discussions with PAPs, public service workers (e.g. teachers and health care workers), NGOs and other relevant stakeholders.

Sector Office Discussions
A second questionnaire was used as a framework for discussions with representatives of Regional Offices, focusing on demographic data, land management and agricultural activities, local compensation guidelines, and other relevant infrastructural information.

3.2.3 Option A

3.2.3.1 Route Description

This route traverses through the western An-Nil Al-Azraq (Blue Nile) State and terminates at the Roseires substation.

This is the longest of the three proposed route Options. The area is characterized by savannah grassland, indigenous forests, scattered dwellings and communal grazing lands. There is scattered inhabitation only, and the road infrastructure is poor, making it impossible to conduct a detailed RAP survey during the rainy season.

3.2.3.2 Sources of Information

- rapid survey of part of the route within Sudan
- consultations with local officials and affected people
- interviews with representatives from institutions relevant to the Project
- interviews with governmental and non-governmental organizations relevant to the proposed Project

3.2.3.3 Survey Methodology

No survey designs are available for Option A. Following baseline data provided by the 1995 Feasibility Study prepared by IVO International Ltd., the present RAP survey focused on updating socio-economic and livelihoods data at a general level. The survey has drawn on a rapid site survey, participatory discussions held with focus groups, relevant stakeholders and Sector Offices, on maps and on secondary data relevant to the Project affected area.

4 Socio-Economic Profile of Project Affected Areas

4.1 General Socio-Economic Profile of Project Affected Areas

The Republic of Sudan is the largest country in Africa and is highly differentiated both geographically and culturally. The country occupies three ecological zones, namely Sahara to the north, savannah in the central belt, and equatorial forests in the south. Sudan is estimated to have a total population of 40 million, over 40% of which is under the age of 15.

4.1.1 Project Area

The three proposed transmission line routes traverse the Al-Qadarif and An-Nil al-Azraq (Blue Nile) States of western Sudan (See Appendix 1, Figures 1 & 2).

The ethnic profile of east central Sudan is extremely diverse. The two States are inhabited by a mix of sedentary agriculturalists and nomadic or semi-nomadic pastoralists. Amongst the latter category are also the West African Felatta groups (Ingessana, Fulani and Umbararo, amongst others) and the Dinka who, more recently, have sought refuge in the area from the war in southern Sudan. Although Sudanese Arabic is spoken by most people throughout these two States, the area is remarkable for its linguistic diversity. While the majority are adherents to the Moslem faith, Christianity and a range of indigenous spiritual traditions are also practiced.

The majority of Sudanese in the given areas are dependent upon land as the basis of socio-economic subsistence. The predominant agricultural practice in east central Sudan is rain-fed mechanized farming. This type of farming was introduced by the British in the mid-1940s and has continued to dominate agricultural production in the region. The investment requirements for mechanised farming favours prosperous cultivators, and most farms are operated by entrepreneurs from urban centres. Private companies have also been officially allocated land, and in the 1970s, state farms amounted to some 7.5% of all mechanized farming (http://www.cia.gov/cia/publications/factbook/geos/su.html#Govt).

Cultivation practices have generally shaped the settlement profiles in the Sudan. The settlement profile is determined largely by the commitment of large tracts of land to mechanized farming. Most people tend to live in villages or towns. They will commute daily to their lands or, if farm labourers, to their places of employment. Smaller villages are provided with the minimal health and educational services, while larger towns (e.g. Doka and Ed-Damazin) have a more developed social services infrastructure. In general, however, the Project affected areas are extremely poor.

Settlement patterns in the An-Nil al-Azraq (Blue Nile) State have more recently been influenced by civil war, which has caused thousands of people to be either displaced locally, to move to other parts of Sudan, or to cross the border as refugees to Ethiopia. In addition, the population profile has been severely affected by the recent wave of displaced persons it has received from Southern Sudan.

4.2 Administrative Background

The Republic of Sudan is divided into 26 States. Each State has a Legislative Assembly which is presided over by elected representatives of each of its localities. The governor of each state, who is appointed by the President, is known as a *Wali.*

Each State has its own Legislative Assembly with an executive administration, which consists of the following ministries:

- Finance, Economic Planning and Labor Forces
- Agriculture, Animal Resource and Irrigation

- Engineering Affairs and Constructional Planning
- Health
- Education
- Social Affairs

Localities within each State are headed by a Commissioner (Mutamad) who has the status of a State Minister. The administrative affairs of the Locality are run by an Executive Officer who is assisted by professional staff. Decision-making at the Locality level is taken by a Locality Council composed of representatives of the villages within the Locality's boundaries.

The lower level of civil administration is run by Administrative Units headed by a Local Government Officer and representatives selected by Village People's Committees (VPCs). At the village level, there are Village People's Committees elected by villagers to administer village affairs and to select members to represent them in Administrative Units and in Locality Councils.

In addition to the Executive Administration, a Traditional (Native) Administration system (*Nazara*) presides over local administrative and judicial affairs. The *Nazara* system consists of three administrative tiers: the *Nazars*, who are the highest officials within the administrative and judicial structure; the *Omdas* who are medium level leaders, and who are usually heads of tribal subsections; and the *Sheikhs*, who are village or camp headman. All of these Native Administrators are granted legal powers to maintain law and order, to monitor development within their respective constituencies, and to collect taxes.

4.3 Women

The economic, social and political status of women in the entire Project affected area is very weak. For the most part, women are subject to early marriages after which their roles are largely confined to household management and agricultural production. They are generally economically dependent upon men who tend to make the decision as to how many children the family should have. Due to high mortality rates amongst children, women prefer to have more to compensate for high attrition rates.

In the rural areas in particular, women are burdened by back-breaking work. In addition to all food preparation, child rearing and domestic chores, they are responsible for land preparation, planting and weeding. Women are also the principle collectors of water and firewood, and in some instances, they have to walk long distances to acquire these resources for drinking and cooking.

Women's access to formal education is low in all Project affected areas. With the scarcity of educational facilities, families tend to privilege male children and literacy levels amongst girls and women are therefore significantly lower. With little access to formal employment, they consequently represent a negligible proportion of persons employed in professional, technical and administrative occupations. In both countries, girl school enrolment is considered a key factor in promoting wider economic and social development (UNDP Human Development Report 2001, UNDP Human Development Report 2002, UNDP Human Development Report 2003, UNDP Human Development Report 2004).

4.4 Children

Children are the most vulnerable members of the population to the affects of drought, famine, war and related displacement, and to the disintegration of families by poverty. A high percentage of children in the Project affected areas do not have access to formal education and are subject to various forms of child labour, namely livestock herding, and agricultural and domestic work. In the southern regions of the Sudanese Project affected areas, children have been co-opted into the civil war.

In general, infant mortality is high (under the age of 5 years) and most children lack access to good nutrition and basic health services. Given the high rate of HIV/AIDS in most of the Project affected areas, there exists little government infrastructure to support the increasing number of children who have been orphaned by the pandemic.

4.5 Housing

The quality of housing in the Project affected areas is poor. The majority of rural people live in wood and mud houses with thatched roofs. Houses tend to give shelter to both people and their livestock. The current stock of urban housing - most of which are constructed from mud brick and corrugated iron sheeting – is also insufficient and of very poor quality.

4.6 Education

In Sudan, the war and neglect of the education sector over many years are reflected in the low educational standards, although there have been modest improvements in recent years. Illiteracy levels fell during the 1990s, largely as result of low school enrolment. In 2000 the adult illiteracy rate was estimated at 30.2% and 53.7% for men and women respectively. Elementary education for those aged seven to twelve is free in Sudan. Intermediate education lasts three years, and secondary education, which starts at 16, also lasts for three years (http://www.iss.co.za/AF/profiles/Sudan/GenInfo.html).

4.7 Health and HIV/AIDS

As is the case in most areas of Sudan, communicable diseases and nutritional deficiencies are the major health problems experienced in the Project affected area. Poor environmental conditions and sanitation, and low health coverage (on average less than 45%) contribute, among other issues, to high morbidity and mortality of the population. Health services distribution is urban-biased, and rural health coverage is particularly weak. Moreover, vaccine preventable infections are responsible for a high incidence of morbidity, mortality and disability amongst children and pregnant women. This is in part due to the lack of cold chains or refrigeration facilities for safe transportation and storage of vaccines, and to a weak health delivery system.

The most prevalent diseases in the Project area are:

- Malaria
- HIV/AIDs
- Tuberculosis
- Pyrexia (unknown origin)
- Gonococcal infections
- Gastritis and duodenitis
- Bronchopneumonia
- Rheumatism
- Helminthiasis
- Acute upper respiratory infections
- Infections of skin and subcutaneous tissue

HIV/AIDs is a rapidly growing new source of vulnerability in the region with a serious impact on efforts being made to enhance growth and poverty reduction. Women have greater vulnerability to HIV/AIDs than men due to a range of epidemiological, biological and socio-economic reasons.

While there are general trends towards health improvement, the status of HIV/AIDS is discouraging. Although little data on HIV/AIDs is available, UNAIDS estimates the adult infection rate to have been 2.6% at the end of 2001 (http://www.iss.co.za/AF/profiles/Sudan/GenInfo.html). With the low capacity to deal with the crisis due to weak health infrastructure and widespread poverty, the projected social and economic impacts of HIV/AIDS are incalculable. Among the

socio-economic impacts of the pandemic the most critical are demographic, health care economic impacts, an increased vulnerability and burden on women, and the rapidly increasing number of orphans (OHAPCO Strategic Plan to Fight HIV/AIDs, 2002).

4.8 Water and Sanitation

As with related social services infrastructures, the provision of domestic services such as water and sanitation in Project affected areas is very low. Problems related with scarcity of drinking water supply and adequate sanitation services prevail. Basic facilities for both solid and liquid waste disposal are almost entirely lacking. Many urban houses are without appropriate sanitation facilities and there are few public toilets. Poor sanitation has adverse effects on community health. Sanitation in rural areas is almost non-existent.

4.9 Food Security

Environmental problems in Sudan are experienced predominantly in the form of deforestation and soil erosion. Environmental degradation throughout the Project affected area is considerable, and is exacerbated by population growth and centuries of cultivation and abuse of natural resources. Mechanized farming has been accountable for the depletion of biodiversity.

In Sudan an estimated 2.9 million people were in need of urgent food assistance in the mid-2002. The crisis is most extreme in the south where the impact of poor climatic conditions has been compounded by the effects of the civil war. Nearly one-third of the population in Southern Sudan is highly food insecure and an average of 572,000 people required food aid during 2003. These conditions have similarly affected States in the east, such as the Al-Nil An Azraq (Blue Nile) State, (http://www.iss.co.za/AF/profiles/Sudan/GenInfo.html).

Poverty reduction programmes confer that agriculture and rural development requires complementary and simultaneous development initiatives in non-agricultural sectors. Education, health, water supply, road and transport services, and small and medium industries development is considered critical for rural transformation and national development (*see Section 18: Recommendations).*

4.10 Rural Electrification

Provision of electricity would result in an increase in commercial activities while boosting the production of small and medium industries, such as the coffee and leather processing industries. In brief, it would facilitate all round economic growth in the rural areas and create employment opportunities for the poor, including women, thereby increasing income levels and reducing poverty.

The only sizeable area of Sudan that had access to electric power in 1991 was the central region along the Blue Nile from Khartoum south to Ed Damazin. At this time, the central region accounted for approximately 87% of Sudan's total electricity consumption. The area was served by the country's only major interconnected generating and distributing system, the Blue Nile Grid. This system provided power to both the towns and the irrigation projects in the area, including the Gezira Scheme. Another small, local, interconnected system furnished power in the eastern part of the country that included Al-Qadarif and three other States. The remaining customers were located in fewer than twenty widely scattered towns having local diesel-powered generating facilities. About fifty other urban centres in outlying regions, each having populations of more than 5,000, still did not have a public electricity supply in 1982, the latest year for which statistical information was available. Rural electrification was found only in some of the villages associated with the main irrigation projects (http://www.photius.com/countries/sudan/economy/sudan.economy.electric.power.html).

5 Socio-Economic Profile of Option C

5.1 Project Area

Option C is located in eastern Sudan, the transmission line passes through the State of Al-Qadarif, commencing from the border town of Gallabat and passing near the villages of Atrab, Konnaina, Saraf Saeed, Tawareet, Alhamraa and Kagara before terminating at the substation in the town of El Gedaref. The total line length within Sudan is 157.5 km (See Appendix 1, Figure 3).

TABLE 1. LIST OF ALL ADMINISTRATIVE ZONES ALONG ROUTE C ALIGNMENT

State	Locality	Administrative Area	Towns
Al-Qadarif State, Sudan	El-Gallabat Locality		Gallabat
			Doka
	Al-Gedaref Locality		Gedaref

5.2 Environmental Background

Within Sudan, the route runs mostly parallel with the Gedaref to Gallabat Highway. From Gedaref to near the Sudan/Ethiopia border the landscape is flat and land use is dominated by rainfed cultivation and livestock grazing. From Konnaina village up to Metema the land becomes undulated and hilly with many wadis.

The Sudanese State of Al-Qadarif consists of a vast, flat, fertile, clay landscape, interrupted by a number of scattered hills of low to medium height. A number of streams (*wadis*, *khors*) run across the state, as do four main seasonal rivers, namely the Atbarawee, Basalam, Setit and Rahad.

The northern part of the State falls within a semi-desert zone, while the southern area (Project affected area) is classified as savannah woodland. The average annual rainfall in the north is about 300 mm, while the south receives some 900 mm per annum. The rainy season lasts from June-September, with the heaviest concentration being during the months of July and August.

Only 15% of the State retains its forest cover. Indigenous forests have declined dramatically as a result of the expansion of mechanized agriculture, wood cutting and charcoal production. In the past, forests were an important means of survival for many of the local inhabitants, both as a source of income (especially *Acacia senegal* or gum arabic), as building materials, for wild fruits and for traditional medicines. In order to remedy the problem of deforestation, the State has stipulated that 10% of all agricultural schemes are to be planted to trees. However, infrastructure within the State is too weak to oversee the implement of this directive.

5.2.1 Water Resources

Ground water is an important resource in Al-Qadarif, especially in the central and southern parts of the State. Ground water is commonly obtained from boreholes, hand pumps and shallow wells. The main sources of surface water are *hafeers* (man-made water storage areas used for drinking water supply) and streams (*wadi* and *khors*), their quantities being wholly dependent upon rainfall.

5.3 Administrative Framework

Al-Qadarif State is located in eastern Sudan. It shares international borders with Eritrea in the northeast and with Ethiopia in the east and southeast. It covers an area of about 75,263 km². Al-

Qadarif State is divided into three localities, namely Northern Gadaref, Gadaref and Gallabat. The Gallabat locality (Project affected area) consists of five administrative units (see table below); its administrative capital is Doka.

TABLE 2. ADMINISTRATIVE UNITS OF GALLABAT LOCALITY

Administrative Unit	Head Quarters
Kassab	Kassab
Goresha	Goresha
Bandegew	Bandegew
Mogran	Safawa
Basonda	Basonda

5.4 Demographic Features

In the last census of Sudan (1993), the population of the Al-Qaradif State was estimated to be 1,022,000 with an average population density of 17 persons per km² and an annual growth rate of 3.45%. The high growth rate of the State is due partly to waves of immigrations from the neighbouring countries and others states of Sudan. These are either refugees, or economic migrants who are attracted by the potential for employment in the agricultural sector.

TABLE 3. POPULATION OF AL-QADARIF STATE (2000-2004)

Year	2000	2001	2002	2003	2004
Male	759,342	785,106	812,127	839,243	864,420
Female	706,570	730,542	755,685	780,917	804,344
Total	**1,465,912**	**1,515,648**	**1,567,812**	**1,620,160**	**1,668,764**

Source: Economic Review & Strategic Planning Council, Al-Qadarif State

Some 71% of the total population resides in rural areas, and most of them are concentrated in the southern and south-eastern localities of Fashaga and Gallabat where the proposed transmission line route is located. The urban population represents some 29% of the regional population.

TABLE 4. RURAL AND URBAN POPULATIONS OF THE STATE (2000-2002)

Area/Year	2000	2001	2002	Percentage
Urban	428,046	442,569	457,801	29
Rural	1,037,866	1,076,679	111,001	71
Total	**1,465,912**	**1,519,248**	**568,802**	**100**

Source: Administration of Statistics, Al-Qadarif State

TABLE 5. DISTRIBUTION OF THE STATE POPULATIONS ALONG THE ROUTE ALIGNMENT

Locality	2000	2001	2002	Percentage
Gadarif	129,000	13,377	137,967	9
Gallabat	413,387	427,413	444,124	28.3
Fashaga	451,501	466,820	482,886	31
Rahad	279,990	289,488	249,452	16
Fao	142,034	198,550	205,383	13.1
Total	**1,415,912**	**1,395,648**	**1,519,812**	**97.4***

Source: Administration of Statistics, Al-Qadarif State

** The remaining 2.6% of the population are considered nomads*

The population of the state is composed of a number of different ethnic groups. The major groups include semi-nomadic people such as the Shukriya, who occupy the western and the southwest parts of Butana; the Lehaween, who live along the River Atbarawee and are both livestock owners and cultivators. Other groups include Kawahla, Fur, Hamar, Masaleet, Beni Amir, Fallata, Kenana, Barno, Zabarma, and a number of minor groups who have migrated from northern and western Sudan.

5.5 Livelihoods and Economic Practices

The Metema-Gallabat border serves as the main passage for the importation of fuel from the Sudan and for the exportation of cash crops (e.g. cotton, sesame and gum Arabic) to Sudan from the Amhara Region of Ethiopia.

The State of Al-Qadarif in Sudan is dependent mainly on agriculture, some 10 million feddans of which is arable land. During 1998-2002, agriculture contributed an average of 91% of the GDP of the State, explaining a weak contribution of the services sector (5.4% of GDP) and the industrial sector (3.6%).

There are two major agricultural systems in the State, the most important of which is irrigated or rain-fed mechanized agriculture. Mechanized agriculture in Sudan was introduced by the British colonial government in the 1940s. Al-Qadarif State is considered to have pioneered this type of agriculture in Sudan, and has subsequently become the main commercial producer of sorghum and sesame. Today, mechanized agriculture is directed by the government of the State via the Mechanized Agriculture Agency.

Mechanized agriculture has been expanding horizontally at the expense of forestry and natural rangelands. It has also become the main cause of land degradation in the State. Lands are subjected to continuous mono-cropping which has led to loss in soil fertility. Agricultural productivity has dropped to the extent that in some parts of the State, the contribution of agriculture to the regional GDP is no longer comparable with that of livestock.

TABLE 6. CONTRIBUTION OF DIFFERENT SECTORS IN AGRICULTURAL GDP

Sector	1998 Percentage	1999 Percentage	2000 Percentage	2001 Percentage	2002 Percentage
Rain fed Agriculture	31.4	26.3	27.8	11.8	11.5
Irrigated Agriculture	2.4	3.2	2.9	4.0	2.2
Livestock Raising	66.0	70.4	69.2	84.1	86.2
Forestry	0.2	0.1	0.1	0.1	0.1
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: Administration of Statistics, Al-Qadarif State (2003)

The second agricultural system practiced in the State is traditional rainfed farming. It is characterized by small-scale farm allotments (*bildat*), which are cultivated with the use of rudimentary technologies and family labour. Staple food crops like sorghum, millet and sesame are grown on these small farms, which tend to be located close to villages and settlements. Cultivation is often combined with sedentary livestock husbandry. Farming in this instance is mainly subsistence-based.

The majority of farmers in the State depend on the informal credit system known locally as *sheil* or *kasir*.

Northern Gadaref Locality is predominantly pastoral and the local tribes are traditionally livestock owners. They raise camels, cattle, sheep, and goats. The pastoral tribes follow specified transhumance routes in their seasonal movements which are dictated to by the need for food and water. During the dry season, they stay in their grazing areas in the southern parts of Al-Qadarif State along the Rahad River; in the rainy season they move northwards to the Butana and Atbara Rivers. Traditional movement patterns have, however, been significantly disrupted, and in some cases blocked altogether by mechanized rain-fed farming and irrigated schemes such as the Khashm El Girba and Rahad Schemes. Hence, nomads are forced to follow narrow routes and move long distances to avoid agricultural areas. In some cases they prefer to stay in the southern parts of the state in the Gallabat locality despite the hazards of animal diseases.

The main herding groups in the Al-Qadarif State are the Shukriya, Lehawin, Beni Amer and Kenana. The increasing numbers of livestock beyond the carrying capacity of the rangelands in recent years has become a cause for concern, and is contributing to the ecological problems of an already fragile environment.

5.6 Social Services

5.6.1 Education

Education indicators in the Sudanese State of Al-Qadarif are as follows:

TABLE 7. EDUCATION INDICATORS IN AL-QADARIF STATE

	Percentage
Primary School Enrolment (aged 6-13)	45
Literacy Rate (Male)	72.9
Literacy Rate (Female)	38.4

Source: Ministry of Education, Al-Qadarif State

TABLE 8. NUMBER OF SCHOOLS IN AL-QADARIF STATE

School Level	Number of Schools
Pre-school (kindergarten)	245
Elementary	503
Secondary	70

Source: Ministry of Education, Al-Qadarif State

TABLE 9. NUMBER OF SCHOOLS IN GALLABAT LOCALITY

School Level	Number of Schools
Pre-school (kindergarten)	48
Elementary	154
Koranic	12
Secondary	24

Source: Ministry of Education, Al-Qadarif State.

5.6.2 Health

Health is an important social indicator that has enormous human development implications. Malaria is one of the major health problems in the project area. According to information obtained from various health services within the Project affected area, *plasmodium vivax* and *P.falciparium* are the commonly occurring malarial parasites in the project area. Sudan suffers from a lack of health delivery and there is high incidence of malaria and bilharzias, as well as a high rate of maternity mortality.

TABLE 10. HEALTH INDICATORS, AL-QADARIF STATE

Health Indicators	Numbers
Crude Birth Rate (per 1000)	38.8
Crude Mortality Rate (per 1000)	20.4
Infant Mortality Rate (less than 5 years, per 1000)	16.36
Child Mortality Rate (less than 1 year, per 1000)	67
Child Mortality Rate (less that 5 years, per 1000)	117
Female Mortality Rate of Pregnancy and Birth (per 1000)	644
Life Expectancy (Male)	50.5
Life Expectancy (Female)	52.6

Source: Administration of Statistics, Al-Qadarif State.

TABLE 11. MAIN HEALTH INSTITUTIONS IN AL-QADARIF STATE

Health Services	Numbers
No. of Hospitals	13
No. of Health Centres	72
No. of Health Units	97
No. of Doctors	58
No. of Health Supporting Staff	129
Environmental Health Workers	715

Source: UNICEF (2004)

These statistics reveal the poor level of health services in the areas under consideration. This is further reflected in the high infant mortality rate (6.7% in Al-Qadarif); low access to adequate sanitation (39.8% in Al-Qadarif) and poor access to safe drinking water (59.1% in Al-Qadarif) (UNICEF 2004).

6 Socio-Economic Profile of Option B (B1 and B2)

This Section outlines socio-economic information of Option B. This Option has two starting points in Ethiopia, namely Bahir Dar (Route B1) and Debre Markos (Route B2), (see Appendix 1, Figure 4). Options B1/B2 share a common route within Sudan. The transmission line traverses east through the An-Nil al-Azraq (Blue Nile) State, commencing at the village of El Mahal on the border of Ethiopia-Sudan, and terminating at the Roseires substation in the locality of Ed-Damazin. The length of this section is approximately 165km. While EEPCo has prepared a cadastral survey of this section of Route B, it was not possible to conduct a detailed RAP survey due to the inaccessibility of the route by road during the rainy season.

6.1 Project Area

In Sudan, the route traverses through eastern An-Nil al-Azraq State, commencing at the border village of El Mahal on the Ethiopian-Sudanese border, and terminating at the Roseires substation in the Ed-Damazin administrative locality. Table 12 outlines the administrative zones and villages along the route. The An-Nil al-Azraq State is divided into five localities namely Ed-Damazin, Roseires, Kurmuk, Bau and Geisen. The capital is located in the city of Ed-Damazin.

TABLE 12. LIST OF ALL ADMINISTRATIVE ZONES AND TOWNS ALONG OPTION B ROUTE

State	Locality	Administrative Area	Town
An-Nil an-Asraq State, Sudan	Ed-Damazin	Ed-Damazin	Menza
			Umjinigir
			Azaza
			Roseires
			Damazin

Source: CSA Statistical Abstract, July 2004

6.2 Environmental Background

An-Nil al-Azraq (Blue Nile) State in Sudan is located in southeast Sudan. It is bordered by Sennar State to the north, Upper Nile State to the west and Ethiopia to the east. The state covers an area of 14,000 km².

The An-Nil al-Azraq (Blue Nile) State is inhabited by different tribal groups including: Hawsa, Fung, Falla (Umbararo) as well as other indigenous tribes like Berta and Gumuz. Nomadic tribes from Central and Northern Sudan also spend the dry season in this state. Despite the presence of such tribal groups which include migrants from Western and Southern Sudan, people live within a context of social harmony and religious flexibility.

The State is classified as rich savannah. The average rainfall in the north is 400 mm and in the south is 1,000 mm. The rainy season starts in April and lasts until November with peak months being July-September. The landscape is undulating and hilly and is characterized by highly fertile clay soils.

Roseires Dam is located in An-Nil al-Azraq State. The dam generates and supplies electricity to most of northern Sudan.

6.3 Demographic Features

Recent statistics are not available for the An-Nil al-Azraq (Blue Nile) State. However, the 2003 estimates show that the total population of the State was 696,000, with average annual growth rate of 2.5%. Some 75% of residents are located live in rural areas.

The State has been affected by civil war, which has forced thousands to move within the State or across the border into Ethiopia as refugees. The State has also received a large number of Internally Displaced Persons (IDPs) from Southern Sudan, who live in camps in Damazin, Gissan and Kurmuk. The table below shows some population characteristics of the State.

TABLE 13. SOME POPULATION CHARACTERISTICS OF THE AN-NIL AL-AZRAQ (BLUE NILE) STATE

Population Characteristic	Number
Total population	696,000
Rural population	75%
Urban population	25%
Internally Displaced Persons (IDPs)	41,705
Nomadic	N. A.

6.3.1 Population by Administrative Zone

The following two tables indicate population statistics of the An-Nil al-Azraq (Blue Nile) State in Sudan. The first profiles population density in the State as a whole, and the second focuses on the eastern Roseires Reservoir area more specifically.

TABLE 14. POPULATION OF THE AN-NIL AL-AZRAQ (BLUE NILE) STATE BY LOCALITY (2000)

Locality	Number	Percentage
Damazin	234,452	39
Roseires	166,457	28
Kurmuk / Gissan	76,760	13
Bau	120,941	20
Total	**598,610**	**100**

Source: Gaafer, Karrar, *et. al.*, 1994

TABLE 15. POPULATION BY AGE AND SEX DISTRIBUTION FOR EAST ROSEIRES RESERVOIR AREA 1994

Age Group	Males	Females	Sex Ratio
0<1	285	291	97.9
1-4	3960	3994	99.1
5-14	7184	6888	104.0
15-34	6352	7109	89.4
35-49	2340	2245	104.1
50-59	758	633	119.7
60+	1246	858	145.2
Total	**22125**	**22018**	**100.0**

Source: Gaafer, Karrar, *et. al.*, 1994

6.3.2 Urban Population

The alignment of the transmission line within Sudan does not cross any urban areas.

6.3.3 Ethnicity and Religious Affiliation

The An-Nil al-Azraq (Blue Nile) State is inhabited by different cultural groups including the Hawsa, Fung and Falla (Umbararo), as well as other indigenous hunter-gatherer groups such as the Berta and Gumuz. Nomadic groups from Central and Northern Sudan also spend the dry season in this state. Despite the presence of such tribal groups which include migrants from Western and

Southern Sudan, there is increased tendency to live in harmony, accept change and flexibility in religious beliefs. Islam and Christianity are the dominant religious practices in the region.

6.4 Livelihoods and Economic Practices

In the An-Nil al-Azraq (Blue Nile) State, the localities to be affected by the proposed transmission line include Roseires and Ed Damazin. In these localities, agriculture is the dominant subsitence activity. Agriculture is practiced partially in *gerouf* (river bank cultivation), *jubraka* (house farm), *bildat* (smallholder cultivation) as well as in mechanized rain-fed farming. The dominant crops grown are sorghum, millet and sesame. The Gaafer and Karrar report (1994) claims that farming contributes to 49% of the household income, of which 43% is accrued from crops, and 6% from livestock. The remaining 51% comes from a wide range of off-farm activities which include commerce, handicraft, wood cutting, charcoal burning and wage labour.

Various types of livestock are kept by the inhabitants under sedentary, semi-nomadic and nomadic conditions. Recent estimates showed that there are about 2,899,000 cattle, 2,641,000 sheep, 1,484,000 goats and 160,000 camels in the An-Nil al-Azraq (Blue Nile) State.

TABLE 16. OWNERS AND AVERAGE AREA OF AGRICULTURAL HOLDINGS (EASTERN ROSEIRES RESERVOIR AREA) 1994

	No. of Holdings	No. of Owners	Average Area (Feddans)	% of Owners to Total Holdings in the Area
Orchards	789	691	2.2-6.5	5.9
Rainland	12836	11265	8.9-27.4	95.8
Gerouf	8438	7848	1.6-3.6	66.7

Source: Gaafer, Karrar, *et. al.*, 1994

Of those who do not participate in farming, almost 36% participate in some form of artisanship: 14% in wood cutting and charcoal burning, 11% in fishing and 39% in a variety of other activities including wage employment. However, it is important to emphasize that agriculture remains the most important activity that provides employment to the inhabitants and represents the basis of their survival (Gaafer, Karrar, et.al., 1994).

TABLE 17. MAJOR SOURCES OF INCOME

Activity	Percentage of Household Income
1. Farming only	29.3
2. Farming + Artisanship	20.0
3. Farming + Commerce	12.1
4. Farming + Fishing	5.1
5. Farming + Forestry	14.0
6. Farming + Wage labour	5.7
7. Farming + others	4.8
Total	**100.0**

Source: Gaafer, Karrar, et.al. 1994.

6.5 Social Services

6.5.1 Education

The 1993 Sudanese census result revealed that the Ed-Damazin administrative area suffers from poor educational attainment and poor educational infrastructure. The population is served by 24 elementary schools (six are closed) and no general or secondary schools. More than 55% of the population of age 7 and over are illiterate; only 2% completed their primary education.

TABLE 18. SCHOOL ENROLMENT RATE IN EASTERN ROSEIRES RESERVOIR AREA) 1991

Region	Males	Females	Both Sexes
East Bank, Roseires	27.6	9.9	11.5
Average in Region	28.9	10.5	19.9

Source: Gaafer, Karrar, *et .al.* 1994

6.5.2 Health Services

In Al-Nil an-Azraq State, health service delivery is likewise extremely poor. The area suffers from a high incidence of malaria and bilharzia, and maternity mortality is particularly high (Gaafer, Karrar, et.al., 1994).

TABLE 19. MAIN HEALTH INSTITUTIONS, AN-NIL AL-AZRAQ (BLUE NILE) STATE

Health Service	Blue Nile State
No. of Hospitals	7
No. of Health Centres	24
No. of Health Units	40
No. of Doctors	41
No. of Health Supporting Staff	388
Environmental Health Workers	68

Source: UNICEF (2004)

The above statistics reveal the poor level of health services in the areas under consideration. This is reflected in the high infant mortality rate (25.9%) and poor access to adequate sanitation (62.7%) and safe drinking water (38.3%), (UNICEF, 2004).

In the Eastern Roseires Reservoir area specifically, there is neither a hospital nor a health centre. The only health service units available are 7 dispensaries (composed of 19 rooms), and 19 dressing stations (composed of 38 rooms). Most of these facilities are constructed from mud or straw (Gaafer, Karrar, et.al., 1994).

7 Socio-Economic Profile of Option A

7.1 Project Area

This proposed transmission route passes through the An-Nil al-Azraq (Blue Nile) State in eastern Sudan. Within Sudan the route commences at the Sudan/Ethiopia border near the village of Kurmuk (Ethiopia) and then travels due north to the substation at Roseires Dam. It is the longest route Option for the Project, with the tie-line totalling some 614 kilometres of which 140 km is in Sudan (See Appendix 1, Figure 5).

TABLE 20. LIST OF ADMINISTRATIVE ZONES ALONG ROUTE OPTION A ALIGNMENT

State	Locality	Administrative Area	Towns
An-Nil Al-Azraq (Blue Nile) State, Sudan	Ed-Damazin		Roseires
			Damazin

7.2 Environmental Background

An-Nil al-Azraq (Blue Nile) State

An-Nil al-Azraq (Blue Nile) State is located in southeast Sudan. It is bordered by Sennar State to the north, Upper Nile State to the west and Ethiopia to the east. The state covers an area of 14,000 km². It is divided into four provinces namely Ed-Damazin, Roseires, Kurmuk and Bau. It has 14 localities, and the capital city is Ed-Damazin. The State is headed by a governor or "*wali"* while a commissioner heads each province.

The Roseires Dam is located in An-Nil al-Azraq State. The dam generates and supplies electricity to most of Northern Sudan.

An-Nil an-Azraq State is classified as rich savannah. The average rainfall in the north is 400 mm and in the south is 1,000 mm. The rainy season begins in April until November with the peak months being July-September. The landscape is undulating and hilly and is characterized by highly fertile clay soils.

The main livelihood activities are agriculture and livestock. The traditional peasant farmers usually grow sorghum, sesame, groundnuts, vegetables and fruits while nomadic tribes keep animals such as cattle, goats, sheep and donkeys. In the past, An-Nil al-Azraq hosted mechanized farms that exported grain to the neighbouring areas. Today, the unstable security situation, limited access to land, lack of production inputs and poor access to safe drinking water hampers food security in the state. While the residents, returnees and old internally displaced people (IDPs) are able to produce their own grain, new IDPs have no access to farmland and have limited labour opportunities to supplement their basic needs.

7.3 Demographic Features

An-Nil al-Azraq (Blue Nile) State

The total population of the An-Nil al-Azraq State in 2003 was estimated at 696,000 persons, of which 74.6% were rural. The average household size in the state is 6.42. The sex ratio of males to females is 108.4 women per 100 men. The crude birth rate (1998-2003) is 38.5 per 1,000 live births while the crude death rate (1998-2003) is 12.3 per 1,000 live births. The annual population growth rate (1998-2003) is 3.01% (Sudan Transitional and Recovery Database, 2003). The main ethnic groups in the State are Burrum, Hamai, Fallata, Angasna and Funji.

One third of An-Nil al-Azraq State area is under Sudan Peoples Liberation Army (SPLA) control. The southern part of the State, mainly Kurmuk and Bau, have been affected by civil war for the past eighteen years and are under Government of Sudan (GoS) SPLA control.

TABLE 21. POPULATION OF AN-NIL AL-AZRAQ (BLUE NILE) STATE ACCORDING TO PROVINCES

Province	Population	Percentage
Ed-Damazin	234,452	39
Roseires	166,457	28
Kurmuk	76,760	13
Bau	120,941	20
Total	598.610	100

Source, Blue Nile State Encyclopaedia, 2000

7.4 Social Services

7.4.1 Health Services

Health as a social indicator has enormous human development importance. There are nine hospitals in the An-Nil al-Azraq (Blue Nile) State. One hospital has specialists, one is a specialized hospital; there are 14 health centres, 40 dispensaries (9 closed), 76 dressing stations (31 closed), 46 public health clinics (22 closed) in addition to one blood bank and two x-ray units (Sudan Transition and Recovery Database, 2003).

The infant mortality rate per 1,000 live births in the state is 101 compared to 66 for the rest of Sudan. The nutrition status of children and women is poor. The most common diseases identified are malaria, bilharzias, tuberculosis, diarrhoea, acute respiratory infection (ARI) and malnutrition.

In 2003 there were very few cases of AIDS reported in the State. However, it is feared that the high population concentration in the IDP camps and their proximity to the Ethiopian border may advance the spread of HIV/AIDS into major towns (ibid, 2003).

7.4.2 Education

Education plays a crucial role in the process of social and economic transformation of any country. The panacea for attaining sustainable long-term development lies in making an effective use of its abundant human and material resources, through expanding education and skill trainings (See Section 18 of the Report: Recommendations).

Education in An-Nil al-Azraq State is ranked the lowest in the country. There are 184 primary schools in the State catered for by a total of 2,108 teachers. Enrolment rate in primary education in the state is 33.9% and the proportion of children starting grade one and completing grade five is 88.8%. The ratio of girls to boys in primary schools is 0.96 (or 96 girls per 100 boys), which reflects gender equality at the primary education level. The literacy rate of 15+ year olds is 36.7% and the ratio of literate females to males of 15-24 year old is 1.07 (or 107 girls per 100 boys) (Sudan Transition and Recovery Database, 2003).

TABLE 22. EDUCATION FACILITIES IN AN-NIL AL-AZRAQ (BLUE NILE) STATE IN 2000/2001

Level	Institution	Pupils			Teachers
		Girls	Boys	Total	
Pre-school	82	1,899	1,640	3, 539	82
Primary	184	19,576	27,994	47,570	2,108
Secondary	19	1,544	1,915	3,459	235
Technical	5	310	484	794	24
Total	**290**	**23,329**	**32,033**	**55,362**	**2,449**

Source: CBS Yearbook, 2000

7.4.3 Water and Sanitation

In 2003, the proportion of population who had access to safe drinking water in the An-nil al-Azraq State in Sudan was only 23.7% (Sudan Transition and Recovery Database 2003). The majority of the population relies entirely on natural water sources, valleys, streams and shallow unprotected wells (*hafirs*). The communities suffer severely from water scarcity in the summer when women will spend up to six hours every day in search of water. Overall access to safe drinking water remains very poor in the State compared to other states. In addition, the water infrastructure in the area has been seriously damaged as a result of conflict.

8 Legal Framework for Land Acquisition and Compensation

8.1 Sudan

8.1.1 Policy, Legal and Administrative Framework

The Sudan is a federal country divided into 26 states with special consideration given to Southern Sudan according to the Interim Constitution of 2005. There are three levels of authority; national level, state level and locality level. The powers over land are divided among the various levels as follows:

- At the national level, the federal organs exercise the power of planning, legislation and execution on federal lands, natural resources, mineral and subterranean wealth, inter – state waters, national electricity projects, epidemics and disasters.
- The state organs within the boundaries of the state exercise power on state lands, natural resources, animal wealth, wildlife, non-Nile waters and electric power.
- There are concurrent powers where both federal (national) and state organs exercise power on education, health, environment, tourism, industry and meteorology.
- The Interim Constitution provides for the creation of commissions particularly, on land to assume among others planning and division of lands and forests between federal and state authorities.

Interim National Constitution

Environment and social justice enjoy the protection of the Interim National Constitution of the Republic of the Sudan dated 10 July 2005 wherein:

Section 11:

- guarantees the right of the Sudanese's people to clean and diverse environment while imposing a duty on the citizens to preserve and promote the country's biodiversity.
- precludes the State from pursuing any policy, or taking or permitting any action, which may adversely affect the existence of any specious animals or vegetative life, their natural or adopted habitat, would not be pursued by the State.
- guarantees that the State shall promote, through legislation, sustainable utilization of natural resources and best practices with respect to their management.

Section 12 requires the State:

- to develop policies and strategies to ensure social justice through insuring means of livelihood and opportunities of employment.
- to encourage mutual assistance, self-help, cooperation and charity.

Section 24 describes the Sudan as the decentralized State with four levels of government:

1) the national level of government with the power to protect national sovereignty, and territorial integrity of the entire Sudan and to promote the welfare of its people,
2) the Southern Sudan level of government with the power to exercise authority in respect of the people and States in Southern Sudan,
3) the State level of government with the power exercise authority at the State level throughout the Sudan, and render public services through the level closest to the people, and
4) the local level of government, which shall be throughout the Sudan.

The Interim Constitution has five Schedules (Schedules A-F), which more specifically state the powers of the various level of government in respect of, among others, environment, land acquisition and conservation of cultural heritage. Such powers include:

1) Exclusive legislative and executive powers of the national level as stated under Schedule A:
    - Natural Lands and National natural resources (item no. 15),
    - Meteorology (item no. 19),
    - Signing of International Treaties on behalf of the Republic of Sudan (item no. 25),
    - National Public Utilities (item no. 30),
    - National Museums and National heritage Sites (item no. 31),
    - National Economic Policy and Planning (item no. 32), and
    - Nile Water Commission, the management of the Nile Waters and transboundary waters and disputes arising from the management of interstate waters between Northern States and any dispute between Northern and Southern States (item no. 31).

2) Exclusive legislative and executive powers of the Government of Southern Sudan as stated under Schedule B:
    - Wildlife Services (item no. 2),
    - Public Utilities of Government of Southern Sudan (item no. 14),
    - Reconstruction and Development of the Southern Sudan (item no. 16),
    - Natural Resources and forestry in so far as these cannot effectively dealt with effectively by a single a single state and the legislation or intervention of the Government of Southern Sudan is required [(item no. 19 (2)], and
    - Town and Rural Planning in so far as these cannot effectively dealt with effectively by a single a single state and the legislation or intervention of the Government of Southern Sudan is required [(item no. 19)],

3) Exclusive legislative and executive powers of a State of the Sudan as stated under Schedule C:
    - State Land and State Natural Resources (item no. 8),
    - Cultural matters within the sate (item no. 9),
    - Enforcement of state laws (item no. 19),
    - The development, conservation and management of state natural resources and state natural resources and state forestry resources (item no. 21),
    - Laws relating to Agriculture within the state (item no. 23),
    - Pollution control (item no. 27),
    - Quarrying regulations (item no. 31),
    - Town and rural planning (item no. 32),
    - State cultural and heritage sites… and other historical sites (item no. 33),
    - Traditional and customary law (item no. 34),
    - State irrigation and embankments (item no. 36),
    - State archives, antiquities and monuments (item no. 38), and
    - State public utilities (item no. 40).

4) Legislative and executive competencies (concurrent powers) of the National Government, the Government of Southern Sudan and state governments under Schedule D:
    - Economic and Social Development in Southern Sudan (item no. 1),
    - Health policy (item no. 4),
    - Urban Development, planning and housing (item no. 5),
    - Delivery of public services (item no. 7),
    - Electricity generation and water and waste management (item no. 15),
    - Environmental management, protection and conservation (item no. 17),
    - Relief, Repatriation, Resettlement, Rehabilitation and Reconstruction (item no. 18),

- Financial and economic policies and planning (item no. 20),
- Customer safety and protection (item no. 24),
- Water Resources other than interstate waters (item no. 27), and
- Regulation of land tenure, usage and exercise of rights in land (item no. 32).

Schedule E provides for residual powers exercised by the relevant level of government depending on the nature to which they relate. Schedule F deals with the resolution of disputes in relation to concurrent powers of various levels of government. New legislations expounding the broad principles of the Interim Constitution may be enacted while revision or repeal of some of the existing laws might be considered in order to conform to the provisions of the Constitution.

Article 43 (2) of the Interim Constitution gives the national government the right to expropriate land for development purposes and to compensate owners. There are a number of articles related to natural resource management, protection of cultural heritage sites and respect of traditional and customary regulations related to land ownership. The Interim Constitution also specifies land issues which are under national powers (federal level) and those under the control of states as well as joint powers (concurrent powers) shared by federal and states. The States manage issues related to State lands which are not under national control. These include; management, lease and utilization of lands belonging to States, town and rural planning and agricultural lands within the State boundaries. The concurrent powers include matters related to urban development, planning and housing, electricity generation, waste management, consumer safety and protection, water resources other than inter-state waters and regulation of land tenure and the rights on land.

Specific details and procedure on land are found in sectoral laws including:

- **Land Registration and Settlement Act 1925** provides rules to determine rights on land and other rights attached to it and ensure land registration.
- **** Land Acquisition Act 1930** gives the government the power to appropriate lands for development purposes. It also states detail formalities of acquisition and rules governing assessment and payment of compensation.
- **Unregistered Land Act 1970** deems any unregistered land, before the enactment of this law, as being registered in the name of the government.
- **The Civil Transactions Act 1984** regulates the different matters related to civil transactions with respect to titles on land, means of land acquisition, easement rights and conditions to be observed by land users.
- **Urban Planning and Land Disposal Act 1994** regulates designation of lands for different purposes and urban planning. With respect to land expropriation for public purposes Section13 of the Act recognizes the application of its predecessor – Land Acquisition Act, 1930
- **Central Forest Act, 1932** empowers the Minister of Agriculture, Food and Natural Resources to declare to be a central forest reserve an area of land, which is registered under the Land and Settlement and Registration Act, 1925 as a Government land (Section 5). Unless with special license or a permit has been first obtained from the Director of Forest any act, including entry upon or remaining in such forests would be an offence (Sections 9 & 10 of Central Forest Act, 1932). Central forest reserves are located in the provinces of Blue Nile, Khartoum and Geizira (Schedule to the Act).
- **Provincial Forest Act, 1932** protects an area in Geizira province as provincial forest reserve from being interfered with on the same principle as applied to the central forest reserve.
- **The Environmental Health Act, 1975** contains detail provisions for the protection of water and air from pollution and assigns defined administrative responsibilities to District Councils with respect to preservation of environmental health in general.

** **The Land Acquisition Act of 1930** outlines detailed procedures to be followed in the acquisition of land and rules governing payment of compensation for land for public purposes. The procedures for land acquisition in any locality are initiated with a notification by the People's Executive Council in a Gazette stating that it appeared to the President of the Republic to authorize

the acquisition of land for public purposes (Section 4). It is only after such notification that it shall be lawful to enter into, bore, set out boundaries, mark or survey the land.

An appropriation officer appointed by the People's Executive Council would notify the occupant of land the declaration that a designated area of land is to be appropriated for public purposes; call upon persons claiming compensation to appear before him at a place and time (not earlier than fourteen days) and to state the particulars of their claims for compensation (Section 10). He must attempt to agree on the amount of compensation for the land. The Act provides for further steps to be taken with regard to assessment of compensation if agreement is not reached.

Generally, these Acts provide procedures for land expropriation for development purposes and ways to specify rights in order to compensate the owner. The Urban Planning Act sets specific rules for the separation of industrial areas from residential areas.

8.1.2 Relevant Policies and Institutions

Two key strategies deal with sustainable development in the Sudan, namely:

1. Environment Strategy (part of the comprehensive strategy) 1992 – 2002.
2. Quarter Century Strategy 2002 – 20027.

The Institutions of most relevance to this Project are:

- The Ministry of Environment and Physical Development (MEPD)
- The Ministry of Electricity
- The Ministry of Urban Planning and Housing.

The reviewed Acts and laws provide standards to be considered in assessing the environmental impacts of the Project. It is important to note here that State organs and local laws deal with issues at State or local levels, while the Federal Acts are more concerned with general directives and set limits and standards to certain environmental concerns without detailing problems of a local nature. Based on the provisions of these legal requirements and sectoral laws as well as policies of NEC, the impacts of the proposed Project will be assessed and detailed in the various sections of this report.

8.2 Policies of the World Bank

The Feasibility Study Update Report for Ethiopia-Sudan Power Systems Interconnection Project dated May 2005 contemplates financing of the Project by the World Bank. This explains that compliance with the relevant World Bank's Safeguard Policies is a condition to financing of the Project.

The Feasibility Study Update Report refers to the World Bank's Safeguard Policies OP 4.01 and OP 17.50 as the necessary instruments applicable to the project. In a section on Policy, Legal and Administrative Framework WB Operational Manual OP 4.01 Annex B, January 1999 of the World Bank requires separate ESIA and a RAP reports for Category B projects. OP.4. 01, para.3 requires these reports to take into account natural environment (air, water and land), human health and safety and social aspects (involuntary resettlement, indigenous peoples, and cultural property).

The RAP Report, which deals specifically with resettlement and compensation, needs to include also comparable national legislations, particularly as it pertains to Expropriation of Land for Public Purposes & Compensation Proclamation, No. 455/2005 and Research and Conservation of Cultural Heritage Proclamation No. 209/2000.

8.2.1 Involuntary Resettlement

The World Banks OP 4.12 details involuntary resettlement, emphasizing the severe economic, social and environmental risks involved, if unmitigated. The World Bank's Policy objectives urge that involuntary resettlement be avoided whenever possible. If involuntary resettlement is unavoidable, displaced persons need to:

- share in project benefits,
- participate in planning and implementation of resettlement programs, assisted and
- be assisted in their efforts to improve their livelihoods or standard of livings or at least to restore them, in real terms, to pre-displacement levels or levels prevailing prior to the beginning of project implementation, whichever is higher.

8.2.2 Cultural Property

Operational Policy 4.11 of the World Bank defines Cultural Property to include both remains left by previous human inhabitants (e.g. middens, shrines) and unique natural environmental features such as canyons and waterfalls. The Bank does not support projects that will significantly damage non-replicable cultural property and assists only those projects that are sited or designated so as to prevent such damage.

9 Framework for Public Consultation and Participation

9.1 Objectives of Public Consultation and Information Dissemination

In the context of resettlement, public participation includes both the information exchange (dissemination and consultation), and collaborative forms of decision-making and participation. Dissemination refers to transfer of information from Project authorities to the affected population. Consultation, on the other hand, generally refers to joint discussion between Project authorities and the affected population serving as a conduit for transfer of information and sharing of ideas. Public participation is an ongoing process throughout resettlement planning and implementation, not an event. The level of information which is disseminated or the issues on which consultation takes place vary with the progress in the Project process and resettlement activities.

Specific objectives of the public information campaign and public consultation are as follows:

- To share fully the information about the proposed Project, its components and its activities, with the PAPs
- To obtain information about the needs and priorities of the PAPs, as well as information about their reactions to proposed policies and activities
- To inform PAPs about various options for relocation and rehabilitation
- To obtain the cooperation and participation of PAPs and related communities in activities required to be undertaken for resettlement planning and implementation
- To ensure transparency in all activities related to land acquisition, resettlement and rehabilitation
- To establish a clear, easily accessible and effective complaints and grievance procedure
- To assist PAPs in relocating to replacement houses

9.2 Public Participation and Consultation in Resettlement

9.2.1 Project Preparation

During the RAP preparation phase of the Project, information on the Project was provided to different stakeholders as part of the preparation of the inventory of impacts and the Socio-Economic Survey. One hundred percent of PAPs for Option C were covered; sample communities in Sudan for Option B, and on a random basis on Option A.

Meetings were held with Regional administration officers, representatives of Omda in Sudan. Meetings took place both in groups or on a one-to-one basis. The Project was explained with particular emphasis on the nature of the impacts and the compensation entitlements. Care was taken to keep the information within context, and to ensure that people understood the limitations of the impact. This applied particularly to the limited extent of the land acquisition requirement, and clarified that permanent land acquisition is only required for the construction of transmission towers, substations and access roads.

Discussions and consultations about the compensation rates to apply will be carried out by the Executing Agency (NEC) in association with Regional Administrators during Project implementation and a joint agreement reached. Section 14 of this Report outlines the organisational responsibilities for implementation of compensation and resettlement issues for the Project.

Ongoing community liaison for the Project includes the following:

- Review inventory of PAPs and impacts on the basis of the design and detailed sitings of the Project
- Confirm identification of PAPs and compensation entitlements

- Inform PAPs about the project, activities, effects, compensation and related provisions and timing
- Confirm PAPs' preferences for how replacement land, houses and crop losses are to be provided or purchased
- Provide independent financial advice or counselling for PAPs to receive significant cash compensation
- Establish complaints and grievance procedure

9.2.2 Public Participation during the Project

Public consultation will take place on a number of levels and at several stages of the RAP process. In so doing, it will ensure that there is open and interactive communication between stakeholders, that minority groups and women are fairly represented, and that there is a framework for effective disclosure to all relevant stakeholders.

Persons and organizations that will be consulted include, but are not limited to:

- People who are affected by the Project, both those who are potential beneficiaries and/or losers;
- Officials from relevant ministries and government agencies;
- Officials from regional and local administration: relevant bureaus and departments, municipalities, local administration offices, and/or peasant associations;
- Local elders who are familiar with the social and economic environment. They would also know sites of significance related to religious or cultural traditions;
- Women as local users of natural resources;
- Local NGOs and CBOs.

Public consultation has been an integral part of the process used for gathering data; for understanding community and individual preferences; for selecting project alternatives, and for designing viable and sustainable mitigation and compensation plans. It has been included in the planning and design phases as well as during implementation.

10 Identification of Project Impacts of Affected Populations

10.1 Description of Works

The following description of works focuses on Option C specifically, although the technical specifications apply to all route Options.

The proposed works for the Project covering Sudan and Ethiopia include the construction of a 230 kV (highest operation voltage is 245 kV) double-circuit line with lattice steel towers and all aluminium alloy conductors (2- 450 mm^2 cross-section) from the existing Bahir Dar substation in Ethiopia to a new substation at El Gedaref in Sudan via the Boreder town of Gallabat. Most of the construction activity during Project implementation will involve the construction of a new transmission line from Gallabat to Gedaref. The line will use self-supported steel lattice towers with concrete foundations as commonly used in Sudan.

The new substation proposed for El Gedaref is part of an upgrading of the electricity distribution network for the Region and provision will be made to accommodate two additional incoming lines should the Ethiopia-Sudan Power System Interconnection Project proceed with Option C route.

Basic information for the Bahir Dar - El Gedaref alignment:

1. Line Length for the whole Project - Bahir Dar (Ethiopia) to El Gedaref (Sudan): 453.5 km
2. **Line length in Sudan from Metema/Gallabat to Gedaref: 150km**
3. Approximate number of towers: 915 (312 in Sudan and 603 in Ethiopia)
4. Average span length: 0.5 km
5. Width of line corridor RoW: 40m
6. Design and fabrication of materials (6 months)
7. Total construction time: September to September (12 months) multiple work teams
8. Access road: a 5m-wide path along the line route will be required for repair and maintenance in the absence of a public road.

10.1.1 Ancillary Facilities and Services

The following construction and post-construction facilities and services will be required:

- Tower erection, this follows tower foundation excavation/construction and uses the same area used by civil works.
- Approximately 7 construction material storage and camp areas will be required for the whole Project each approximately 5 ha in area (contractor to determine actual number). Two areas are likely to be located in Sudan.
- Access for stringing of conductors is along the line corridor.
- El Gedaref substation - new substation of the open type (outdoor), will require 200m x 200m for substation and storage of construction equipment.
- Access to tower sites will be via the line corridor whenever possible to reduce the number of temporary access roads required during construction.
- A number of permanent access roads will be required for maintenance purposes along the transmission line route.

10.1.2 Operation and Maintenance Activities

10.1.2.1 Line Route (RoW)

A permanent area (typically of 40m width, i.e. 20m clear of the route centre line) of land will be required to accommodate the transmission line, when completed. A parallel strip of land through those sections of the route which pass through vegetation shall be completely cleared. The width of the strip may vary according to the mean height of the vegetation and shall be determined by

ensuring that any standing tree would not cause flashover from a conductor deflected up to 45° from the vertical. In determining the flashover clearance and in estimating the mean height of the vegetation due allowance shall be made for seasonal growth. In addition, any tree that may fall in the direction of the overhead line shall be cleared unless located more than 20 m plus the height of the tree clear of the route centre line.

Routine maintenance is carried out along the RoW to ensure the appropriate clearances between towers, conductors and vegetation and other objects are maintained according to the required safety/operation specifications listed above. A 5m wide path along the line route will be required in the absence of a public road. Maintenance is normally carried out twice a year (dependent on site conditions).

10.1.2.2 Area of Impact

The area of immediate impact will be the Line corridor Right-of-way (RoW) which will be 40m in width by 150 km in length from Metema/Gallabat to El Gedaref in Sudan. A parallel strip of land through those sections of the route which pass through vegetation will also be completely cleared of all trees, scrub and undergrowth above a height of 150mm during the construction stage. Appropriate clearance between conductors and vegetation/structures along this corridor will be maintained throughout the life of the transmission line. Cropping and grazing beneath the conductors is normally permitted.

Tower foundations will require a permanent area of approximately 7m x 7m (49m^2) based on a typical 220 kV line tower. The temporary area required during tower foundation construction will be 10m x 10m. Tower foundation materials and equipment will be stored in the area reserved for stringing along the line corridor.

Additional temporary land will be required for worker camps and storage of construction materials during the dry season as well as the line corridor. A small area of land will be permanently required for construction of a new substation on the outskirts of El Gedaref.

10.1.2.3 Project Implementation

In line with similar projects implemented in Sudan, construction is expected to start after contract signing following international competitive tendering. Pre-construction activities associated with design work include soil investigations and detailed survey of the transmission line route and substation location. Actual mobilization for construction work will follow within six to twelve months of final design. The mobilization period includes activities for preparation of material storage areas, camps, water, power, communication and other site facilities as well as prefabrication of tower components.

Construction of the transmission line will then start by preparation of tower foundations, followed by tower erection & conductor stringing. Construction of the substation will start by substation civil works (equipment foundations & substation building) and installation of equipment.
The dominant land use along the transmission line route is rain-fed agriculture and crops are normally grown only during the rainy season from June-October. The land is left to fallow and/or used for grazing during other times of the year. During this period and due to the absence of paved roads it will not be possible to transport material or to carry out construction work. Also during heavy rains it will be very expensive to properly store building materials, especially cement.

For these reasons most site works will proceed during the dry season November-June, when there is no cultivation. This will facilitate construction and reduce impact on crops to a minimum. Working during the dry period will also provide job opportunities for local people after the busy cultivation season.

The project is planned to be completed within 20 months from awarding of the construction contract assuming construction takes place only during the dry season and it will take approximately 18 months for equipment design, fabrication, delivery, erection and testing.

10.2 Scope of Resettlement

10.2.1 Income Restoration Strategy

Although no significant displacement by PAPs is predicted, certain assets will be affected by Project-related activities. Despite this, the Consultant believes that no major threats will be posed to livelihoods and most PAPs will be able to continue their farming and animal production activities near to, or in the same locality of their original place of residence.

The major assets for which compensation will be paid are:

a) Private houses, out-buildings and fences
b) Farm land (crop loss)
c) Private plantation (tree loss)
d) Grazing land (fodder loss)
e) Public buildings and temporary loss to social services infrastructure;

10.2.1.1 Private Houses

Materials and design features of houses, out-houses and barns differ significantly in Project-affected areas. Houses are constructed from a range of materials, namely mud and wood or stone, mud with straw reinforcement, mud-brick, corrugated iron steel (CIS) or cement brick. Roofs are constructed variously from thatch and corrugated iron steel. Fences around homesteads also differ considerably, ranging from woven mating, bamboo, wood, wire and corrugated iron steel sheeting (See Appendix 2, Photo 1).

10.2.1.2 Private Plantations and Economically Valuable Trees

Wood is the main source of fuel for most Project-affected households. It is also used to construct houses and fences, and provides an important source of household revenue when sold as scaffolding for building or bridge construction. Loss of woodlots or plantations to transmission line construction would thus have considerable impact on household economy, and due compensation would be required.

The major plantation species in the Sudanese Project affected areas are *Acacia seyal*, *Acacia senegal* and *Acacia nilotica* and *Ballanites aegyptica*, which occur on all route options (See Appendix 2, Photo 1). Removal of trees will be necessary for the construction of access roads and tower sites, and areas directly under the transmission line (line corridor) will have to remain permanently cleared.

10.2.1.3 Farmland and Grazing Land

Compensation will be made for loss of crops during the construction of access routes, line corridors and tower sites. The most prevalent crops in Project affected areas in Sudan are sorghum, millet, cotton and sesame. Cattle, goats and sheep are raised in all Project affected areas.

A line corridor of a width of some 5-6 metres between towers will have to be cleared to allow for the construction of the towers and the stringing of conductors. These access roads may have to remain operative for a number of months. During this period, crops and grazing lands will be temporarily affected by the Project. However, it is recommended that construction be concentrated during the dry months (in some areas this is a necessity). These months (October to May) mark the period when little to no cultivation is conducted in Project affected areas.

10.2.1.4 Public Infrastructure

All Project affected areas are severely under-serviced with schools, hospitals, health and sanitation facilities and other services infrastructure. Due compensation will have to be paid for temporary or permanent damage to buildings, and the appropriate mitigation measures will be undertaken to ensure that alternative buildings are constructed prior to impact by the Project. The Consultant advises, however, that all possible measures be taken to re-align the transmission line route in order to avoid damage to social services.

10.3 Relocation Preferences

Based on discussions held with Sector offices and PAPs on Option C and Option B, it has been observed that most of PAPs wish to remain within the same locality of their original places of residence where they may retain their familial, social and cultural networks.

10.4 Compensation Preferences

All discussions conducted with focus groups and sector offices have revealed that the general preference for compensation is for financial reimbursement for lost or damaged assets. In Sudan where alternative land is available, many PAPs opted to select a combination between land and financial compensation.

11 Impact Assessment of the Proposed Route Options

11.1 General Comments

Because of the linear nature of a transmission line development, the Consultant believes that the Ethiopian-Sudan Power System Interconnection Project will have minimal impact on communities or persons, and on private or common property assets. However, compensation may be due where project right-of-way (RoW) affects residential dwellings or social services (which will pose health and safety problems); may fragment cultivated fields and compromise productivity/income; may involve the removal of fruit-bearing trees and other relevant natural resources, or may partially or totally disturb cultural properties such as churches, mosques, historical or archaeological sites. Although it is anticipated that the project will inflict minimal impact upon PAPs, site specific relocation may have to occur where substations, access routes or towers are to be located.

Negative Impacts

Project impact will occur predominantly during the construction phase in the form of:

- Clearance of access routes (crop damage)
- Clearance of line corridor between towers (crop damage; removal of trees)
- Earth-moving and tower construction (crop damage; removal of tress; temporary or permanent damage to dwellings or social services properties)
- Importation of skilled workers into rural areas (health concerns, esp. HIV/AIDs; over-exploitation of local resources such as water , wood fuel and other natural resources)
- Construction of work camps (damage to crops and properties; potential affects from inadequate waste management facilities etc.)

Positive Impacts

- **Direct Positive Impacts**

While major attention will focus on loss of income due to temporary disturbance to fields or grazing areas, and on health conditions related to the influx of foreign workers, positive opportunities to PAPs may be presented in the form of temporary employment during the construction phase, as well as through income generated by the sale of food and other consumables to migrant workers.

The most positive impact of the Project *could* be the provision of electricity to communities within the Project alignment. As detailed in the Recommendation Section of the Report, developing the transmission line in association with an existing or proposed single-circuit alignment (as would be the case with Option C in particular) would ensure tangible benefits to local communities.

- **Indirect Positive Impacts**

In the Recommendations outlined in this report (Section 18), the Consultant emphasizes that the provision of local electrification either directly from the Project, or as a complementary and indirect benefit of the Project, would be the most significant long-term positive impact of the Project.

Rural electrification lies at the centre of the poverty-reduction programmes in both Sudan and Ethiopia, and would support rural economic development through the provision of power to generate water pumps, grinding mills and local industries.

Significantly, local electrification would have significance with regard to women's work burden; pumped water and electricity would spare them the arduous daily responsibilities of collecting water and fire wood. So too would it have a significant impact on the environment which is widely threatened by deforestation and soil erosion.

Electricity would support overall investment in education and strengthen the ongoing effort of capacity building to overcome critical constraints in the implementation of development programmes. Essential to this effort would be power supply to health facilities for the installation of cold storage facilities for the safe transportation and storage of vaccinations and other vital medications.

Given the detailed socio-economic profiles presented in the previous Sections of the report, which indicate that most Project affected communities are severely under-serviced, it is evident that power supply to local communities by this Project would have far-reaching positive development implications. Additionally, local communities have developed an expectation that the Project provides an opportunity for improvement in their livelihoods.

11.2 Impact Assessment of Route Option C

Option C is situated in the Al Qadarif State in Sudan. From Ethiopia, it proceeds from the border towns of Metema and Gallabat (Sudan) and terminates at a substation in El Gedaref in Sudan (to be constructed). The Sudanese landscape between Gallabat and El Gedaref is largely flat except for the first 20-30km from the border where the topography is hilly and dominated by wadis. Apart from some communal grazing lands, the route is almost entirely utilised for large-scale mechanized rain-fed agriculture.

Option C is the most direct of the three proposed routes and has been recommended in the 'Ethiopia-Sudan Power Systems Interconnection Project Feasibility Study Update' (2005) as the most cost effective. In Sudan, a single circuit line is operative between El Gedaref and Doka only. Thereafter, while there is no local electricity supply, the erection of electricity poles indicates that NEC, together with local authorities, had embarked on a project to extend the line to Gallabat. This project has not been completed. Should this route Option be implemented, the Consultant recommends that the local line be completed as a separate, but complimentary Project process, thus delivering tangible benefits to local communities and facilitating their support of the Ethiopia-Sudan Power System Interconnection Project.

A 100% household survey has ben undertaken along the Option C alignment in Sudan. While for the most part, the line has been positioned away from human habitation, there will be some impact on houses in Gallabat, where the line intersects with the Ethiopian route at the national border, and Gedaref where the line terminates.

TABLE 23. DETAILED BREAKDOWN OF TOWNS AND THEIR POPULATION FROM GEDAREF TO GALLABAT

Towns Along the Alignment	Population
Gedaref Town	247,000
Kanara Village	565
Kajarat Village	2,233
Assar Village	6,463
Wad El Sanosi Village	3,446
Kassab Village	3,771
Kom Shita Village	1,651
Zereiga el Beer	1,154
Zereiga el Donkey	951
Sabonei Village	3,321
El Hamra Village	16,808
Tawarit Village	6,286
Doka Town	22,540
Saraf Saeed Village	2,028
Allaam Village	2,653
Um Khareat Village	6,280
Konneya Village	5,254
Ottrob Village	642
Gallabat Town	1,844

Scope of impact

According to the 1970 Land Act, most land in Al-Qadarif State belongs to the State. Most farmers of both small-scale farms (*bildat)* and mechanized farms only have usufruct rights to the land. Under these circumstances, compensation may be paid to a farmer for one season crop loss only, or where fixed assets are temporarily or permanently damaged.

The total line length is some 150 kms, of which 109 km is arable agricultural land. The total number of hectares that will be temporarily affected by the RoW is 438 ha; while 1.53 ha will be permanently affected by the construction of approximately 312 towers.

Impact on Residential Dwellings

The proposed transmission line has been routed away from most human inhabitation and impact on houses will occur in Gallabat and Gedaref only.

Gallabat

Impact of the transmission line in Gallabat is confined to the eastern neighbourhood of the village, where there is also potential for a future housing extension. Since the area is relatively new, there are different patterns regarding how the allocated plots have been developed and used by tenants.

In addition to housing, some plots are used as enclosures for selling forest products (poles, firewood, bamboo, etc.), while others are used for farming (groundnuts, okra and other house garden crops).

House construction differs substantially in the affected area. While some houses are complete with a tukul and a fence, others are tukuls without fences, fences without tukuls, or empty plots without any type of structure. All houses are built from local materials (poles, thatch, or thorny branches). There is no use of mud, red bricks or CIS.

Complete houses with tukuls and woven mat fences invariably belonged to families with children. Tukuls without fences tend to belong to single males whose families reside elsewhere (Gedaref, Doka, and other villages). This is due to the lack of education facilities in Gallabat.

A master plan for Gallabat is currently under preparation. The market place has already been demarcated and plots for the construction already allocated. The next step is to demarcate the residential area with the purpose of opening proper channels to facilitate the provision of a domestic water supply, telephone lines and electricity. Some 24 houses in total will be affected in Gallabat. An additional 10 plots have been allocated, but no structures have yet been erected.

A detailed list of houses affected between Gallabat and Gedaref is provided in Appendix 3.

Gedaref

The NEC cadastral survey for the transmission line was conducted without sufficiently consulting the Gedaref State Survey Department. Consequently, the last 7 kilometres of the transmission line has been routed through an area that has been formally allocated for residential development. As yet, no construction has commenced, so no compensation will be due for impacts to houses or fences. However, a land-for-land agreement will have to be negotiated with affected parties.

The affected neighbourhoods are:

- El-Geneina neighbourhood
- El-Nazir Neighbourhood
- El Tadamon Square 9
- Housing Plan Square 6

TABLE 24. SUMMARY OF IMPACTS ON HOUSES AND FENCES

Type of Houses or Fences	No. of Houses or Fences	Price per Typical Tukul in Sudanese Dinnar	Total Price in USD
Tukul*	18	15,000	1250
Woven fence**	50	1200	278
Thorny bush	7	3000	97
Total			**1625**

**24 households will be affected, of which only 18 have constructed tukuls*
*** A typical house has an area of 15 x 20 metres*

Only 2 of the 24 affected households are female-headed.

Impact on Agricultural Land and Crops

Two agricultural systems are practiced on this route: mechanized farming (the average farm size being 1000 feddans (420 hectares) and small-scale subsistence cultivation (*bildat*). For the most part, land is owned by the State and farmers only have usufruct use of land. Compensation is therefore paid for crop loss only.

Temporary loss of agricultural land for the transmission line RoW will amount to 109 km x 40 m = 436 ha.

Permanent loss of agricultural land for the construction of towers along the 150 km route will be: 49 m² x 312 towers = 1.53 ha.

No compensation will be made for impact on land. Rather, compensation is calculated according to one season crop loss.

The most common crops produced in the Project affected area are sorghum and sesame. The following table identifies market values per ton (1000 kg) and hectarage, and the total compensation value of one season crop loss.

TABLE 25. TEMPORARY CROP LOSS

Major Crops	Yield Per Hectarage (Ton)	Hectarage Affected	Price per Ton USD	Annual Income lost (USD)
Sorghum	0.8	350.4	235	65,875.20
Sesame	0.5	87.6	530	23,214.00
Total				**89,089.20**

Attitude towards the Project

All people interviewed preferred to be compensated in cash or, in the case of lost plots, land-for-land for housing. However, it was also expressed that support for the Project would be greatly enhanced by the provision of a local electricity supply to local towns and villages.

11.3 Route Option B

In Sudan, the line continues from the Sudan/Ethiopia border near the village of Menza through sparsely populated terrain which is characterised by large-scale mechanised farming. In this portion of the route, there will be less impact from the Project. The challenge presented in this section, however, is that it lacks an all-weather road infrastructure, thus restricting construction to the dry season only. Inaccessibility during the rainy season would present challenges should repair work be necessary at this time. NEC has conducted a cadastral survey of the route which indicates that the line will run within proximity of the towns of Menza and Umjinigir.

Scope of Impact

Although NEC has conducted a survey of Option B in Sudan, the Consultant was not able to conduct a follow-up survey of the route due to the inaccessibility of the area by road during the rainy season.

From the Ethiopian-Sudanese border, Route B passes through a heavily forested area with scattered inhabitation and some subsistence cultivation. It traverses through two Agricultural Schemes. Near the town of Azaza it runs through a protected forest area. According to Gaafer, Karrar, et.al. (1994) some 34 villages are scattered within the vicinity of the East Bank of the Roseires Reservoir where the transmission line reaches its endpoint. Each settlement comprises an average of 1800-2500 persons, with an average household composition of 6.2 persons. The gender composition of the settlements is estimated to be almost equal.

Impact on Land

Permanent Loss of Land: The total line length of Option B within Sudan is 82 km, a distance which amounts to 164 towers. Tower foundations (measured at the standard 7 m x 7 m = 49m²) will result in a permanent loss of land to towers of 0.8 hectares.

Temporary Loss of Land: The RoW along the 82 km tie-line multiplied by 40 m results in the temporary loss of use of 328 hectares of land during construction.

The following table provides an assessment of Project impacts. This data is drawn from the NEC engineering survey and from profile maps from which data on mileage between settlements, vegetation types and settlement profiles have been obtained.

TABLE 26. COMPENSATION COSTS FOR LOST ASSETS

Assets	Percentage of Total Assets Lost	No. of Km	Hectares (within 40 m RoW)
Forests	35	28.7	114.8
Economically valuable trees	15	12.3	49.2
Grasslands (grazing)	40	32.8	131.2
Farmlands (sorghum +sesame)	10	8.2	32.8
*Dwellings/Enterprises	0	0.0	0.0
Total	**100**	**82.0**	**328.0**

* Confirmed by engineering survey from EEPCo and NEC.

The following table presents a breakdown of lost assets between the Ethiopa-Sudanese border and the substation at Roseires.

TABLE 27. ESTIMATION OF AFFECTED ASSETS ON SUDANESE SECTION OF OPTION B

Village/ Town	Mileage (approx)	Percentage of 82 km Section	Estimated Affected Assets	Compensation Type
Border – Menza	4.92 km	6	Forest area (80%)	No compensation
			Shifting agriculture (20%)	Compensation for single season crop loss
Menza – Umjinigir	13.12 km	16	Forest Area (80%)	No compensation
			Farmlands (20%)	Compensation for single season crop loss
Umjinigir – Forest	50.84 km	62	Farmlands (10%)	Compensation for single season crop loss
			Communal grazing (25%)	No compensation
			2 x Agricultural Schemes (15%)	Compensation for permanent Land loss (RoW) and single season crop loss

			Forests (50%)	No compensation
Forest to Roseires Substation	13.12 km	16	Protected forests (30%)	No compensation
			Farmlands (30%)	Compensation for single season crop loss
			Communal grazing (20%)	No compensation
			Scattered inhabitation on east bank of Roseires Reservoir (20%)	No compensation for residential dwellings, small businesses, or social services.
Total	**82 km**	**100**	**-**	**-**

Attitudes towards the Project

The Damazin Locality has a resettlement history which commenced with the construction of the Roseires reservoir. In the ESIA report prepared for the subsequent heightening of the Roseries Dam, some 54 villages (total of 58,804 persons) were assessed for further resettlement (Gaafer, Karrar, et.al., 1994). On the east bank of the Roseries Reservoir (which falls into the Option B Project area), there are approximately 20 settlements, comprising a total population of 33,524 persons. The ESIA report recommends that attempts be made to relocate communities within their homestead areas, and in so doing, to improve standards in housing and community services. This is particularly important as most villages do not have piped water or electricity (Gaafar, Karrar et.al., 1992).

Given the resettlement history of the area, as well as the impact of civil war on population dispersal and local levels of service delivery, it is important that consideration be made by the current Project to ways in which it may minimize impact on PAPs and provide tangible benefits to local infrastructure.

Discussions held by the Consultant with the Sheikh of Azaza Village and the Omda in the Roseires Locality revealed that there is considerable need for social services development within the area. Benefits derived from the Project in the form of local electricity supply would be necessary in order to win buy-in from communities in this area. So too would due compensation have to be paid in cash or land-for-land compensation for lost land and assets.

11.4 Route Option A

Based in the An-Nil al-Azraq (Blue Nile) States of Sudan, Option A is regarded by the *Ethiopia-Sudan Power Systems Interconnection Project Feasibility Study Update* (2005) as the least viable of the three proposed routes. This Option connects the substation at Gedo to Nekemte, Ghimbi and Assosa in Ethiopia to Kurmuk on the Ethiopian/Sudan border. From there, it traverses to the substation at Roseires in Sudan. The total tie-line is 614 km of which 140km occurs within Sudan. Option A is the longest of the proposed routes, much of which passes through difficult terrain that lacks an all-weather road infrastructure.

Scope of Impact

Given that there is insufficient survey data for the proposed transmission line for Option A, it is not possible to produce an exact inventory of assets damaged or lost by the Project. No survey data is available for the Sudanese section of Option A. It passes through an area of scattered inhabitation, with some subsistence farms, grazing lands, indigenous forests and some mechanized rainfed agriculture. No data is available on PAPs or other Project affected assets. In general, the area is characterized by low population density with long distances between settlements (Gaafer, Karrar, et.al, 1994).

Inhabitation becomes denser within the vicinity of western Roseires (although is less so than on the East bank, which falls within the Option B Project area), which is the end point of the route. There are some 10 villages scattered in this region of the Reservoir, each with a population of less than

2500 persons. Villages are surrounded by subsistence farmlands and areas of communal grazing (Gaafer, Karrar, et.al. 1994).

TABLE 28. SUMMARY OF ASSETS AFFECTED BY THE PROJECT FOR OPTION A (SUDAN AND ETHIOPIA)

Affected Assets	Percentage of Total Route	Total km of Affected Asset from Total of 614 km	Estimate of Affected Area (ha)	
			Permanent	Temporary
Farmlands (teff, maize, sorghum, sesame)	40	245.6	6.02	982.4
Forests/plantations (Eucalyptus, black wattle, bamboo)	15	92.1	368.4	-
Economically valuable trees (mangoes, bananas, citrus, coffee)	5	30.7	122.8	-
Communal grazing land	20	122.8	Not compensated	Not compensated
Dwellings (tukuls + CIS) and social services	0.5	3.07	-	-
Commercial enterprises (kiosks, tea houses)	0.5	3.07	-	-
Indigenous forest	19	116.66	Not compensated	Not compensated
TOTAL	**100**	**614.00**	**-**	**-**

12 Compensation Framework

12.1 Project Resettlement Policy (RP)

12.1.1 General Approach

Policies to compensate loss of land or property by the proposed Project are based on Sudanese federal laws and regulations stipulated by Regional Authorities, and the World Bank Operational Directives/Policies on involuntary resettlement. The primary objective of the land acquisition and Resettlement Action Plan (RAP) is to restore the income and living standards of the affected persons within a short period of time after resettlement and with as little disruptions as possible. Particular attention will be given to the needs of the poorest and most vulnerable groups.

12.1.2 Principles of Compensation

According to the legal and policy requirements of the Sudanese Governments and the World Bank, the principles of compensation and entitlements established for the project are as follows:

- That compensation and entitlements provided to PAPs ensure that pre-Project standards of living are maintained or improved;
- That land temporarily occupied is kept to a minimum;
- That all PAPs, legal and illegal, are taken into consideration and accounted for;
- That per capita land holding after land acquisition is sufficient to maintain livelihood standards;
- Where land allocation per capita is not sufficient to maintain livelihood, that other income generating activities are provided for;
- That all PAPs are adequately informed on eligibility, compensation rates and standards, livelihood and income restoration plans, and project timing; and
- That no land acquisition will take place prior to satisfactory compensation and resettlement of the PAPs.

12.1.3 Compensation Eligibility

All PAPs and organizations (whether public or private) who lose land, buildings/houses, crops or sources of income will be compensated or rehabilitated according to the types and amount of their losses (permanent and temporary).

The cut-off date for compensation eligibility will be set once all detailed measurements have been completed. Cultivating land, constructing buildings or settlements in Project affected areas after the cut-off date will not be eligible for compensation or subsidies. Compensation will also not be paid for any structures erected, or crops and trees planted purely for the purposes of gaining additional compensation.

12.1.4 Compensation Standards

The following section describes the compensation standards to be adopted for this Resettlement Action Plan. Detailed compensation rates will be based on standard regulations and estimates and provided in Section 13: Compensation Plan and Detailed Budget.

12.1.5 Compensation for Loss of Cultivated Land and Crops

Depending on the availability of land, permanently cultivated land lost to the Project will be compensated on a land-for-land basis. However, if there is shortage of land, crop loss will be compensated in cash to PAPs at a rate equivalent for 7 – 10 times the Average Annual Output

Value (AAOV) for a stipulated number of years. This time frame is considered sufficient for a household to be re-established elsewhere.

Another approach to compensation of cultivated land is to make ready 'seed capital' in proportion to the amount of annual loss of crops. This will be facilitated by depositing money into a bank account which can yield interest each year equal to the amount of income lost.

Temporary loss of cultivated land will be directly compensated in cash at a rate equivalent of AAOV for the number of years that the land is not available for cultivation.

12.1.6 Compensation for Residential Land, Houses, and Fixtures

Residential land, houses, buildings and other fixture losses will be directly and fully compensated at replacement cost free of demolition expenses and salvaged materials. Compensation for residential land will be paid to the responsible unit that will, in consultation with the village committee, make available replacement plots within the community. If this is not feasible, the responsibility will be assumed by local government. Houses, out-buildings, apartments and related fixtures will be compensated in cash at replacement cost with monies paid directly to the PAPs. Renters of affected houses/buildings will be guaranteed of a rent contract at the same rental terms.

12.1.7 Resettlement Allowances for Home-Owners

In addition to the compensation for houses and land, relocation allowances will be paid to PAPs. These relocation allowances cover relocation and resettlement costs, including rent of temporary accommodation that may be due between the period of demolition of the old house and the construction of a new one (i.e. transition allowance). The cost of moving all household items and any salvageable materials to the new house, or from the rented house to new house (i.e. moving allowance) will also be paid. These allowances will be payable as a lump sum to PAPs.

12.1.8 Compensation for Loss of Businesses or Employment

The transition allowance for a commercial business moving from old premises to a new one will be calculated on the basis of total post-tax profit during the six months prior to relocation as declared by the business to the tax-collection agencies. The transitional allowance for employees' loss of income will be equal to the total sum of earnings (including basic salaries and national subsidies) of all registered employees (including those retired) for 6 months prior to relocation.

These allowances will be paid on a monthly basis for up to 6 months from the date of removal from the original premises.

Moving Allowance: The allowance for transport and re-installation of the equipment of enterprises will be based on regulations stipulated by the Federal and Regional State. An allowance equal to the actual expenditure on renting storage space will be paid for temporary storage (if any) of equipment and materials.

12.1.9 Relocation of Public Buildings

All the public buildings affected will be replaced or paid in cash directly to its owners.
New schools and health facilities will be re-constructed before the affected one is demolished.

12.1.10 Vulnerable Households

Special attention will be paid to the vulnerable groups, defined as those already experiencing hardship (e.g. as a result of extreme poverty, sickness, female-headed households, the aged, etc.) and for whom loss of land/property could lead to further hardship. In order to ensure that resettlement does not further exacerbate the conditions of these groups, certain incentives will have to be offered to them in consultation with community representatives.

13 Compensation Plan and Detailed Budget

13.1 Option C

The following section presents a breakdown of compensation estimates.

Compensation for Agricultural Land

Two agricultural systems are practiced on this route: mechanized farming (the average farm size being 1000 feddans (420 hectares) and small-scale subsistence cultivation (*bildat*). All farmers only have usufruct use of land so compensation will be paid for one season crop loss only. Thereafter, farmers will be able to resume cultivation.

Temporary loss of agricultural land to the transmission line RoW will amount to 109.5 km x 40 m = 438 ha.

Permanent loss of agricultural land for the construction of 312 towers along 109.5 km will be 49 m² x 312 towers = 1.53 ha.

Compensation for Temporary Crop Loss

The most common crops produced in the Project affected area are sorghum and sesame. The market value of these crops differs considerably.

TABLE 29. SUMMARY OF CROP LOSSES

Major Crops	Yield Per Hectarage (Ton)	Hectarage Affected	Price per Ton USD	Annual Income lost (USD)
Sorghum	0.8	350.4	235	65,875.20
Sesame	0.5	87.6	530	23,214.00
Total				**89,089.20**

Compensation for Loss of Residential Dwellings

It is estimated that 24 houses will be permanently affected by the Project and will have to be removed. Amongst these homesteads are tukuls with or without fences of different construction. Consequently the total amount for replacement of tukuls is 1,250 USD, while woven fences will cost 278 USD and thorny bush fences will be 97 USD.

TABLE 30. SUMMARY OF IMPACTS ON HOUSES AND FENCES

Type of Houses or Fences	No. of Houses or Fences	Price per Typical Tukul in Sudanese Dinnar	Total Price in USD
Tukul	18	15,000	1250
Woven fence*	50	1200	278
Thorny bush	7	3000	97
Total			**1625**

** A typical house has an area of 15 x 20 metres*

Summary of Compensation Costs

The following table summarizes the estimated compensation costs for all affected assets along the transmission line alignment between Gallabat and Gedaref.

TABLE 31. SUMMARY OF COMPENSATION COSTS OF OPTION C (SUDAN)

Property	Type	Number	Unit costs (USD)	Total Cost for Compensation in USD
Compensation for agricultural land	Permanent	1,53 ha		Land for land
	Temporary	438 ha		Land for land
Loss of agricultural produce	Sesame	87.6 ha	530 /ton	23,214.00
	Sorghum	350.4 ha	235 /ton	65,875.20
Loss of residential dwellings	Tukul	18		1250.00
Loss of fences	Woven	50		278.00
	Thorny bush	7		97.00
Sub-total				90,714.20
Contingency (10%)				9,071.40
Grand Total				**99,785.60**

13.2 Option B: Sudan

Option B traverses from the Sudanese-Ethiopian border within the proximity of the towns of Menza and Umjinigir, through a protected forest area near the village of Azaza, and to the substation at Roseires. The total tie-line is 82 km.

According to the EEPCo route survey, the following vegetation types and land-use practices occur along the route.

TABLE 32. INVENTORY OF AFFFECTED ASSETS – BORDER TO ROSEIRES

Assets	*Percentages	No. of Km	Hectares (within 40 m RoW)
Forests	35	28.7	114.8
Economically valuable trees	15	12.3	49.2
Grasslands (grazing)	40	32.8	131.2
Farmlands: Sorghum/Sesame	10	8.2	32.8
*Dwellings + Enterprises	0	0.0	
Total	100	82.0	328

* Confirmed by survey engineers from EEPCo.

Permanent Land Loss:

The number of towers along the 82 km alignment will be approximately 164. Permanent land loss to towers is calculated as 164 x 49 m² = 8036 m² (0.8 ha).

Affected farmlands comprise of permanent loss to towers (+2 ha) and temporary loss for RoW (6.2 ha).

Of the 2 ha permanent land loss, 1 hectare is estimated to be sesame and 1 hectare is sorghum. One hectare of sesame = USD 392 x 10 years annual loss. The total compensation for permanent loss is USD 3920. Similarly, 1 ha sorghum = USD 298 x 10 years annual loss is USD 2980.

Economically Valuable Trees

It ha sbeen assumed that the standard economically valuable tree in the area is *Acacia senegal* (Gum Arabic). Compensation for *Acacia senegal* is estimated at USD 10 per tree. One hectare will carry an average of 200 trees. Some 49.2 ha will be permanently affected by RoW. The total number of trees affected will therefore be (200 x 49.2) x USD 10 per tree.

Total compensation for loss of economically valuable trees = USD 98,400.

Temporary crop loss

The amount of land that will be temporarily lost to RoW is 6.2 hectares. Of this, 3.1 hectares are estimated to produce sesame, and 3.1 will produce sorghum.

The annual yield of sesame is estimated to be 2 sacks per feddan (0.42 ha) so that 3.1 hectares will produce 14.5 sacks. At USD 84 per sack, the total compensation due for one season crop loss will be USD 1218.

The annual yield of sorghum is 3 sacks per feddan (0.42 ha) so that 3.1 hectares will yield 21 sacks. At USD 42 per sack, the total compensation for one season crop loss will be USD 882.

Summary of Affected Assets

The following table summarizes the estimated compensation costs for all affected assets on Option B (Sudan).

TABLE 33. SUMMARY OF COMPENSATION COSTS FOR OPTION B (SUDAN)

Type of Assets		Lost Assets (ha)	Yield Per ha	Unit Value (USD)	Total (USD)
Economically valuable trees	*Acacia senegal*	49.2	200 trees per ha	10 per tree	98,400
Permanent Crop Loss	Sesame	1.0	2 sacks per ha (X 10 annual loss)	84	3920
	Sorghum	1.0	3 sacks per ha X 10 annual loss)	42	2980
Temporary Crop loss	Sesame	3.1	2 sacks per ha	84	1218
	Sorghum	3.1	3 sacks per ha	42	882
Sub-total					**107,400**
Contingency (10%)					10,740
Total					**118,140.00**

13.3 Matrix of Project Impacts for Options C and B: Sudan

The following table summarizes permanent and temporary impacts incurred on Options C and B, as well as number of residential households to be relocated by the Project.

TABLE 34. MATRIX OF PROJECT IMPACTS: OPTIONS C AND B, SUDAN

Country	Route Option	Line Length (km)	No. of Towers	No. of Permanently Affected Hectares (tower bases)	No of Temporarily Affected Hectares (RoW)	No. of Buildings within Residential Households to be Permanently Relocated	Main area of impact
Sudan	C	157.5 (109.5 km arable land)	312	1.53	430.0	24	Farmlands Houses Eucalytpus trees
Sudan	B	82	164	0.80	32.8	0	Houses Eucalyptus trees Forests
Total		**239.5**	**476**	**2.33**	**462.8**	**24**	

TABLE 35. COMPENSATION COSTS FOR OPTION C

Route Option	Country	Route Section	Total
Option C	Sudan	Gallabat-El Gedaref	**99,785**

TABLE 36. TOTAL COMPENSATION COSTS FOR OPTION B

Route Option	Country	Total (USD)
Option B	**Sudan**	**118,140**

13.4 Option A: Sudan and Ethiopia

Description of Affected Assets

Given that there is insufficient survey data for the proposed transmission line for Option A, it is not possible to produce an exact inventory of assets damaged or lost by the Project. A rapid site survey of the route reveals that the transmission line will run through scattered farmlands (predominantly maize, teff, sorghum, coffee and sesame), woodlots (Eucalyptus and black wattle), plantations (Eucalyptus, Black wattle) and communal grazing land. From Assosa in Ethiopia, the environment changes into lowland bamboo savannah and deciduous woodland, and inhabitation becomes progressively scattered. In this section of the route, bamboo has a high economic value and is particularly threatened.

A small number of dwellings may be affected by the line on the periphery of some towns and villages. However, because of the relatively sparse settlement along the route, most towns and villages will be bypassed so as to minimize impact to dwellings, social services and commercial enterprises.

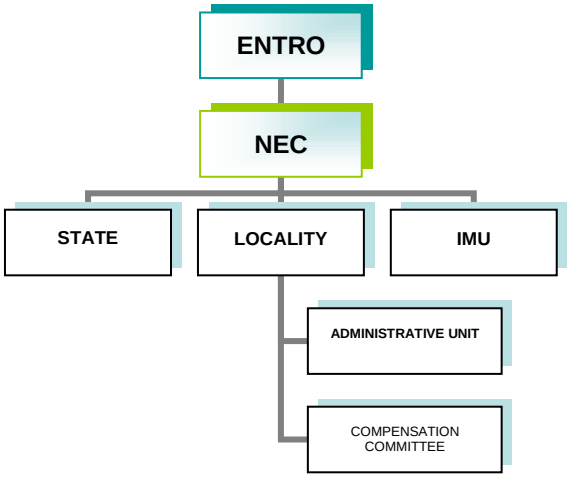
The table below provides an estimate of assets affected by the Project for both Sudan and Ethiopia based on a rapid site survey and available vegetation maps. The length of the tie line within Sudna is 140 km.

TABLE 37. SUMMARY OF ASSETS AFFECTED BY THE PROJECT FOR OPTION A

Affected Assets	Percentage of Total Route	Total km of Affected Asset from Total of 614 km	Estimate of Affected Area (ha)	
			Permanent	Temporary
Farmlands (teff, maize, sorghum, sesame)	40	245.6	6.02	982.4
Forests/plantations (Eucalyptus, black wattle, bamboo)	15	92.1	368.4	-
Economically valuable trees (mangoes, bananas, citrus, coffee)	5	30.7	122.8	-
Communal grazing land	20	122.8	Not compensated	Not compensated
Dwellings (tukuls + CIS) and social services	0.5	3.07	-	-
Commercial enterprises (kiosks, tea houses)	0.5	3.07	-	-
Indigenous forest	19	116.66	Not compensated	Not compensated
TOTAL	**100**	**614.00**	**-**	**-**

14 Description of Organizational Responsibilities

The Eastern Nile Technical Regional Office (ENTRO) has been vested with the overall responsibility for the coordination, planning and implementation of land acquisition and resettlement activities under the Project. The actual implementation of land acquisition and resettlement work will be carried out by NEC in Sudan.



Compensation and Relocation Committee

The Compensation and Relocation Committee in Sudan will be responsible for the planning, coordinating and monitoring of compensation and relocation activities. This committee will be responsible for:

- Clarifying policies and operational guidelines
- Coordinating and supervising implementation of compensation as stipulated in federal and regional guidelines
- Ensuring that appropriate compensation procedures are followed
- Overseeing Project's requirements related to the social environment

The following organisational framework would apply:

Compensation and Relocation Committee

1. State Land Settlement Officer from concerned Locality (Chairperson to be selected from the State government)
2. Representative from Nazir (Native Administration Office) (selected from State government)
3. Representative from NEC
4. Sheikh (Village Heads from affected areas)
5. Land Use Planner (Urban Planner and/or Agricultural Planner)
6. Sociologist (representative of IMU selected from University or Consultancy firm)
7. Civil Engineer/Surveyor

Compensation and Implementing Committee

1. State Land Settlement Officer from concerned Locality (Chairperson to be selected from the State government)

2. Representative from Nazir (Native Administration Office) (selected from State government)
3. Representative from NEC
4. Sheikh (Village Heads from affected areas)
5. Land Use Planner (Urban Planner and/or Agricultural Planner)
6. Representatives of PAPs
7. Representative from local NGO/CBO
8. Local Notables/Elders

The process of notifying affected persons is done through a newspaper announcement that the compensation and relocation committee will start its work with field visits on specific dates and the affected persons on the list are requested to meet the committee on the date and place specified. Such announcement is also sent to localities and administrative units where the affected persons live. The village Sheiks and Village People's Committees will be asked to inform the affected persons.

15 Implementation Schedule

A schedule for implementation of resettlement and compensation activities is included in Appendix 6. The schedule is tied to the implementation schedule for the Project. All compensation and resettlement for each component of the Project must be completed satisfactorily, income restoration measures in place and the construction area free of all encumbrances before commencement of civil works for that component.

The main objective in implementing this schedule is to ensure that compensation for land acquisition and lost assets is disbursed in time to enable affected households to construct dwellings and to restore livelihoods, and for affected public services to be fully reinstated prior to the commencement of the Project. A minimum of 3 months and a maximum of 5 months will be required.[1]

The programme also makes provision for a series of activities before commencement of construction to ensure the participation and consultation of PAPs, namely:

- The establishment of Compensation and Relocation committees;
- Dissemination of relocation information and details of land acquisition activities
- Negotiation between PAPs and the Compensation and Relocation representatives regarding acquisition boundaries and the type and measurement of structures and land parcels;
- Holding village meetings to decide upon the location of new house sites,
- Compensation arrangements and income restoration measures.

The timing of these activities is designed to allow the executing agency time to respond to practical and useful suggestions made by PAPs and to respond to, and resolve, grievances.

[1] Discussions with PAPs and local leaders indicate that should the necessary materials be available, a new house in a rural area will not take more than 3 months to build.

16 Description of Provisions for Redress and Grievances

In order to ensure that PAP grievances and complaints on any aspect of the land acquisition, compensation, and resettlement are addressed in a timely and satisfactory manner, and that all possible avenues are available to PAPs to air their grievances, a well defined grievance redress mechanism will be established by the Project.

16.1 Grievance Redress

In the initial instance, grievances will be dealt with by the infrastructure instituted by the Compensation and Relocation Committees (see Organizational Framework in Section 14).

These committees comprise:

- Local Authority Resettlement Sub-Committees
- Representative of Land Use and Land Administration Authority
- Local leaders in affected villages/local areas
- Representatives of PAPs
- Local NGOs and CBOs.

16.2 Grievance Redress Mechanism

Where disputes arise between principle parties and PAPs, the initially preferred means of settling grievances is by arbitration. Grievances will be initially addressed at the level of the Local Compensation and Implementing Committee. Should an agreement not be reached at this level, the complaint may be taken to the Local Authority level Compensation and Relocation Committee. If the complaint is not resolved at this level, the aggrieved party has the right to appeal to a court of law.

17 Framework for Monitoring and Evaluation

17.1 Internal Monitoring

It is the responsibility of the proponent to conduct regular internal monitoring of the resettlement performance of the operation. The monitoring should be a systematic evaluation of the activities of the operation in relation to the specified criteria of the condition of approval.

In Sudan, NEC will be responsible for implementing resettlement and compensation activities for the section of the Project from Gallabat (at the Ethiopia/Sudanese border) to Gedaref and it will therefore be their responsibility to undertake regular internal monitoring of the process.

The objective of internal monitoring and supervision will be:

- To verify that the valuation of assets lost or damaged, and the provision of compensation, resettlement and other rehabilitation entitlements, has been carried out in accordance with the resettlement policies provided by the Sudanese Government and the World Bank;
- To oversee that the RAP is implemented as designed and approved;
- To verify that funds for implementation of the RAP are provided by the Project authorities in a timely manner and in amounts sufficient for their purposes, and that such funds are used in accordance with the provisions of the RAP.

17.1.1 Internal monitoring Indicators

The main indicators that will be monitored regularly:

- That the World Bank's entitlements are in accordance with the approved policy and that the assessment of compensation is carried out in accordance with agreed procedures
- Payment of compensation to the PAPs in the various categories is made in accordance with the level of compensation described in the RAP
- Public information and public consultation and grievance procedures are followed as described in the RAP
- Relocation and payment of subsistence and shifting allowances are made in a timely manner
- Restoration of affected public facilities and infrastructure are completed prior to construction

17.2 External Monitoring and Evaluation

The Consultant recommends that an independent monitoring unit (IMU) be established to evaluate implementation of compensation and resettlement.

The IMU shall be appointed to monitor the resettlement and compensation process and implementation of requirements to verify that compensation, resettlement and rehabilitation have been implemented in accordance with the agreed RAP. The IMU will also be involved in the complaints and grievance procedures to ensure concerns raised by PAPs are addressed.

More specifically, the IMU will carry out the following:

- review the results of the internal monitoring and review overall compliance with the RAP
- assess whether relocation objectives have been met especially with regard to housing, living standards, compensation levels, etc.
- assess general efficiency of relocation and formulate lessons for future guidance

- determine overall adequacy of entitlements to meet the objectives.

The Consultant recommends that ENTRO establishes an IMU that draws on personnel with resettlement and social development experience. The Consultant further recommends that relevant representatives from the World Bank and the implementing agencies, EEPCo (Environmental Monitoring Unit) and NEC, be included in this unit. Project Affected Persons should be represented through relevant NGOs. The objective of this Unit will also be to provide a forum for skills-sharing and to develop institutional capacity.

It is important that the IMU is able to maintain a strong independent position and provide constructive feedback to the project to ensure the objectives are met. This could be facilited through inclusion of an expert from a highly regarded University (drawing on Departments of Sociology and Anthropology, Environmental Studies, Geography and related disciplines).

17.2.1 Outcome Indicators for Monitoring and Evaluation

Outcome indicators include the delivery of compensation and other mitigation to avoid economic and physical displacement caused by the Project.

A key objective of the RAP is that resettlement actions and mitigatory measures should lead to sustainable restoration or enhancement of affected people's pre-Project living standards and income levels. Outcome indicators measure whether compensation is paid and received, whether the affected populations were able to use compensation payment for investments that would give them sustained income.

Outcome indicators will include:

- Restoration of agricultural production and overall income levels
- Successfully negotiated land agreements
- Satisfaction with reinstatement activities
- Changes in community attitude towards the project
- Types of compensation payments for income generating investments

18 Recommendations

The World Bank Operational Policy for Resettlement encourages the avoidance of involuntary resettlement wherever feasible or to minimize it by exploring alternative project designs and sites. The following recommendations are put forward according to these Directives.

18.1 Summary of Study

This RAP study focused on three alternative power system interconnections between Ethiopia and Sudan. Methodologies applied to the respective route appraisals were determined by available cadastral surveys undertaken by the relevant Power Utilities (EEPCo in Ethiopia and NEC in Sudan). Impact analyses ranged from 100% census and household survey for Option C, to general socio-economic overviews (Option A) that were drawn from route descriptions, aerial surveys and secondary literature.

From a Resettlement perspective, Option C (Bahir Dar-Gedaref) was found to be the preferred route. This is consistent with conclusions drawn by the ESIA, as well as the technical findings as outlined by the Feasibility Update (2005). Following workshops held with EEPCo and NEC respectively, it has been agreed that consideration will be given to Options B and A for future power interconnections.

18.2 Preferred Option

It is the opinion of the Consultant that Option C is the preferable route for the following reasons:

- Option C is considered the most cost-effective of the three route options;
- Option C is located in regions of Sudan where there is scattered inhabitation and where there will be nominal impact on PAPs. An estimated 24 households in Sudan will require relocation by the Project;
- No major resettlement will have to take place; households affected by the route will be shifted either to a different section of a property or within the vicinity, thus minimizing disruption to social and economic networks that are relied upon by families and individuals;
- Fewer female-headed (vulnerable) households will be affected on Option C than on the other routes;
- The route traverses through sparsely cultivated regions of Ethiopia, and through flat terrain in Sudan which is mainly utilized for mechanized farming. The total impact on farmlands or economically valuable trees is minimal relative to that of the other two routes;
- No social services will be disrupted. The Consultant recommends that during final design the line be re-routed to avoid possible impacts on any social services;
- Given the detailed socio-economic profiles presented in this report which explicitly profile the Project affected communities as severely under-serviced, it is evident that the provision of benefits to local communities by this Project needs to be considered as a priority;

In Sudan, local electricity supply is available to part of the proposed route. The Consultant recommends that the Project set aside some budget to see to the completion of the single line circuit, thus ensuring that local villages can benefit from the Project.

- Given the above conditions, the transmission line will build upon a similar roads and local electricity infrastructure, thus supporting the notion of an inclusive Project profile, built upon transboundary partnerships and exchange.

Recommendations with regard to Options B and A

Route Options B and A are more circuitous than Option C. For the majority of the Ethiopian section of Option B1, the line traverses through highly cultivated regions which are particularly reliant on Eucalyptus cultivation. These trees carry a particularly high economic value, and compensation for permanent removal of the trees will amount to an extremely high financial outlay for the Project. The number of households required to be relocated is also far higher than for Option C.

The Consultant is concerned by the lack of supporting infrastructure on Options B and A with respect to roads. The lack of all-weather roads on these routes will challenge both construction and future upkeep of the transmission line. On the Sudan section of Option B, the roads are strictly dry-weather roads and are inaccessible to all vehicles during the rainy season. The road system on the Sudanese section of Option A is similar.

One of the greatest concerns of the Consultant is how to achieve local support for Options B and A when no local Project benefits in the form of local electrification can be demonstrated. While discussion groups held with Sector offices and PAPs on the Ethiopian routes have indicated that communities will support the inter-State initiative as long as adequate financial compensation is provided for, indication from rapid site inspections on the Sudanese routes is that PAPs are less likely to support the initiative.

As many of the villages that are situated in the vicinity of the Roseires hydroelectric power station – Sudan's largest hydroelectric scheme - do not have electricity or piped water, the lack of local infrastructure has become construed as a political issue. The Consultant is concerned that the Ethiopian-Sudan Power System Interconnection Project will be interpreted by local communities as yet another development initiative that will by-pass local towns and villages in the effort to meet the power needs of Central Sudan. This will reduce support by local communities for the Project. Investment by the Project in local electricity supply would therefore need to be a major consideration.

18.3 Mitigation Measures

The following mitigation procedures are recommended by the Consultant:

- Where feasible, to consider re-routing of the transmission line to avoid resettlement. This is of particular significance for homesteads located on subsistence farms where loss of land may not be compensated under a land-for-land agreement. Where such re-routing may not be feasible, consideration should be given to shifting a homestead out of the transmission line RoW but within the same locality thus avoiding major resettlement;

- Where feasible, to consider re-routing of the transmission line to avoid impact to social services (schools, clinics) or cultural properties (water well). As the transmission line will, for the most part, pass through remote areas where the infrastructure for social services are at best fragile, the Project should consider all alternatives rather than jeopardize continuous access to schooling, health services and other amenities;

- The Consultant recommends that where land has been allocated for residential development in Sudan, land-for-land compensation be negotiated with affected parties;

- To select the route Option where the construction of the transmission line may build upon existing infrastructure – i.e. road upgrading or the construction of a single electricity line so that further impact by the Project to PAPs may be substantially minimized;

- The Consultant recommends that all major construction be undertaken during the dry season (i.e. November - June). This is a period when lands are not being cultivated and crops will thus not be affected by construction activities;

- The Consultant recommends that compensation for dwellings be based on the replacement cost of affected assets;

- The Consultant recommends that financial compensation be reinforced by education on financial management provided through local Administrative Units;

- The Consultant recommends that special assistance and support be given to vulnerable groups such as female, elderly or disabled-headed households;

- The Consultant recommends that provision be made for local tangible benefits to PAPs in the form of local electricity supply. This may be achieved through coordinating Project efforts with local Electricity Authorities so that the transmission line may build upon an existing or proposed single-circuit infrastructure, as with the Gallabat-Gedaref section of Option C, the Project may participate in the completion of local electricity supply in association with NEC or relevant local authorities.

- The Consultant strongly recommends that unskilled labour be drawn from local communities;

- The Consultant recommends that skills training be provided to PAPs so that employment opportunities for local villagers may be prioritized;

- The Consultant recommends that income generating opportunities for women be considered during Project construction in the form of food preparation and sale to work camps, as well as in the form of domestic service (cleaning, washing etc.);

- The Consultant recommends that training or other appropriate assistance be given to those PAPs who have lost their businesses so as to ensure that they are not permanently disadvantaged by the loss of their enterprises;

- The Consultant recommends that adequate health and safety guides be disseminated prior to Project construction, either in the form of posters or pamphlets to schools and social service centres, or, in places of high impact, through a more interactive programme such as through lectures by personnel from NEC, local radio, or by way of teacher education. Of particular concern will be the effects of electro-magnetic radiation and the climbing of towers by children;

- In the event that farmlands are affected by the construction of access routes or work camps, the Consultant recommends that upon completion of construction, that this land be restored to its original state to enable the restoration of cultivation activities in the ensuing season;

- The Consultant recommends that health training be provided to immigrant skilled workers regarding communicable diseases (HIV/AIDs in particular) so as to mitigate against the spread of infections during the Project construction period;

- The Consultant recommends that work camps be positioned away from village sites in order to minimize the spread of communicable diseases and so that immigrant workers do not draw on village supplies (e.g. water, sanitation facilities, natural resources etc.).

- The Consultant recommends that ENTRO establishes an independent monitoring unit (IMU) that draws on personnel with resettlement and social development experience. The Consultant further recommends that relevant representatives from the World Bank and the implementing agencies, EEPCo (Environmental Monitoring Unit) and NEC, be included in this Unit. Project Affected Persons should be represented through relevant NGOs. The objective of this unit will also be to provide a forum for skills-sharing and to develop institutional capacity.

18.4 Poverty Alleviation

Sudan has one of the lowest levels of electricity generation per capita in the world. Electricity is thus essential to the development of agro-processing industries, commercial enterprises and irrigation facilities in the rural areas.

The Consultant believes that by providing local electricity to PAPs (either directly through the financing of local distribution lines, or indirectly, by reinvesting a proportion of the economic benefits of the Project into rural electrification), the Project will be enhancing overall poverty reduction and rural development efforts in the two affected countries.

Electricity supplied to rural towns would replace/reduce the consumption of woody biomass and petroleum products used for cooking, lighting, and motive power. It would support development in the agricultural sector (irrigation pumps, poultry, animal husbandry, preservation of products); in the commercial sector (shops, bars, and restaurants); to small and medium industries (flour mills, rural water supply installations, tanneries, and coffee processing plants), to the residential sector (lighting, heating, and cooking), to education (kindergarten, elementary schools, junior secondary schools, secondary schools and technical colleges), and to the health sector (pharmacies, clinics, health centers and hospitals). In brief, the Project would assist in the facilitation of economic growth in Project affected areas and create long-term employment opportunities for the poor, including women, thereby increasing income levels and reducing poverty.

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APPENDIX 1 : Maps of Project Affected Areas

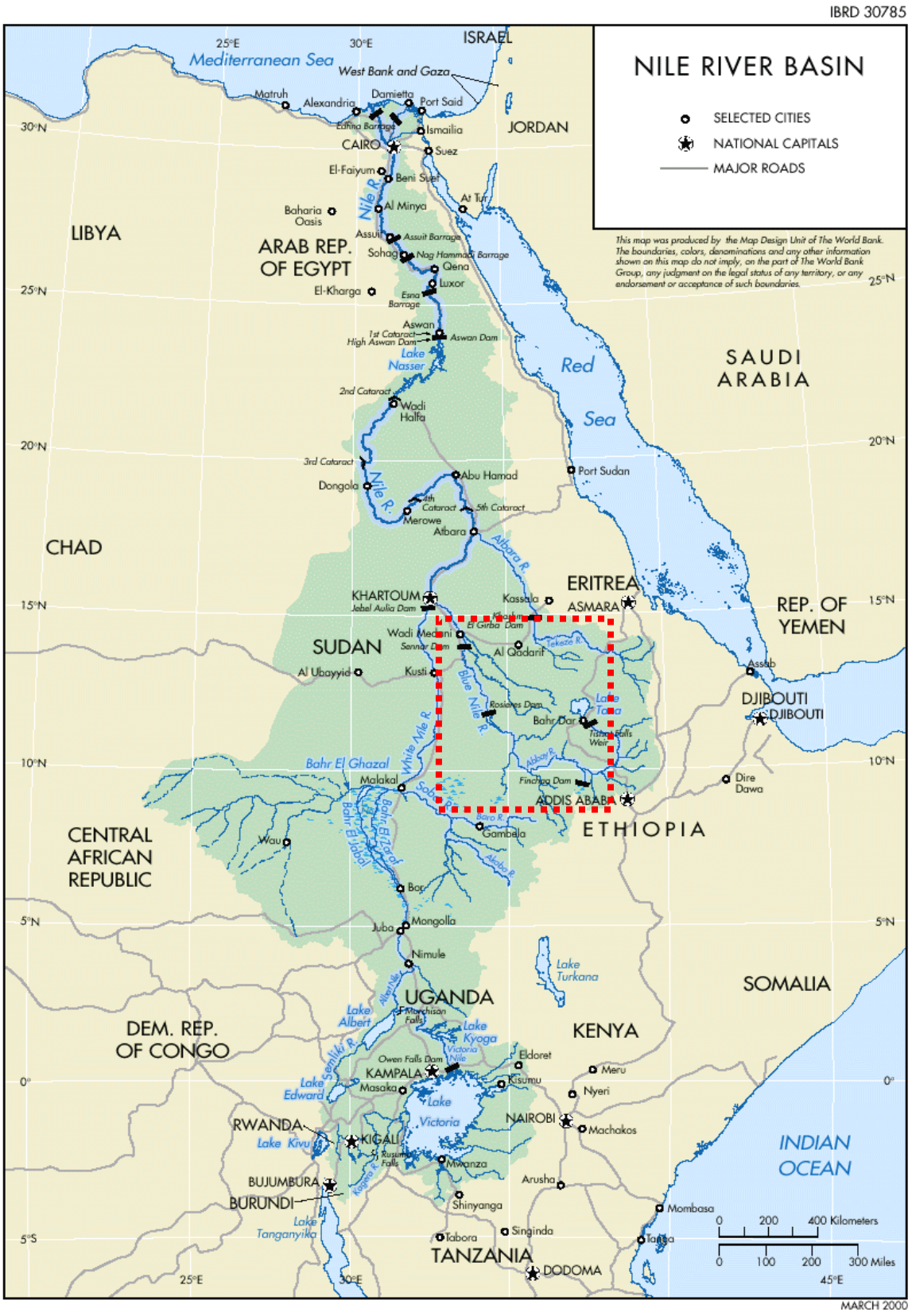

Figure 1. Regional Location of the Ethiopia-Sudan Power System Interconnection Project

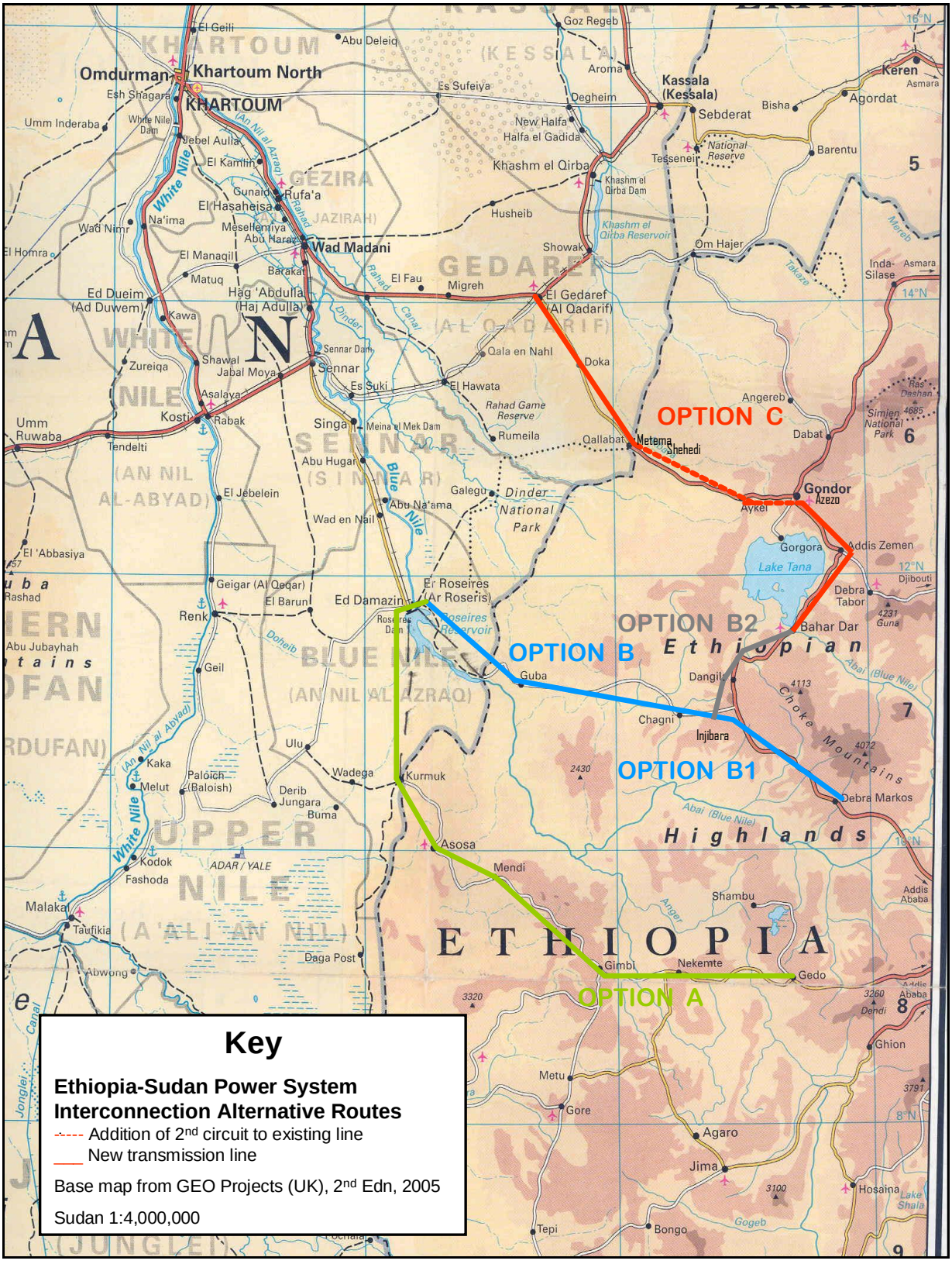

Figure 2. Location of proposed transmission line routes between Ethiopia and Sudan

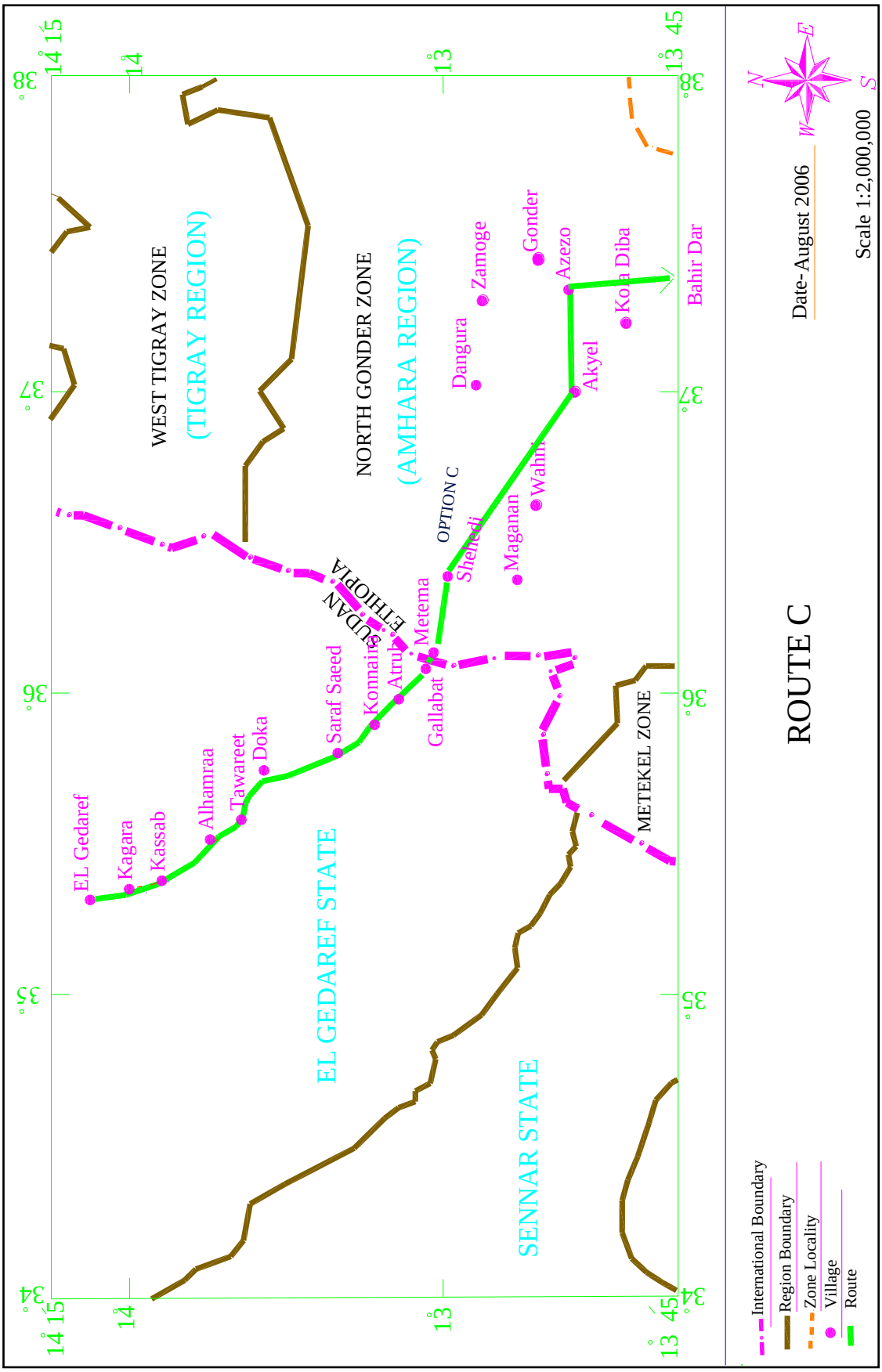

Figure 3. Route Option C)

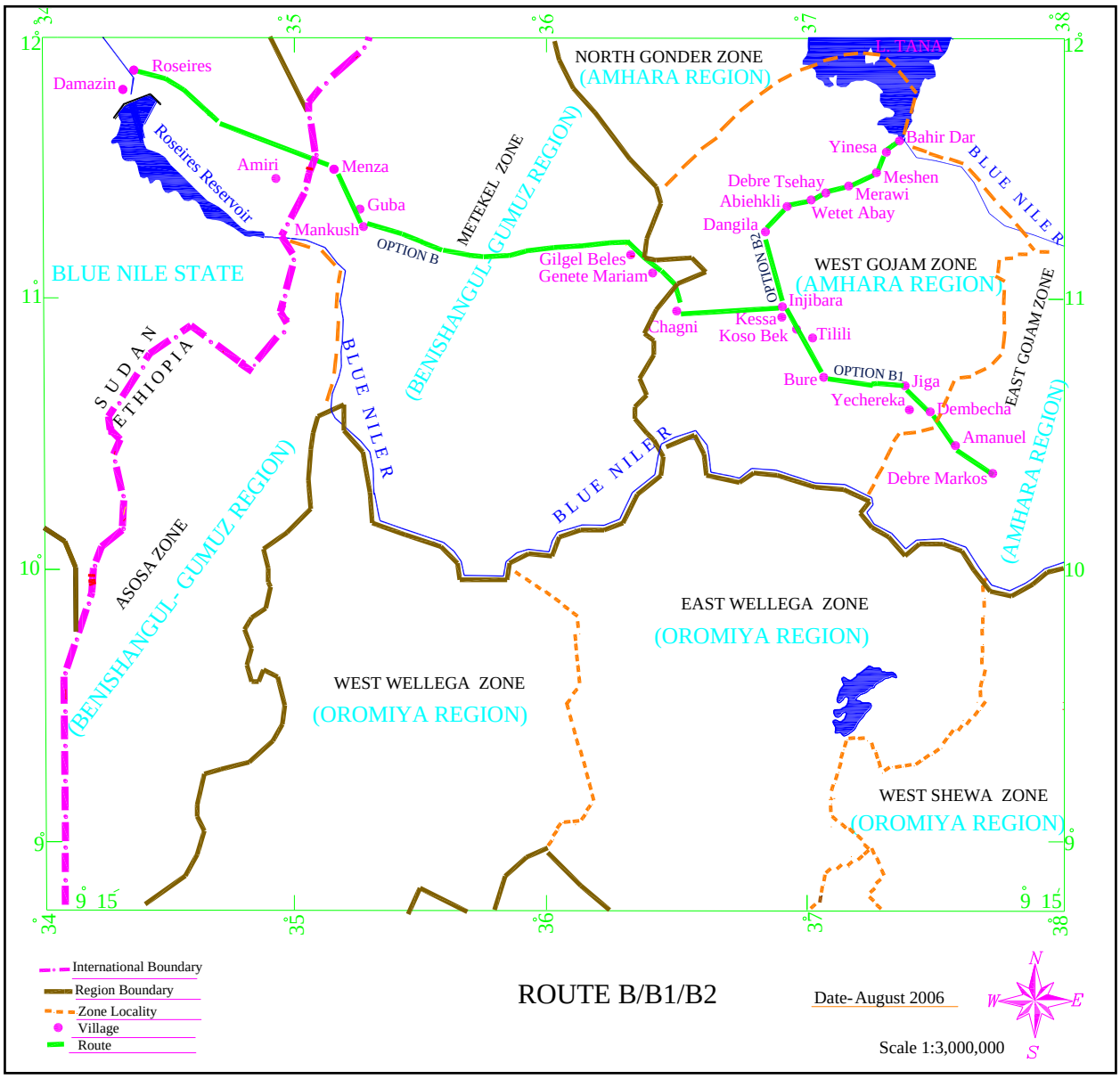

Figure 4. Route Option B1 and B2

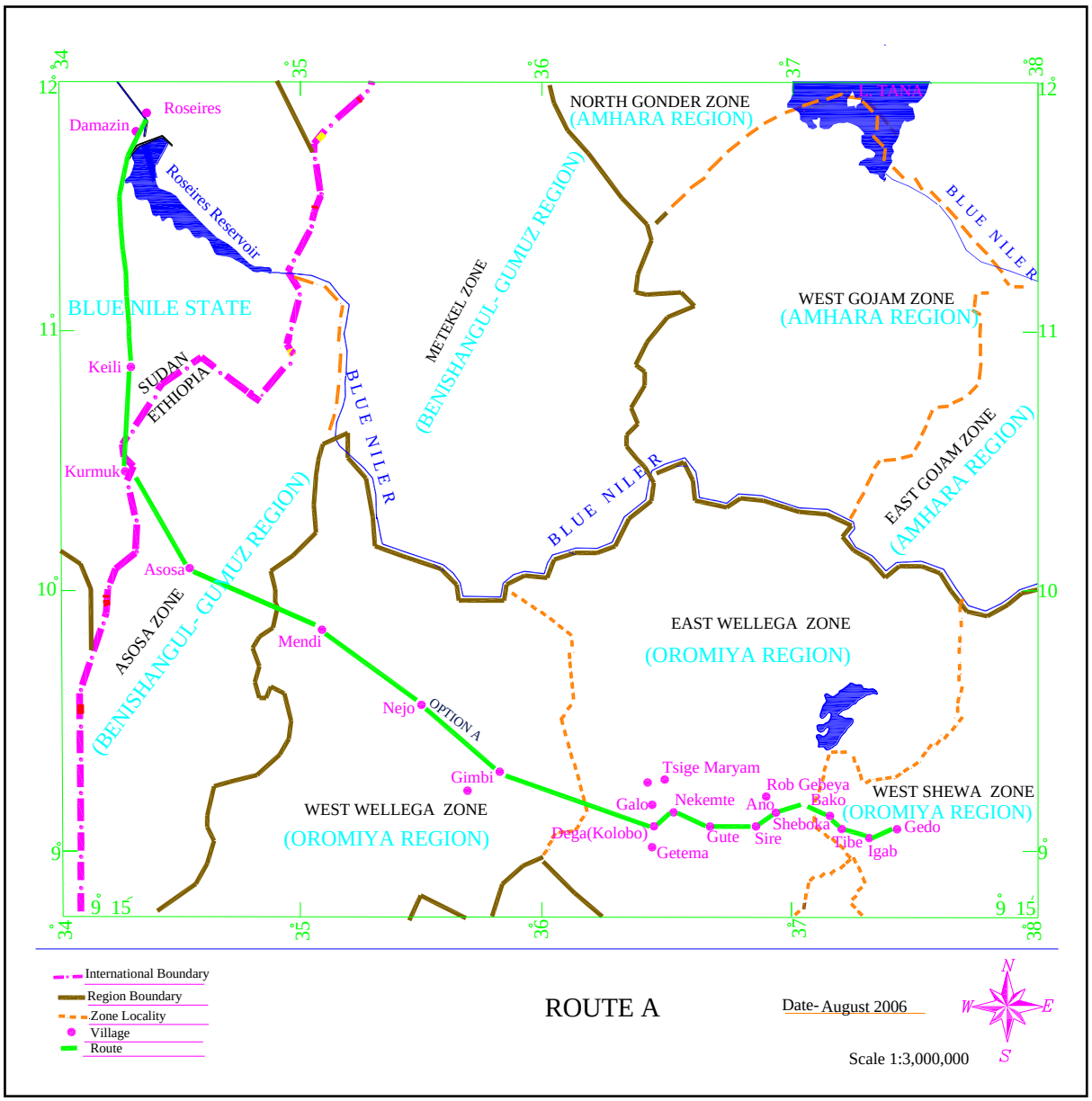

Figure 5. Route Option A

APPENDIX 2 : Photographs

Photo 1: Wire fence, Sudan (Option C).

Photo 2: The road from El Gedaref to Gallabat, Sudan (Option C).

Photo 3: Typical roadside commerce, Sudan (Option C).

Photo 4: Roseires Power Station, Sudan (Option A and Option B).

APPENDIX 3 : List of Permanently Affected Households Option C, Sudan

No.	Householder	Gender	Family Size	Profession	Plot Area (m^2)	Type of Fence	Built Structures
1	Ibrahim Higazi	Male	NA	Wood trader	15X20	Thorny branches	None
2	Eisa Ibrahim	Male	NA	Wood trader	15X20	Thorny branches	None
3	Mohamed Mattar	Male	NA	Wood trader	15X20	Thorny branches	None
4	Ibrahim Elhawari	Male	NA	Wood trader	15X20	Thorny branches	None
5	Idris Eisa	Male	Divorced	Trader	20X30	Woven mat (8)	Guttiya
6	Ahmed Ibrahim	Male	Single	Trader	15X20	Woven mat (6)	Guttiya
7	Omer Ahmed	Male	4	Farmer	15X20	Woven mat (6)	Guttiya
8	Ibrahim Abdalla	Male	7	Trader	15X25	Woven mat (6)	Guttiya
9	Eisa Ahmed	Male	Single	Farmer	5X10	None	Guttiya
10	Mubarak	Male	Single	Wood trader	10X15	None	Guttiya
11	Zakaria Abdalla	Male	Single	Worker	10X15	None	Guttiya
12	Salih	Male	Single	Worker	10X20	None	Guttiya
13	Abbakar Abdalla	Male	6	R. Soldier	15X20	Woven mat (6)	Guttiya
14	Aziza	Female	2	Kisra seller	15X20	Woven mat	Guttiya
15	Mariam Hassan	Female	Single	Elderly	15X20	Woven mat (6)	Guttiya
16	Hamad Abjeiga	Male	6	Cook	15X20	Woven mat (6)	Guttiya
17	Ibrahim wad Elzaghawa	Male	6	Farmer	15X20	Woven mat (6)	Guttiya
18	Mohd. Hassan Breima	Male	Single	Cart owner	10X15	None	Guttiya
19	Gumaa Abdalla	Male	6	Farmer	15X20	Thorny branches	Crops (groundnuts, wild okra)
20	Unknown	NA	NA	Farmer	15X30	Thorny branches	Crops (groundnuts, wild okra)
21	Musa Ibra	Male	Single	Worker	10X20	None	Guttiya
22	Faki Mohamed Ibrahim	Male	Single	Religious teacher	15X20	None	Guttiya
23	Haroon Osher	Male	4	Farmer	15X20	Thorny branches and sorghum stalks	Guttiya
24	Khamis Diroob Mohamed	Male	Single	Trader	15x20 None		Guttiya

APPENDIX 4 : Valuation Method of Assets for Compensation

Affected Farmland

In determining the replacement cost for affected farmlands, the following considerations are taken into account:

- Measure the actual size of the affected area/plot and count all assets/ property found on the same plot.
- Calculate the unit rate/cost for the affected assets/property according to the current market price
- Calculate average production/income that is obtained from the land and reach a consensus with PAPs on the amount of the average production or income.
- Calculate annual income in relation to annual bank interest rates in order to assess income from savings
- 10% compensation value could be calculated for the psychological and social inconveniences created due to the relocation. This is calculated by taking the amount of production on the measured plot of land and by summing up the annual income obtained from the above plot.
- Total compensation cost is derived by (or it is the sum of) calculating annual income, the compensation value affected property, and social and psychological inconveniencies.

Construction works on farmlands have to be carried out according to the environmental regulations and procedures of the country. However, these activities have to be planned in a way not to displace the local population and to minimize impact on farmlands and settlements.

Affected Houses

In determining the replacement cost for affected houses, the following considerations are taken into account:

- The current construction cost for replacement (with no allowance for deprecation);
- Depreciation of assets and the value of salvage materials are not taken into account, nor is the value of benefits to be derived from the Project deducted from the valuation of affected assets;
- Houses that are partially affected are assumed to be entirely affected and compensated accordingly;
- The compensation rate is estimated on the basis of the type of the house affected. The cost of each house that will be replaced is estimated on the basis of specifications and bill of quantities agreed upon by PAPs;
- Families who will lose their houses to the Project will receive full replacement cost plus the compensation value for all unforeseen costs. The compensation value is the family's expenses and loss in income in making the transition is duly recognized and accounted and compensated for to cover the loss of established business, and for any social disruptions and inconveniencies. With this compensation value, the affected people might be able to cover any expenses associated with their relocation/re-housing including access to social and public services.

Crop Loss

Compensation for crop loss is made on the assumption that only the land affected on the tower sites will result in permanent loss. The remainder of the land will be affected for a maximum period of two years only while construction of the tower sites is underway. Compensation will be based on the productivity of the land and on current market prices of the crops.

Based on the availability of the farm land on the project area where PAPs reside, permanent cultivated land loss will be compensated on a land-for-land basis. If there is shortage of land, however (as is generally the case in Ethiopia), loss of cultivated land will be compensated in cash at a rate equivalent to 10 times of Average Annual Output Value (AAOV) of previous three years. Individuals or entities legally using affected plots will be compensated in terms of a land-for-land mechanism through redistribution of land within the village territory.

Loss of Eucalyptus and Other Economically Valuable Trees

The main type of plantation in the Ethiopian Project area is Eucalyptus. The following valuation is based on a compensation method developed by the Environmental Monitoring Unit of Ethiopian Electric and Power Cooperation (EPPCo). Their assessment of eucalyptus production and the market prices are based on averages collected from different Eucalyptus plantation regions in the country.

Eucalytpus yields and prices are based on age, height and diameter of trees, and their functions (e.g. house construction, electricity poles, fuel wood etc).

Trees are classesified into three major classes:

1. Small
2. Medium and
3. Large (Pole)

Prices are 0.7 USD, 2.4 USD and 31.8 USD for small, medium and large trees respectively.

Compensation is valued at quivalent to ten X average annual income.

The Table below indicates the estimated values of compensation for a single tree.

Compensation Equivalent			
	Price USD	**Annual Income Loss***	**Compensation Equivalent of 10 Years (USD)**
Small	0.7	0.73	7.3
Medium	2.4	2.46	24.6
Large (Pole)	31.8	32.38	323.8

* Transportation costsnare 0.03 USD, 0.06 USD and 0.58 USD for small, medium and large trees respectively.

Other types of trees are compensated for one cutting only, as it is assumed that they will be taken to market only once they have reached maturity, at which stage they have no regenerative capacity.

Damage to Cultural Properties and Community-owned Facilities

Cultural significance is a concept in estimating the value of a site. It includes aesthetic, historic, scientific (research), social or economic value and the concept of amenity value. Sites that are likely to be significant are those that help our understanding of the past, or enrich the present, and that will be of value to future generations. Significance assessment is the basis for determining any action to protect cultural sites and is part of a site management plan.

APPENDIX 5 : Record of Consultation

Consultation with Affected People

As part of social assessment, extensive public consultations were carried out in the study area. A range of concerned stakeholders, including representatives of the local communities, local authorities and representatives of different sector bureaus and offices were consulted. The objective of the consultations was to:

- Disseminate information among potentially affected communities about the intended Project;
- Identify attitudes of communities towards the Project;
- Identify the degree of community participation in the Project;
- Identify anticipated Project impacts on the socio-cultural life of communities; and
- Identify stakeholders and their role in Project activities.

Although, the surveys were conducted during the rainy seasons of 2005 and 2006 – this is a period when roads are impassable, and when farmers migrate for seasonal work - consultations were held with those stakeholders who were available.

Consultation with Community Representatives

Project consultants facilitated the group discussions focusing on the following issues:

- Briefing about the Project;
- Assessment of the attitudes of the local communities towards the proposed Project;
- Anticipated positive and adverse impacts of the Project pertaining to the socio-economic life of the community;
- Mechanisms to avoid and/or mitigate anticipated adverse impacts of the proposed Project;
- Compensation preferences.

Most communities were aware of the Project and appreciated the social and economic benefits likely to be accrued from it. However, the most important issue for which all project affected people indicated concern were:

- Fair compensation for affected assets
- Minimization of land acquisition
- Ensuring adequate land allocation and livelihood restoration.

Consultation with Local Administration

All the local administrators consulted reflected the interest of their respective communities in the Project. In Sudan, consultations were held with

- Qallabat Mahaliya (Doka)
- Gedaref Mahaliya
- Damazin Mahaliya

Surveyors, Gedaref-Gallabat survey, 2006

- Yassir Awad, social assessment specialist, University of Khartoum
- Salah Awad, Survey Engineer, Gedaref State
- Abdelgalil Hamid, Survey Engineer, Gedaref State
- Eisa Eltayeb, Survey Technician, Gedaref State
- Zeinelabdin Hassan, Electric Engineer, Gedaref State

- Adam Jad Adam Boush, Forestry Technician, Gallabat
- Hassan Abbo, local guide

All the local administrations have indicated that they would play an active role during the construction and operation period of the Project. This would include:

- Co-ordination of the local communities to participate as required;
- Involvement in the land acquisition process to facilitate the implementation of appropriate mitigation measures;
- Provision of land for the Contractor's camps;
- Dissemination of information to the local community;
- Represent their constituencies in Grievances Committees;
- Assist in the disbursal of compensation funds.

Record of Consultations

Date	Name	Title/Organization	Contact Details
ETHIOPIA, Addis Ababa			
3 August 2005	Ato Mekuria Tafesse	Executive Director, ENTRO	Tel: (251 1) 2515660 Fax: (251 1) 2515681
3 August 2005	Dr Ahmed Khalid Eldaw	Senior Regional Projects Coordinator, ENTRO	Tel: (251 1) 461130 Fax: (251 1) 459407
3 August 2005	Dr Salah Eldin El Shazali	Regional Social Development Officer, ENTRO	Tel: (251 1) 461130 Fax: (251 1) 459407
3 August 2005	Dr Fatma Moustafa	PCU Manager, ENTRO	Tel: (251 1) 461130 Fax: (251 1) 459407
12 August 2005	Ato Tesfaye Batu	Project Manager, Ethiopia-Sudan Power System Interconnection Project	EEPCO Mob: (09) 254408 Tel: (01) 517169 Fax: (01) 517198
18 August 2005	Ato Yusuf Haji Ali	Power Engineer	World Bank Tel: (01) 176089/627700 Fax: (01) 627717
18 August 2005	Ato Negede Lewi	Engineer Transport Sector	World Bank Tel: (01) 176089 Fax: (01) 627717
19 August 2005	Ato Fekade	Agent	ENERGO INVEST
SUDAN (2005)			
10 Sep 2005	Eng. Sir El Khatin Eisa	Distribution Engineer, NEC El Gedaref	
11 Sep 2005	Adel Moneim Mohamed Abdalla	Executive Director Gallabat Locality, Gedaref State (located in Doka Village)	
12 Sep 2005	Eng. Yassin Abdel Rahman	Deputy Director Transmission Lines, Damazin – Blue Nile State (NEC), Damazin	
13 Sep 2005	Suleiman Hamad El Nil	A native of Mukla Village (now working for NEC at Roseires)	
13 Sep 2005	Ibrahim Dafalla Ali Mohamed	Sheik of Azaza Village and Chair of Azaza Peoples Committee, Sudan	
13 Sep 2005	Peter Ani	Member of Azaza Village Peoples Committee	
13 Sep 2005	Abdel Aziz El Amin	OMDA of Kadaldo Village, Sudan	(+249 91) 258 1402
1-3 Oct 2005	Osama Dorzon	Secretary General, Gedaref Farmers Union	

1-3 Oct 2005	Karamalla Mohamed	Chairperson, Gedaref Farmers Union
1-3 Oct 2005		Mechanised Agricultural Corporation Inspectors, Gedaref
1-3 Oct 2005		Osar Village, Peoples Village Committee
1-3 Oct 2005		Osar Village Sheikhs
1-3 Oct 2005	Humeide El Dai Ibrahim	Chairperson Kassab Village People Committee and Chairperson of Local Court
1-3 Oct 2005	Abdallah Karrar Abdelwahid	Sheikh of Kassab
1-3 Oct 2005	Omer Mohammed Shegeibo	Sheikh of Elsabonei Village
1-3 Oct 2005	Hussein Guma'a	Sheikh of El Hamra Village
1-3 Oct 2005	Guma'a Hamza	Chairperson, El Hamra Peoples Committee
1-3 Oct 2005	Arbab Idris Haroun	Sheikh of Towarreet Village
1-3 Oct 2005	Mohammed Zakaria	Sheikh of Saraf Saeed Village
1-3 Oct 2005	Mohammed Abakar Eisa and Ibrahim Mohammed Taha	Sheikhs of Olam Village
1-3 Oct 2005	Ali Daneen	Sheikh of Otrob Village
1-3 Oct 2005	Abdel Samei Ahmed Mohammed Bahr	Deputy Nazir, Chairperson Peoples Committee and Chairperson of Local Court in Gallabat
1-3 Oct 2005	Abdel Muneim Ahmed Balla	Executive Officer, Gallabat locality in Doka
1-3 Oct 2005		Gedaref Farmers Union
1-3 Oct 2005		Gedaref Pastoralists Union
1-3 Oct 2005		Village Popular Committees
1-3 Oct 2005		Gallabat Locality Legislative Council
1-3 Oct 2005		Youth and Women Associations
SUDAN 2006		
19 July 2006	Ishag Abdalla Bakhit,	NEC Survey Department, Khartoum
24 July 2006	Salah Awad Bashir,	Director, Survey Dpot, Gedaref State
23 July 2006	Badereldin Mohamed Ahmed	Director of Operations, NEC, Gedaref
23 July 2006	Eisa Omer Eisa	Director of Crop Markets, Gedaref State
24 July 2006	Hassan Abbo Siddig	Chairperson, Basunda Pastoral Union, Gallabat Locality
24 July 2006	Abdelsamie Awad Bahr	Chair, Gallabat Popular Committee
24 July 2006	Gaafar Hamad El Neel	Olocal Notable, Gallabat

APPENDIX 6 : Implementation Schedule

No	TASK	Months											
		M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
1	**Project Preparation**												
1.1	*Disclosure/Awareness creation* *Electricity education – schools, clinics etc.*												
1.2	*Project appraisal*												
2	**Land Acquisition and Resettlement: Preparation**												
2.1	*Establish Resettlement Committee*												
2.2	*Mark Right of Way*												
2.3	*Conduct Detailed Measurement Survey* *Revalidate inventories of PAPs*												
2.4	*Fix Compensation Rates and Options through Committee Meetings*												
3.	**Land Acquisition and Resettlement: Implementation**												
3.1	*Pay Compensation to Land Holding Groups and PAPs*												
3.2	*Construction of New Houses and finalize relocation*												
3.3	*Income Restoration* *Training for PAPs*												
4	**Consultation**												
5	**Monitoring**												

APPENDIX 7 : List of Workshop Participants

Ethiopia-Sudan Power System Interconnection ESIA Workshop, December 4, 2005 - NEC Khartoum

No	Name	Country	Organization	Tel	Fax	E-mail
1	Mobark Sayed Ahmed Eldoosh	Sudan	Ministry of Electricity	83767956		m_edoosh@hotmail.com
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5	Al Siddig Ibrahim	Sudan	NEC	0912644330		
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9	Mohdei Hussan Deshein	Sudan	Ministry of Irrigation & WR	0912357850	83773838	

No	Name	Country	Organization	Tel	Fax	E-mail
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11	Nagua Ahmed Omer	Sudan	Planning-Project	0912661549		
12	Salih Hamad Hamid	Sudan	MOI WR	0912671468	0511859700	salidhhamid@yahoo.com
13	Samia Ibrahim	Sudan	Supplier	83742414		samiahieba@yahoo.com
14	A. Alla Elzhbeeir	Sudan	MOE	0912428941	-	
15	Mohamed Elamin Salime	Sudan	NEC	0912309533		Mohamed7@necsudan.com
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22	Basair Omer Bashir	Sudan	Ministry of	0912992082		

No	Name	Country	Organization	Tel	Fax	E-mail
			Environment			
23	Mohamed Adam	Sudan	NEC	912863352		
24	Awadice Ismail Kar	Sudan	NEC	0918335948		
25	Rami S. Gunili	Sudan	Siemens AG	0912146768		
26	Widad Yousif Gasmalla	Sudan	Ministry of Finance	0912613469		
27	Hassan M. Elamin	Sudan	NEC	0912188006		Hashas24@hotmail.com
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