

E4220v2



Republic of South Sudan
Ministry of Agriculture & Forestry



EMERGENCY FOOD CRISIS RESPONSE PROJECT



ENVIRONMENTAL AND SOCIAL ASSESSMENT REPORT

May 2013

Contents

<u>LIST OF ACRONYMS AND ABBREVIATIONS</u>	<u>III</u>
<u>EXECUTIVE SUMMARY</u>	<u>1</u>
<u>ACKNOWLEDGEMENTS</u>	<u>4</u>
<u>1. BACKGROUND INFORMATION ON THE PROJECT AND THE STUDY</u>	<u>5</u>
<u>2. AN OVERVIEW OF THE AGRICULTURE SECTOR IN SOUTH SUDAN</u>	<u>14</u>
<u>3. REVIEW OF THE RELEVANT POLICIES, LAWS AND REGULATIONS</u>	<u>19</u>
<u>4. DESCRIPTION OF THE PROJECT ACTIVITIES AND IMPLEMENTATION APPROACH</u>	<u>26</u>
<u>6. PUBLIC CONSULTATIONS AND DISCLOSURE</u>	<u>48</u>
<u>7. PEST MANAGEMENT</u>	<u>52</u>
<u>8. ENVIRONMENTAL AND SOCIAL ISSUES, IMPACTS AND MITIGATION</u>	<u>55</u>
<u>9. ENVIRONMENT AND SOCIAL MANAGEMENT AND MONITORING PLAN</u>	<u>60</u>
<u>10. SUMMARY OF THE STUDY</u>	<u>66</u>
<u>11. REFERENCES</u>	<u>69</u>

LIST OF ACRONYMS AND ABBREVIATIONS

AAHI	Action Africa Help International
CES	Central Equatoria State
CPA	Comprehensive Peace Agreement
EA	Environmental Assessment
EFCRP	Emergency Food Crisis and Response Project
ESA	Environmental and Social Assessment
ESAF	Environment and Social Assessment Framework
ESIA	Environmental and Social Impact Assessment
ESMF	Environment and Social Management Framework
ESMP	Environment and Social Management Plan
FAO	Food and Agriculture Organization
GDP	Gross Domestic Product
GFRP	Global Food Crisis Response Program
GNI	Gross National Income
GoSS	Government of Southern Sudan
IPM	Integrated Pest Management
IPMF	Integrated Pest Management Framework
IPMP	Integrated Peoples Management Plan
IPPF	Indigenous People Planning Framework
MAF	Ministry of Agriculture and Forestry
MDTF	Multi-Donor Trust Fund
MDTF-S	The Multi-Donor Trust Funds for Southern Sudan
NGOs	Non-Governmental Organizations
NPA	Norwegian People's Aid
OP	Operation Policy
PDO	Project Development Objective
PIU	Project Implementation Unit
PMP	Pest Management Plan
PTC	Project Technical Committee
RSS	Republic of South Sudan
SS	South Sudan
TOR	Terms of Reference
UN	United Nations
UNDP	United Nations Development Program
WFP	World Food Program

EXECUTIVE SUMMARY

The Ministry of Agriculture is implementing the Emergency Food Crisis and Response Project (EFCRP). The project is currently being implemented in six counties. These include Morobo (Central Equatoria State), Yambio (Western Equatoria State), Tonj North (Warrap State), Leer (Unity State), Panyikang (Upper Nile State) and Raga (Western Bahr el Ghazal State). The implementation of the project is done through international NGOs and these include Norwegian Peoples Aid (NPA) in Leer and Panyikang counties; ACTED in Raga county; World Vision in Tonj North county and; AAH-I in Morobo and Yambio counties. The project supports three broad activities, namely, agricultural productivity (i.e. provision of improved inputs for field crops, vegetable production, large scale cultivation and technology transfer), support to community safety nets (i.e. storage facilities, granaries, markets and road rehabilitation) and project management. The project activities are bound to have environmental and social impacts in varying magnitude and extent in the areas of operation.

Thus, this Environmental and Social Assessment (ESA) has been carried out to evaluate the environment and social impacts arising from the project activities and recommend mitigation measures to the adverse negative impacts. The ESA also contains an Environmental and Social Management Plan (ESMP) to ensure that project activities implementation is done in an environmentally sustainable manner.

The EFCRP falls under prescribed list of projects (Category B) under the World Bank's Operational Policy - Environmental Assessment (OP 4.01); Natural Habitats (OP 4.04); Pest Management (OP 4.09), Indigenous Peoples (OP 4.10,); Forests (OP 4.36) and Involuntary Resettlement (OP 4.12).

The aim of the assessment is to highlight potential environmental and social impacts of the EFCRP activities, and to establish an environmental and social management plan for mitigating the negative impacts.

Key specific objectives for the assessment were:

- a) To describe, in general, the baseline conditions of the project areas
- b) To review environmental policies and procedures of the Government of South Sudan and relevant World Bank Operational Policies, triggered by the project activities, for consideration in the planning and implementation of the project activities.
- c) To determine the environmental and social impacts of the project activities.
- d) To develop an environmental and social management plan with recommended mitigation measures and strategies for addressing negative impacts in the course of project implementation and operation.

In order to achieve the above objectives, the following methods and investigative tools were used:

- a) Project sites visits and investigations were carried out between January and April 2012. The field surveys enabled the team to identify the environmental setting of the project sites and to ascertain some of the existing physical conditions. In addition, the site visits allowed the team to discuss with local communities and beneficiary farmer groups as well as Agricultural extension workers and field staff of the implementing NGOs on their views and understanding of the project goals and activities, as well the potential environmental and social impacts of the project activities.
- b) A series of stakeholder consultations were conducted throughout the study period and the drafting process of the report. Some of the consultations were round table discussions and focus group discussions with key stakeholders including senior officials in the Ministry of Agriculture and Forestry. Stakeholder consultations and the rural appraisal process provided a unique opportunity to interact and share experiences with the extension workers, the farmer groups and the local communities who were directly involved and affected in the implementation of the project activities.
- c) Questionnaires seeking socio-economic information of local communities in the project areas were administered in selected implementing counties. The aim was to obtain opinions on the key potential environmental and social impacts and to get additional views on appropriate mitigation measures for the negative impacts including details on the socio-economic setting of the local communities in the project areas.
- d) Some information presented in this report was obtained from available published and unpublished documents. Examples of this information include data on rainfall, flora and fauna, population statistics, socio-economic data, altitude and hydrology regimes of the area; agricultural sector overview and the maps used in the report.

The study has identified and analyzed several negative and positive impacts of the project activities. The positive impacts include; improved food security and poverty reduction for the local community, creation of jobs through the community safety nets program to enable communities buy food and; income generating activities in the trade for agricultural inputs and produce and; enhanced economic activities for the project impact areas. Other positive impacts also include improved agricultural practices and utilization of farm inputs albeit at varying magnitude and extent.

The negative impacts include loss of natural vegetation and habitats, loss of biodiversity, pollution of the soil and water sources through agricultural chemicals and pesticides

although on a very small scale currently. Other negative impacts include deforestation, and loss of globally threatened species including *Khaya senegalensis*, *Milicia excelsa* and *Vitallaria paradoxa* partially due to farming activities. However, it should be noted that some of the negative impacts cannot entirely be attributed to project activities because they would have occurred, whether the project activities took place or not. These include cutting trees for firewood, timber and charcoal burning some of which are globally threatened plant species.

The study has identified and recommended a number of mitigation measures with which to address the negative impacts and enhance the positive effects of the project. Some of the recommended strategies include the following:

- a) Enhancing agricultural productivity through improved agricultural practices and technologies and discouraging opening up of new areas as a way of improving productivity. This will contribute to natural resources conservation, sensitive natural habitats protection and encourage sustainable use.
- b) Controlled and careful use of pesticides and agrochemicals on the household gardens to prevent abuse while achieving the intended result.
- c) Use of code of best practice for the project activities to ensure environmental protection while encouraging sustainable utilisation of natural resources especially arable land
- d) Training of the farmers and extension workers in the project areas of operation to improve efficiency in the areas of environmental management in relation to agricultural activities.

ACKNOWLEDGEMENTS

We would like to thank the Ministry of Agriculture and Forestry (MAF) for the assistance offered during this assessment. Special thanks go to the Project Focal Person and other members of the Project Implementation Unit (PIU) for their support and assistance during the study.

We also recognize the invaluable contribution of implementing agencies, county and State authorities their assistance in facilitating community consultations and field visits. Views and opinions obtained from all the consulted persons both the MAF Juba and the States are all highly appreciated.

Technical input from the Project Implementation Unit and the World Bank (WB) were also very useful in the study and much appreciated. Special thanks to Mr. Luka Kiwanuka for his invaluable support in organizing meetings and travel to all the project sites visited.

1. BACKGROUND INFORMATION ON THE PROJECT AND THE STUDY

1.0 Introduction

This document is an Environmental and Social Assessment (ESA) report for the Emergency Food Crisis and Response Project (EFCRP) under the Ministry of Agriculture and Forestry, Government of the Republic of South Sudan (RSS). The project is being implemented in six counties. These include Morobo (Central Equatoria State), Yambio (Western Equatoria State), Tonj North (Warrap State), Leer (Unity State), Panyikang (Upper Nile State) and Raga (Western Bahr el Ghazal State). The implementation of the project is done through international NGOs and these include Norwegian Peoples Aid (NPA) in Leer and Panyikang counties; ACTED in Raga county; World Vision in Tonj North county and; AAH-I in Morobo and Yambio counties. The locations of the different States with these counties are found in Figure 1.1. The EFCRP is a US\$7.2 million project funded by the Global Food Price Response Trust Fund (GFPR) of the World Bank. The project supports three broad activities, namely, agricultural productivity, support to safety nets and project management.

Figure 1.1: Map showing EFCRP States in South Sudan



1.2 Nature of the Project

The EFCRP is integrated in nature and has three main components which are:

- (i) Support to increased agricultural production
- (ii) Strengthening community safety nets and,
- (iii) Support to project implementation

This report mainly focuses on the support to increased agricultural production component. This component aims at reducing vulnerability to food price escalation through increased production and improved post-harvest handling of key staples including maize. The component also provides inputs and tools to farmers working as cooperatives and/or groups so that they can expand their area farmed. The component provides grants for construction of low-cost food stores and granaries at the household and community levels.

1.3 Objective of the project

The Project objective is to support adoption of improved technologies for food production by eligible beneficiaries, increase storage capacity for staples, and provide cash or food to eligible people participating in public works programs in six counties in South Sudan. EFCRP support includes: (i) provision of inputs and technology packages; (ii) bringing presently idle land back into production; (iii) training on reduction of post-harvest losses; (iv) construction of food storage capacity at the household and community levels; and (iv) provision of cash or food for work to eligible individuals.

1.4 Project Implementing Agency

The proponent of the EFCRP is the Government of Republic of South Sudan (RSS), and the project-implementing agency is the Ministry of Agriculture and Forestry (MAF).

Contact details of the Ministry are as follows:

Official Address: The Under Secretary,

Ministry of Agriculture and Forestry, Government of Republic of South Sudan,

Physical Address: Ministries Complex, Juba

Contact Person: Dr. George Leju - The Project Focal Person/Director General for Research, Training and Extension Services, Ministry of Agriculture and Forestry.

1.5 Project Rationale

Six years after the signing the Comprehensive Peace Agreement (CPA) and now coming close to one year after attaining independence, South Sudan is still poor (poverty estimated at 60.6%) and vulnerable to shocks. Food insecurity is pervasive in most of the States having deficits in cereals.

The food deficit in South Sudan is at present structural; primarily stemming from a conjunction of: (i) low agricultural productivity; (ii) poor state of infrastructure; (iii) the lost productivity ensuing from incessant conflict; (iv) inadequate provision of agricultural services; (v) weak institutions and lack of policies and regulations; (vi) inadequately skilled human resources; (vii) irrational use of natural resources; and (viii) absence of an appropriate land tenure system and limited implementation of the land law.

Much of the food deficit is covered by food aid contributed by donors or purchased by the Government. Despite the high level of food aid, sufficient commercial trade exists to make domestic prices sensitive to movements on regional markets. Most commercially imported food is sourced in Uganda. Prices are very high due to transport costs, and spike higher when regional shortages appear. Most of Southern Sudan is still food insecure with the areas along the border with the North hardest hit.

A combination of a persistent and chronic gap between production and consumption needs, high global and regional food prices, low purchasing power, and uncertainty in trade flows due to the tension between Sudan and South Sudan since attainment of independence by South Sudan has prolonged the conditions that required the original intervention under the Global Food Crisis Response Program. As a consequence a number of war returnees remain at risk long after cessation of hostilities and new waves of internal migrants returning from the North after independence require assistance. Those with assets in the form of livestock or equipment are forced to sell to meet immediate needs, thus putting future income streams at risk. Latent conflicts over access to land and water are more likely to flare into open fighting and this is already happening in Unity, Jonglei and Upper Nile States. The increased numbers of needy exert significant fiscal pressure on government's resources.

In light of the background outlined above, three issues emerge for justification of the EFCRP:

1. The persistent negative impacts of high food prices and exacerbation due to events surrounding the referendum and independence. In accordance with OP/BP 13.20 resources are sought to scale-up investments under the ongoing project, with a dual focus on increased food security and improved storage of staples.

2. The Government's fiscal position now is in a more precarious situation now after the shutting down of the oil wells which contribute over 97% of the country's revenue. This has narrowed fiscal space and deflated the modest financial cushion leading to the start of implementation of austerity measures by the Government. The additional fiscal demands of the establishment of a new state provide a rationale for continued emergency

assistance for food security, even though the amounts of the present additional financing are very modest.

3. The proposed additional financing responds to the Government's request and will be used to: (i) scale-up the provision of input and technology packages to farmers; (ii) help farmers bring idle land into production; (iii) train farmers on mitigation of post-harvest losses; (iv) construct markets and food storage facilities (both on-farm and off-farm); and (v) provide cash or food to vulnerable people through their participation in construction of public works. The additional resources will mostly target four (i.e. Morobo, Yambio, Leer and Panyikang) of the initial six counties, to strengthen progress made by the implementing NGOs. Proposed additional counties include Pochalla, Maban and Tali – Terekeka with a focus on safety nets.

1.6 Purpose of the Environmental and Social Impact Assessment

1.6.1 Justification for Preparation of the Environmental and Social Assessment Report

The need to undertake an environmental and social assessment for the project emanates from the following observations, among others:

The Transitional Constitution of the Republic of South Sudan of 2011 incorporates numerous provisions that have a bearing on the environment. Article 41 (1) provides that the people of South Sudan shall have a right to a clean and health environment (2) every person shall have the obligation to protect the environment for the benefit of present and future generations (3) Every person shall have the right to have the environment protected for the benefit of present and future generations, through reasonable legislative action and other measures that:

- a) prevent pollution and ecological degradation;
- b) promote conservation; and
- c) secure ecologically sustainable development and use of natural resources while promoting rational economic and social development so as to protect the biodiversity of Southern Sudan.

Furthermore, Article 166 (6) expects local governments involve communities in decision making in the promotion of a safe and healthy environment.

The basis is that the project constitutes several components of activities, which could have generated considerable changes and significant effects to the environment including land, water and biological diversity. Thus, the ESA is designed to evaluate the environment and social situation arising from the project activities and recommend

mitigation measures to the adverse negative impacts. The ESA will also contain an EMP to ensure that project activities implementation is done in an environmentally sustainable manner.

The EFCRP falls under prescribed list of projects (category B) under the World Bank's Operational Policy (OP4.01 -Environmental Assessment); under the World Bank's Operational Policy (OP 4.04, Natural Habitats); under the World Bank's Operational Policy (OP4.09, Pest Management), under the World Bank's Operational Policy (OP 4.10, Indigenous Peoples); the World Bank Operational Policy (OP 4.36, Forests); and under the World Bank's Operational Policy (OP4.12 Involuntary Resettlement). Project environmental and social impact assessments are required in such circumstances, to put in place policy and operational frameworks to ensure mitigation of potential environmental and social impacts during the planning stage, thereby avoiding long-term negative environmental and social impacts.

1.6.2 Aim and Objectives of the Environmental and Social Assessment

The aim of the assessment is to highlight potential environmental and social impacts of the EFCRP activities, and to establish an environmental management plan for mitigating the negative impacts.

Key specific objectives for the assessment are:

- (i) To describe, in general, the baseline conditions of the project areas
- (ii) To outline the objectives of the project activities.
- (iii) To review environmental policies and procedures of the Government of South Sudan and relevant World Bank Operational Policies, triggered by the project activities, for consideration in the planning and implementation of the project activities.
- (iv) To determine the environmental and social impacts of the project activities.
- (v) To develop an environmental management plan with recommended mitigation measures and strategies for addressing negative impacts in the course of project implementation and operation.

1.6.3 Target Group for the Environmental Impact Assessment Report

This environmental and social impact assessment report has been prepared for use by different stakeholders to be involved in the implementation of the project. The report contains useful information on policies and procedures to be adhered to, implementation modalities, analysis of potential environmental and social impacts and suggested mitigation measures at various stages of the project activities. Such information will be useful in planning, implementation, and management of the project. In this regard, the report will be useful to the following stakeholders:

- Funding agencies and donors for the EFCRP
- MAF and the PIU of the project
- Implementing NGOs
- The communities in the different counties involved in the project

1.7 Approaches to the preparation of the Environmental and Social Assessment Report

The focus of the assignment is to identify environmental and social impacts of the EFCRP activities and to develop a management plan for addressing potential negative impacts. In order to achieve these targets, the basic tenet of the strategy involved consultations with the various stakeholders as outlined in the sections below. The rationale of these extensive consultations was to take on board, views from a cross section of people, at least from local level (Boma & Payam), County, State level, and Central government level.

The strategies for executing this assignment followed the steps outlined below:

- a) Assessing the biophysical setting in the project sites.
- b) Review of typical implementation approach and processes for the EFCRP activities.
- c) Identification and analysis of potential environmental and social impacts the implementation processes will likely trigger and generate within and around the project sites
- d) Identification of appropriate mitigation measures for the impacts and preparation of a management plan for addressing environmental and social impacts during implementation and operations of the project.

1.8 Information gathering for the Environmental and Social Impact Assessment

The information for this study has been collected through a number of research methods which include field surveys and investigations, stakeholder consultations, review of related literature from published and unpublished documents and professional judgment.

1.8.1 Field surveys of the Schemes

Site visits and investigations and field surveys to the project sites between January and April 2012. The field surveys enabled the team to identify the environmental setting of the project sites and to identify some of the existing physical conditions. In addition, the site visits allowed the team to discuss with local communities and beneficiary farmer groups as well as Agricultural Extension Workers and field staff of the implementing

NGOs on their views and understanding of the project goals and activities, as well the potential impacts of the project activities.

1.8.2 Stakeholder consultations

A series of stakeholder consultations were conducted throughout the study period and the drafting process of the report. Some of the consultations were round table discussions and focus group discussions with key stakeholders such as senior officials in the Ministry of Agriculture and Forestry. A list of all people who were consulted has been provided in Appendix 1. Stakeholder consultations and the rural appraisal process provided a unique opportunity to interact and share experiences with the extension workers, the farmer groups and the local communities who will be directly involved and affected in the implementation of the project activities.

1.8.3 Questionnaire

Questionnaires seeking socio-economic information of local communities in the project areas were administered in every implementing county (Appendix 3). These were administered during the site surveys to the selected counties. The aim was to obtain opinion on the key potential environmental and social impacts and to get additional views on appropriate mitigation measures for the negative impacts including details on the socio-economic setting of the local communities in the project areas.

1.8.4 Literature Review

Some information presented in this report was obtained from available published and unpublished documents. Examples of this information include data on rainfall, flora and fauna, population statistics, socio-economic data, altitude and hydrology regimes of the area; rainfall figures and the maps used in the report. All the documents used are duly acknowledged in Section 12 of this report.

1.9 Constraints and limitations to the study

The information presented in this report is consistent with the data and information gathered through the various sources and approaches outlined above. However, just as in any studies, the exercise experienced a number of constraints and as a result, there could be some gaps of information in the report as the consultant could not exhaust the collection of all primary data.

One constraint was that some institutions and people (who are ideally key stakeholders to the project) understood the purpose of the environmental and social assessment differently due to lack of awareness of the overall objective of the project. In view of this the team devoted some considerable time in awareness discussions, including question and answer sessions, prior to settling down to real issues of consultation.

Secondly, the consultants experienced significant difficulties in receiving the responses to the questionnaires distributed to stakeholders partly because of the relatively short time for the exercise. Thirdly, the consultants could not interview and discuss with all stakeholders such as extension workers, Boma, Payam and State officials, let alone visiting some project sites due to time limitations. As such, while the findings and issues advanced in this report reflect the general views and opinions of some selected people, they may not cover the specific issues from some unique situations or some individuals affected by the project.

Lastly, but not least, some of the information in the report was processed from secondary sources and such data include information for maps, land resources, water resources, biological resources, socioeconomic data on poverty situation in South Sudan and data on the role of agriculture to the economy of South Sudan. It is therefore necessary to understand such information within these limitations.

1.10 Format of the Report

This report is organized in seven chapters. **Chapter One** provides background information to the EFCRP including justification for the proposed project in South Sudan, aims and objectives of the project, the major components of the project, project areas, and estimated costs. In addition, the chapter outlines the scope of the environmental and social impact assessment, and the approach and methodology in the preparation of the report.

Chapter Two gives an overview of the Agriculture Sector in South Sudan whereas **Chapter Three** provides an overview of the relevant policies and laws in place for support and regulation of the EFCRP including the relevant World Bank environmental and social safeguards. **Chapter Four** gives a description of the project activities and implementation approach being used by the implementing agencies.

Chapter Five outlines the baseline environmental and social conditions in the project sites whereas **Chapter Six** outlines the key findings during the consultative process.

Chapter Seven presents an overview of the pest management strategies and approaches being used in South Sudan whereas **Chapter Eight** presents the process used in identification and assessment of the environmental and social impacts of the EFCRP.

Chapter Nine outlines the environmental and social monitoring and management plan for the impacts, for integration in the EFCRP activities. The plan includes responsible authorities for collaboration in the implementation of the mitigation measures. The chapter includes recommendations of alternative options in the implementation of some

project activities in order to address some impacts. It also includes the plan for monitoring the implementation of the environmental management activities.

Chapter Ten outlines the summary of the ESA study for the EFCRP.

Chapter Eleven provides the conclusions and main recommendations for consideration in the implementation of the project activities.

2. AN OVERVIEW OF THE AGRICULTURE SECTOR IN SOUTH SUDAN

2.1 Background

Southern Sudan covers an area of about 640,000 square kilometres and includes stretches of tropical and equatorial forests, wetlands (including the Sudd swamps), savannah and mountains. The high agriculture potential Greenbelt is in the southern states of Western Equatoria, Central Equatoria, and Eastern Equatoria. South Sudan is entirely within the Nile River basin and shares borders with five countries (Ethiopia, Kenya, Uganda, Central African Republic, and Democratic Republic of the Congo). South Sudan is culturally, geographically and religiously diverse and well endowed with natural resources, including water, wildlife, forest, oil and minerals. However, since the independence of Sudan in 1956, South Sudan has been a battleground for two civil wars (1955-1972, 1983-2005) that resulted in egregious suffering, loss of life and opportunities, widespread poverty, greatly diminished capacity and food insecurity.

The level of poverty is extremely high and South Sudan consistently ranks among the lowest countries in the world in terms of most standard development indicators. Economic livelihoods are largely dependent upon subsistence farming and pastoralism. Public services are weak, leaving people in rural areas isolated in terms of access to basic services.

The overall situation in South Sudan is characterized by a fragile peace, an almost complete lack of infrastructure and basic services, a depressed economy, and nascent governance and rule of law structures with significant and urgent capacity-building needs. Translating the Comprehensive Peace Agreement (CPA) into actions and programs that will facilitate sustainable post-conflict recovery, governance and delivery of services is and will be an immense challenge to the Republic of South Sudan and its development partners. Conditions are improving as RSS and donors move ahead to implement a range of programs to address these challenges.

A USAID Assessment of its Economic Growth portfolio in September 2007 noted the major constraints in South Sudan to be:

- Uncertainty about peace or a resumption of war
- Limited government capacity, weak business environment and rampant corruption
- Minimal infrastructure (e.g., roads, water, electricity, ICT)
- Weak markets and non-existent market information systems
- Informal regional and internal trade linkages
- Unclear land tenure and demarcation

- Weak or non-existent capacity to provide services to develop agriculture and off-farm opportunities (e.g., extension services, agricultural research)
- High level of food insecurity
- Many returnees with few or no assets

Agriculture in South Sudan constitutes about one-third of Gross Domestic Product (down from 42% in 2000). Currently approximately 98% of government revenues come from oil, over half of which is paid for government salaries, leaving few resources for development activities, particularly at the state, county, payam and boma levels. Profit margins for farmers are particularly squeezed by the appreciation of the Sudanese pound, in addition to the adverse effects of supply-side bottlenecks. Given that the agricultural sector employs 67% of the population, mainly in the form of small-scale subsistence farmers, the declining competitiveness of the sector is a major concern for prospects for sustainable growth.

A quick review of markets in major urban centres indicates that most agricultural commodities come from Uganda and, to a lesser extent, Kenya and the Democratic Republic of Congo (DRC). This has created a situation where trade flows are one way – into South Sudan. The high prices (and high demand) in South Sudan for agricultural commodities have resulted in price increases in Kampala. In order for South Sudan to be competitive in the region, significant improvements have to be made in increasing productivity, reducing post-harvest losses and reducing transaction costs, particularly transport.

2.2 Agricultural systems in South Sudan

Cultivated area in South Sudan has historically ranged between a minimum of one percent and a maximum of two percent of the total area (i.e. 650,000 – 1,300,000 ha). According to FAO-WFP (Crop and Food Supply Assessment Mission for Southern Sudan-CFSAM 2009), about 1 million ha were put under cultivation in 2008, and increase from 2007 levels likely due to increasing numbers of returnees. Harvest of the “traditional” (non-irrigated) sector for 2008 was estimated to be 1.25 million tons of cereal crops. Sorghum is the main cereal, followed by millet and maize, with an average yield of 1.01 tons/ha (but ranging from 0.75 tons/ha in Bahr el Ghazal to 1.5 tons/ha in Yambio). These figures are for the traditional (non-irrigated) sector. Average yields for Africa range from 1.04 to 1.14 tons/ha.

The 2009 CFSAM report provided a theoretical surplus of 47,000 tons, but quickly noted that “the surplus is in reality a theoretical construct as the current road infrastructure and marketing network preclude meaningful movement of grains from the myriad of small hand-cultivated, household farms in surplus areas in the south to most of the deficits

areas located mainly in the north.” There is some grain that is held at the homestead, mostly the less perishable crops.

Agricultural potential in South Sudan is high with about 90% of its total area considered suitable for agriculture, 50% of which is prime agricultural land. Soil and climate conditions allow for a wide variety of food and cash crops. South Sudan’s agricultural production is principally based on small, hand-cultivated household units belonging to larger family aggregations. Regarding cereals, in most small-holder systems farmers grow a wide range of sorghum landraces, with minor crops of maize, bulrush millet, finger millet and upland rice according to location. Other crops grown include groundnuts, which make a significant contribution to the household food security replacing sorghum as the main staple in poorer sorghum-growing years when the rains begin later than usual; and providing a regular staple and cash crop in the higher localities with sandier soils. Cowpeas, beans, sesame, pumpkins and tobacco add to the biodiversity of the northern farming areas of South Sudan.

Crop production cultivation is almost exclusively by manual means with rudimentary basic tools and the area of land cultivated, which is also related to average allocated land ranging from 1 to 4 feddans (0.4 to 1.7 hectares), is determined by family labour availability (principally women); and by the minimum acreage required for assurance of basic household food supply. Cropping areas are typically cultivated under a shifting regime for two to three years or until yields prove to be in considerable decline, at which stage the land is fallowed and a new arable area is cleared, the vegetation burnt and cultivation commenced. In some cases, the move to new land involves the movement also of the family home; in others, a permanent home location is maintained and only the cropping plots rotated.

The standard practice is for crops to be grown in mixed and/or sequential plantings. The main cereal crops, sorghum and millet, are usually grown with sesame; and root crops, principally cassava, is often inter-planted with groundnuts, maize and pumpkins or other vegetables. The inter-crops may be planted to coincide with weeding of the main crops, or following on from an early harvest. Mixed cropping has advantages of complementary growth between crops, spreading or mitigation of risks, including those of weather and pests and diseases, labour saving and better ground cover, hence soil conservation. However, it can also entail considerable competition and less than optimal plant spacing, which can reduce yields and overall productivity.

2.3 Agricultural Contribution to Household Food Requirements

In the south and central areas, although groundnuts and the other crops are also grown in quantity, cassava is the most important contributor to the household food economy providing at least half of the carbohydrate ration. Minor crops of sweet potatoes, yams,

coffee, mangoes, and Paw paw are also grown for home and some localized commercial use. In average figures, Southern Sudan has produced about 90% of its cereal needs (CFSAM, 2007), which range from 60 to 120 kg per capita per annum, varying according to the availability and access to animal products, cassava, groundnuts and wild foods.

According to respondents in the WFP-FAO-MAF (2006) assessment, households obtained most of their food from: own production (53%); markets (32); barter (5%); gifts (4%); and borrowing (3%). Food aid as a source of food contributes less than 1%. Labour exchange and hunting/fishing/collecting wild foods contribute 1% each. As the economy improves and more employment opportunities are created, labour exchange will be replaced by wage labour and trading in barter will be replaced by money transactions.

2.4 Rural Incomes

Sources of household income in South Sudan are not highly diversified as most income is from farm related activities. However, within the farm sector itself, the income sources are diverse. High diversity of income sources implies reduced exposure to risk. (WFP-FAO-MAF 2006). In terms of household expenditures, households spent approximately 22% of their incomes on staple and non-staple food purchases. High dependency on staple food purchase carries high risk of market shocks especially for the poor households. Social events, shelter and household assets take 15% each of the expenditures. Roughly 13% was spent on clothing. The remaining 20% was spent on social services like health (11%) and education (9%).

2.5 Challenges Facing Agricultural Development

According to an IFAD agricultural project design document, the major constraints to development of the agricultural sector are:

- reliance on outdated and low performing planting material and seed based on local cultivars or landraces of the principal crops, most of which have degenerated and for which there has been no opportunity in recent years for improvement;
- the rudimentary tools and methods of agricultural work and the virtual absence of improved production techniques; both hampering increase of cultivated area and crop intensification;
- the prevalence of pests and diseases and the scarcity of the inputs and technical information to manage them;
- climatic adversity (droughts and floods, or sometimes lack of the natural flooding of a river plain);
- weakness or almost total absence of agricultural support services and communications infrastructure to facilitate their provision;
- lack of capacity and training of public service providers, and of fishers, livestock keepers and farmers;

- an increasing competing demand for resources (land for farming and grazing and, water for domestic purposes, irrigation and cattle);
- the lack of marketing system and adequate markets, so that commercialization of farm produce is negligible and the whole rural economy is neither market-oriented, nor even monetized; and lack of marketing facilities and poor infrastructure in the livestock (health services, holding grounds, slaughter slabs, hygiene facilities) and fisheries (including landing points) sector; transport facilities; appropriate processing technologies (crop and fisheries);
- The results of conflict and insecurity in the disruption or destruction of people's way of life and means of livelihood.

3. REVIEW OF THE RELEVANT POLICIES, LAWS AND REGULATIONS

3.1 South Sudan's Environmental Regulations

Since attainment of Independence in July 2011, the Government of the Republic of South Sudan has adopted a new Republican Constitution, and a number of new policies and legislation, others still being drafted, with the ultimate aim of enhancing sustainable socio-economic development in the country. The policies and laws provide procedures to be followed in the planning and implementation of government activities in order to utilize resources and execute government programs to maximum benefit.

The following sections highlight some selected policies and laws, which are applicable in the planning and implementation of public sector projects, more especially those projects in the agricultural and forestry sector.

3.2 National Policies

3.2.1 Environment Policy of South Sudan, 2010 (Draft)

The policy provides a wide range of guidance in response to emerging environmental management challenges to enable decision makers and resource users make development choices that are economically efficient, socially equitable and environmentally friendly to ensure realization of sustainable development.

The goal of the South Sudan National Environment Policy is to ensure protection and conservation of the environment and sustainable management of renewable natural resources in order to meet the needs of its present population and future generations.

The objectives of the RSS environmental policy seek to:

- Improve livelihoods of South Sudanese through sustainable management of the environment and utilization of natural resources;
- Build capacity of the government at all levels of governance and other stakeholders for better management of the environment;
- Integrate environmental considerations into the development policies, plans, and programs at the community, government and private sector levels;
- Promote effective, widespread, and public participation in the conservation and management of the environment.

This policy is important to the EFCRP activities because it provides general guidelines and principles to be followed in environmental management during the operations of the project. Some of the specific areas of its relevance include waste management, protection

of aquatic and other sensitive habitats against both encroachment and pollution and encouraging sustainable harvesting regimes.

3.3 National legislation and regulations

3.3.1 The Transitional Constitution of 2011

The Transitional Constitution of the Republic of South Sudan of 2011 incorporates numerous provisions that have a bearing on the environment. Article 41 (1) provides that the people of South Sudan shall have a right to a clean and health environment (2) every person shall have the obligation to protect the environment for the benefit of present and future generations (3) Every person shall have the right to have the environment protected for the benefit of present and future generations, through reasonable legislative action and other measures that:

- a) prevent pollution and ecological degradation;
- b) promote conservation; and
- c) secure ecologically sustainable development and use of natural resources while promoting rational economic and social development so as to protect the bio-diversity of South Sudan.

Furthermore, Article 166 (6) expects local governments involve communities in decision making in the promotion of a safe and healthy environment.

3.3.2 The Environment Protection Bill, 2010 Cap 7 (Draft)

Section 32 of the Draft Environment Protection Bill, 2010 Cap 7 intends to introduce the requirement for Environmental Audits. An Environmental Audit, according to this Bill, is defined as the systematic, documented, periodic and objective evaluation of how well Environmental organisation, management and equipment are performing in conserving the Environment and its resources. The guiding principles for an Environmental Audit include:

- (1) The Owner of the Premises or the operator of a Project shall be responsible for carrying out an Environmental Audit of all activities that are likely to have a significant effect on the Environment, in consultation with the Lead Agency.
- (2) An Environmental Inspector may enter any land or Premises for the purpose of determining how far the activities carried out on that land or Premises conform to the statements made in the Environmental Impact Assessment in respect of that land or Premises.
- (3) The Owner of the Premises or the operator of a Project for which an Environmental Impact statement has been made shall keep records and make quarterly and annual reports to the Ministry describing how far the

project conforms in operation with the statements made in the Environmental Impact statement.

- (4) The Owner of Premises or the operator of a Project shall take all reasonable measures to mitigate any undesirable effects not contemplated in the Environmental Impact Statement and shall prepare and submit an Environmental audit report on those measures to the Ministry quarterly and annually or as the Authority may, in writing, may require.

3.3.3 Land Act, 2009

One of the key objectives of the Land Act is to promote a land management system to protect and preserve the environment and ecology for the sustainable development of South Sudan. It also provides for fair and prompt compensation to any person whose right of occupancy, ownership or recognized long standing occupancy of customary use of land is revoked or otherwise interfered with by the Government.

The Land Act reinforces government recognition of customary land tenure: 'Customary land rights including those held in common shall have equal force and effect in law with freehold or leasehold rights.' Community land can be allocated to investors as long as investment activity 'reflects an important interest for the community' and 'contributes economically and socially to the development of the local community'. It also requires that state authorities approve land acquisitions above 250 feddans (105 hectares) and create a regulated ceiling on land allocations. The Land Act requires government to consult local communities and consider their views in decisions about community land. The Land Act also gives pastoralists special protection: 'No person shall without permission ... carry out any activity on the communal grazing land which may prevent or restrict the residents of the traditional communities concerned from exercising their grazing rights'. Project proponents must also conduct environmental and social impact assessments (ESIAs) before undertaking any activity that might affect people or the environment.

3.4 An Overview of the World Bank Environmental requirements

The EFCRP triggered three of the World Bank's safeguard policies, namely, OP 4.01 Environmental Assessment, OP 4.09 Pest Management, under the World Bank's Operational Policy (OP 4.10, Indigenous Peoples); the World Bank Operational Policy (OP 4.36, Forests); and under the World Bank's Operational Policy (OP4.12 Involuntary Resettlement).

The World Bank's Environmental Assessment (EA) policy states *quote "The EA, takes into account the natural environment (air, water, and land); human health and safety; social aspects (involuntary resettlement, indigenous peoples, and cultural property); and transboundary and global environmental aspects. EA considers natural and social*

aspects in an integrated way. It also takes into account the variations in project and country conditions; the findings of country environmental studies; national environmental action plans; the country's overall policy framework, national legislation, and institutional capabilities related to the environment and social aspects; and obligations of the country, pertaining to project activities, under relevant international environmental treaties and agreements. "

Section 7 of the WB's Environmental Policy states *"Depending on the project, a range of instruments can be used to satisfy the Bank's EA requirement. Environmental impact assessment (EIA), regional or sectoral EA, environmental audit, hazard or risk assessment, and environmental management plan (EMP). EA applies one or more of these instruments or elements of them, as appropriate. "*

In terms of environmental screening, quote *"a proposed project is classified as **Category A** if it is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented."*

In view of the above, it is considered that the proposed EFCRP satisfies the definition of a Category B project which is defined as quote *"A proposed project is classified as Category B if its potential adverse environmental impacts on human populations or environmentally important areas-including wetlands, forests, grasslands, and other natural habitats-are less adverse than those of Category A projects. These **impacts are site-specific; few if any of them are irreversible; and in most cases mitigatory measures can be designed more readily than for Category A projects.** The scope of EA for a Category B project may vary from project to project, but it is narrower than that of Category A EA. Like Category A EA, it examines the project's potential negative and positive environmental impacts and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance. "*

The World Bank also requires a variable selection of follow up studies and reports depending upon the perceived environmental issues, their scale and impacts. Such studies can include an Environmental Impact Assessment, an Environmental Audit, a Hazard Risk Assessment or an Environmental Management Plan. In this case the Bank has required the preparation of an Environmental and Social Management Plan which is part of this report and an Environmental and Social Management Framework (ESMF). The latter is addressed in a separate report and will cover other agricultural projects and activities in MAF.

The EMP must include:

- (i) Mitigation;
- (ii) Monitoring, and;
- (iii) Institutional Measures

Particular attention is to be paid to:

- (i) Globally threatened species, sensitive habitats and protected areas especially in Yambio county and Morobo counties
- (ii) Provision of an Integrated Pest Management Framework (IPMF)

The Environmental and social requirements of the World Bank are addressed in this Environmental Assessment, and the Environmental Management Plan and the Environmental and Social Management Framework. The following sections review these applicable operational policies.

3.4.1 Environmental Assessment (Operational Policy, OP 4.01)

The objective of OP 4.01 is to ensure that Bank-financed projects are environmentally sound and sustainable, and that decision-making is improved through appropriate analysis of actions and of their likely environmental impacts. This policy is triggered if a project is likely to have potentially adverse environmental risks and impacts in its area of influence. Thus, the farming practices and construction of stores in various project sites could have environmental impacts of varying magnitude and extent.

3.4.2 Pest Management (Operational Policy, OP 4.09)

The objective of OP 4.09 is to promote the use of biological or environmental control methods and reduce reliance on synthetic chemicals and pesticides. In World Bank-financed operations, pest populations are normally controlled through Integrated Pest Management (IPM) approaches. In Bank-financed public health projects, the Bank supports controlling pests primarily through environmental methods. The policy further ensures that health and environmental hazards associated with pesticides are minimized.

3.4.3 Involuntary Resettlement (Operational Policy, OP 4.12)

The objective of OP 4.12 is to avoid or minimize involuntary resettlement, where feasible by exploring all viable alternative project sites and designs. Furthermore, it assists displaced persons in improving their former living standards. It encourages community participation in planning and implementing resettlement and seeks to provide assistance to the affected people, regardless of the legality of title of land. This policy is triggered not only if physical relocation occurs, but also by any loss of land resulting in relocation or loss of shelter; loss of assets or access to assets; loss of income sources or means of livelihood, whether or not the affected people must move to another location. The World Bank's safeguard policies are provided in Appendix IV.

3.4.4 Indigenous Peoples (Operational Policy, OP 4.10)

The World Bank policy on indigenous peoples, OP/BP 4.10, Indigenous Peoples, underscores the need to identify indigenous peoples, consult with them, ensure that they participate in, and benefit from Bank-funded operations in a culturally appropriate way - and that adverse impacts on them are avoided, or where not feasible, minimized or mitigated.

Indigenous Peoples as a term defines groups that are particularly vulnerable to exploitation and oppression by nation states, and as a result a special set of political rights in accordance with international law have been set forth by international organizations such as the United Nations, the International Labour Organization and the World Bank. Indigenous Peoples may be referred to in different countries by such terms as "indigenous ethnic minorities," "hill tribes," "minority nationalities," "scheduled tribes," or "tribal groups."

3.4.5 Forests (Operational Policy 4.36)

The Bank's current forests policy (Operational Policy/Bank Procedure 4.36) aims to reduce deforestation, enhance the environmental contribution of forested areas, promote afforestation, reduce poverty, and encourage economic development.

Combating deforestation and promoting sustainable forest conservation and management have been high on the international agenda for two decades. However, little has been achieved so far and the world's forests and forest dependent people continue to experience unacceptably high rates of forest loss and degradation. The Bank is therefore has finalised a revised approach to forestry issues, in recognition of the fact that forests play an increasingly important role in poverty alleviation, economic development, and for providing local as well as global environmental services.

The latest Forest Strategy suggests three equally important and interdependent pillars to guide future Bank involvement with forests:

- (i) Harnessing the potential of forests to reduce poverty,
- (ii) Integrating forests in sustainable economic development, and
- (iii) Protecting vital local and global environmental services and forest values.

EFCRP is supporting activities in areas that have tropical rainforests and are of high conservation value especially in Yambio and woodlands in Morobo and Raga Counties.

3.4.6 Natural habitats (Operational Policy 4.04)

This policy seeks to ensure that World Bank-supported infrastructure and other development projects take into account the conservation of biodiversity, as well as the

numerous environmental services and products which natural habitats provide to human society. The policy strictly limits the circumstances under which any Bank-supported project can damage natural habitats (land and water areas where most of the native plant and animal species are still present).

Specifically, the policy prohibits Bank support for projects which would lead to the significant loss or degradation of any Critical Natural Habitats, whose definition includes those natural habitats which are either:

- legally protected,
- officially proposed for protection, or
- unprotected but of known high conservation value.

In other (non-critical) natural habitats, World Bank supported projects can cause significant loss or degradation only when there are no feasible alternatives to achieve the project's substantial overall net benefits; and acceptable mitigation measures, such as compensatory protected areas, are included within the project. Some areas in Yambio County, particularly in Bangasu Payam contain forests with high conservation value due to the presence of globally threatened species (IUCN, 2012) including *Khaya senegalensis* (Mahogany) and *Milicia excelsa*. In Morobo county, *Vitellaria paradoxa* (lulu) is common and tends to grow gregariously. However, the tree species is being cut for charcoal burning, firewood and clearing land for agricultural activities.

3.5 Other International Policies and Conventions

South Sudan is in the process of ratifying a number of internationally acceptable policies, conventions, treaties and protocols in order to augment the national policies and laws. These include the conventions and protocols listed below:

- The convention on biological diversity.
- The Ramsar convention on wetlands of significant importance.
- The convention on conservation of migratory species of wild animals.
- The convention on protection of world and natural heritage.
- Convention on desertification and drought.
- African convention on conservation of nature and natural resources.

4. DESCRIPTION OF THE PROJECT ACTIVITIES AND IMPLEMENTATION APPROACH

4.1 Background

The Emergency Food Crisis Response Project is an emergency response, formulated in the context of the RSS' overall strategy for livelihood security that underpins increase in access to food and nutrition to the population. The EFCRP covers six Counties, namely Morobo, Yambio, Tonj North, Leer, Panyikang and Raga. Others areas have been proposed for inclusion and these include Pochalla, Maban and Tali – Terekeka. It is a US\$7.2 million project funded by the Global Food Price Response Trust Fund (GFPR) of the World Bank. It is already working with some 186,000 farmers and scheduled to close on December 31, 2012. The project supports three broad activities, namely, agricultural productivity, support to safety nets and project management. Currently, the implementation of the project has been outsourced to four international NGOs including NPA in Leer and Panyikanga, ACTED in Raga, AAH-I in Morobo and Yambio and World Vision in Tonj North.

4.2 EFCRP Description and Objective

The EFCRP Development Objective is to support adoption of improved technologies for food production by eligible beneficiaries, increase storage capacity for staples, and provide cash or food to eligible people participating in public works programs in six counties in South Sudan. EFCRP support includes: (i) provision of inputs and technology packages; (ii) bringing presently idle land back into production; (iii) training on reduction of post harvest loss; (iv) construction of food storage capacity at the household and community levels; and (iv) provision of cash or food for work to eligible individuals, under three main components:

- a) ***Support to Agricultural Productivity:*** This component aims at reducing vulnerability to food price escalation through increased production and improved post harvest handling of key staples. The component also provides inputs and tools to farmers working as cooperatives and/or groups so that they can expand their area farmed. The component provides grants for construction of low-cost food banks and granaries at the household and community levels.
- b) ***Strengthening Community Safety Nets:*** The objective of this component is to increase the ability of targeted food insecure households to buy food by providing cash-for-work or obtain it directly through food for work. The public works undertaken enhance agricultural productivity or reduce post-harvest losses.
- c) ***Support to Project Implementation Arrangements:*** This component finances the administrative costs of implementing NGOs, project operational costs and the strengthening of public institutions for coordination at the different levels. Support under this component also defrays costs associated with monitoring and evaluation.

4.3 Project Administration and Management Strategy

The project is designed to work within the institutional arrangements of the MAF with a Project Implementation Unit (PIU) to facilitate implementation. An Internal Coordination Committee (ICC), which comprises of the technical staff in the ministry is chaired by the Undersecretaries and is responsible for the implementation of the project. All implementing agencies are members of the ICC. Similar structures exist with the same functions at the State and the County levels. The project uses a systems approach, guided by Implementation and Operational Manuals that define the different roles and responsibilities of the different actors.

4.3.1 Project Management Unit

The project Implementation unit (PIU) is responsible for strategic planning and facilitating implementation of the project. Among others, the project implementation unit is responsible for day to day project administration, supervision of the project activities, procurement of goods and services for implementation of the activities, coordination of multi-sectoral training and coordination of internal and external evaluations and audits. The project management unit has highly motivated staff in order to establish an effective and responsive project management structure. Key staff will be the following:

- One Project Focal Person
- One Chief Technical Advisor, and One Program Assistant
- One Financial Specialist, and One Assistant Financial Controller
- One Procurement Specialist and two Assistant Procurement Officers
- One Environmental and Social Management Specialist
- One Project Support Officer
- One Office Assistant and Three Drivers
- Three Messengers and Three Security guards

The staff of the project implementation unit is on short-term performance related contract work conditions in order to enhance high level of work productivity throughout the project period.

5. ENVIRONMENTAL BASELINE CONDITIONS

This chapter describes the biophysical, socio-economic and cultural conditions in South Sudan with more specific information, where available, in the States and Counties where the EFCRP is operating. Data and Information presented here is primary data (i.e. from field observations and interviews). Other information has also been sourced from various documents, which were used as reference during the Environmental and Social Impact Assessment (ESA) Study.

5.1 South Sudan: General overview

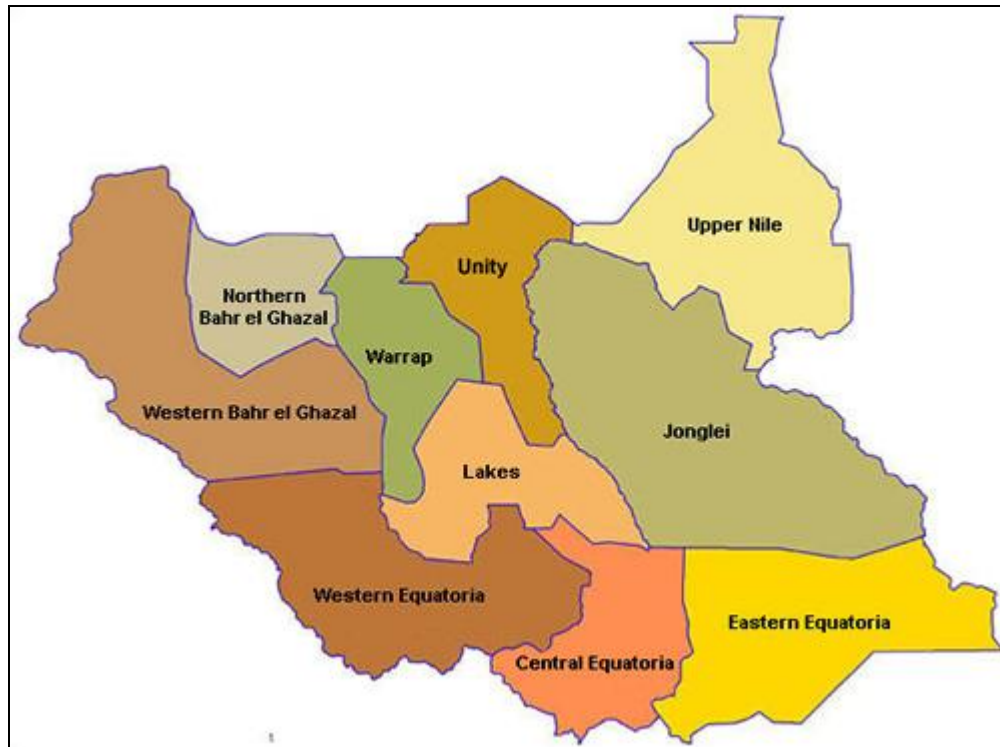
South Sudan, officially called the Republic of South Sudan, is the world's newest country. It is a landlocked country located to the south of the country of Sudan. South Sudan became an independent nation on July 9, 2011 after a January 2011 referendum regarding its secession from Sudan passed with around 99% of voters in favour of the split. South Sudan mainly voted to secede from Sudan because of cultural and religious differences and a decades-long civil war. It has an estimated population of 8.2 m people and an area of 619,745 sq. km.

Since South Sudan is located near the Equator in the tropics, much of its landscape consists of tropical rainforest and its protected national parks are home to a plethora of migrating wildlife. South Sudan also has extensive swamp and grassland regions. The White Nile, a main tributary of the Nile River, also passes through the country. The highest point in South Sudan is Kinyeti at 10,456 feet (3,187 m) and it is located on its far southern border with Uganda.

The climate of South Sudan varies but it is mainly tropical. Juba, the capital and largest city in South Sudan, has average yearly high temperature of 94.1°F (34.5°C) and an average yearly low temperature of 70.9°F (21.6°C). The most rainfall in South Sudan is between the months of April and October and the average yearly total for rainfall is 37.54 inches (953.7 mm).

5.2 EFCRP operations areas

The Project activities and operations were restricted to six states in South Sudan, namely, Western Bahr el Ghazal, Central and Western Equatoria, Warrap, Unity and Upper Nile. These are mainly located in the South and East of Southern Sudan except Warrap and Unity State which occupies a northern central position. Below is a brief overview about each State in which the EFCRP operated and Figure 2.1 shows the locations of the project States in South Sudan.



Source: <http://www.goss-brussels.com/goss.php/map.goss>, accessed 06/06/2011

Figure 5.1: Locations of the various States in South Sudan

Administratively, Southern Sudan is sub-divided in to 10 States; namely, Central Equatoria, Eastern Equatoria, Jonglei, Unity, Upper Nile, Western Equatoria, Lakes, N. Bahr El Ghazal, Warrap, and Western Bahr El Ghazal States. Below is a brief overview of the states in which the project is operating.

5.2.1 Unity State

Unity State is one of the ten states of South Sudan. Unity state is in the Greater Upper Nile region. It has an area of 35,956 square kilometres (13,883 sq mi). Unity is inhabited predominantly by two ethnic groups, the Nuer (majority) and the Dinka (minority).

The capital of Unity state is Bentiu. Prior to an administrative reorganization in 1994, Unity was part of a much larger province of Upper Nile, and the state is still sometimes called Western Upper Nile. The counties of Unity are: Mayom, Rubkona, Panrieng, Leer, Guit, Koch, Abiemnom, Mayendit, and Payinjiar. In Unity State, the EFCRP is being implemented in Leer county. The larger towns are Bentiu, Mayom, Leer and Adok.

Agriculture is the state's primary economic activity. The people are nomadic agro-pastoralists who engage in both agriculture and rearing of livestock, especially cattle. Farming is conducted during the rainy season although some cultivation also occurs

during the drier season. Vegetables are not widely cultivated as most farmers are rural rather than urban, and therefore lack access to markets for their produce. Some NGOs are introducing farmers to the practice of cultivation for supplying markets.

The EFCRP is being implemented in Leer county. Leer is in Dok Nuer territory. It is located in Block 5A, an important oil-producing area in the north of South Sudan. Leer is a 1.5 hour flight or a two day bus drive from Juba, the capital of South Sudan. The roads are not usable in the rainy season, when the only means of travel is by boat on the River Nile. Leer County has been described as "a sprawling, flat, marshland littered with oil fields".

The low-lying country around Leer is subject to flooding in the later part of the rainy season, so crops must be planted early. Alternative sources of food if the floods arrive too soon include hunting, fishing and collection of edible wild plants.

5.2.2 Central Equatoria State

Central Equatoria is one of the ten states of South Sudan. With an area of 22,956 km², it is the smallest South Sudanese State. It was formerly named Bahr al Jabal after a tributary of the White Nile that flows through the state. It was renamed Central Equatoria in 2005 under the government of Southern Sudan. The state capital of Juba is also the national capital of South Sudan. Counties that comprise the Central Equatoria State include Juba County, Lainya County, Morobo, Terekeka County, Yei County and Kajo Keji County.

Important towns of Central Equatoria are Juba, Kajo Keji, Liria, Mangalla, Rokon, Tali, Terekeka, Yei, Gemaiza, Tombek, Tindilo, Muni and Rejong. The major border crossing to the Democratic Republic of the Congo is at Dimo.

Major tribes include Bari people, Pojulu, Kakwa, Kaliko, Kuku, Lugbara, Nyangwara, Makaraka and Lulubo. Minor tribes include the Nyepo in Northern Kajo-Keji County and Lokoya along Nimule Road.

The EFCRP is being implemented in Morobo county. In Morobo County, the average number of males and females per household was the same (i.e. 3.8 per household) with an average of 7.8 persons per household. About 80% to 90% of the households were food insecure in 2007 and 2008. The lower figure of 67.3% in 2009 is attributed to enforcing (by the County administration) of the policy of increased crop production at the household level and no dependency on food relief. The County Food Security Committee (FSC), chaired by the County Executive Commissioner, lays emphasis on enforcing this policy. The major factors that influence food accessibility in Morobo include lack of funds to buy food, poor road network and poor market facilities. In Morobo County, the

commonly grown crops are maize, cassava, sorghum and groundnuts. Rice and other crops are the least grown. The average acreage of crops grown ranges from 0.8 to 1.0 acre per household and the most common form of plant preparation for cultivation is by use of hand tools including hoes and machetes. Tractor and ox-ploughing are rarely practiced. Some of the key factors that affect crop production include high incidences of pests and irregular rainfall patterns. Other factors include poor market facilities and low soil fertility.

The vegetation in Morobo is mainly woodland dominated by *Daniellia oliveri*, *Isoberlinia doka*, *Burkea africana*, *Terminalia avicinnioides* and *Lannea kerstingii*.



Figure 5.2: Typical woodland vegetation in Morobo county recovering from a fire

Vitallaria paradoxa (Lulu) is one of the important globally threatened species (IUCN, 2012) that occurs in the county. It is being cut for charcoal burning and firewood. It is important for its Shea nut oil that is highly medicinal.



Figure 5.3: Vitallaria paradoxa (Lulu) tree that is quite common in Morobo county

5.2.3 Western Equatoria State

Western Equatoria is one of the ten states of South Sudan. It has an area of 79,319 km². Its main town is Yambio. The state is divided into counties, each headed by a County Commissioner. There are a total of ten counties in Western Equatoria and these include Yambio, Nzara, Ibba, Ezo, Maridi East, Tambora, Mundri West, Mvolo, Najero and Mundri County. The economy of Western Equatoria is largely agricultural, with high quality timber being one of its most important products. Western Equatoria is home of the Azande people, the third largest nationality in South Sudan. The EFCRP is being implemented in Yambio county, particularly Yambio, Bangasu and Ri Lang Payams.

In Yambio County the average number of males per household is just slightly higher than average number of females (4.0 for males and 3.9 for females) and the average number of people per household is 7.9. The invasion of Yambio by the Lord's Resistance Army (LRA) from Uganda in two highly productive payams of Gangura and part of Bangasu contributed significantly to the food insecurity. This resulted in farmers moving away and staying in Internally Displaced Persons' (IDPs) camps, making them dependent on food relief. The commonly grown crops in Yambio County are groundnuts and maize, while cassava is moderately grown. The average acreage of crops grown ranges from 0.8 to 1.4 acres per household. People are also involved in the project safety nets program specifically improving roads by themselves.

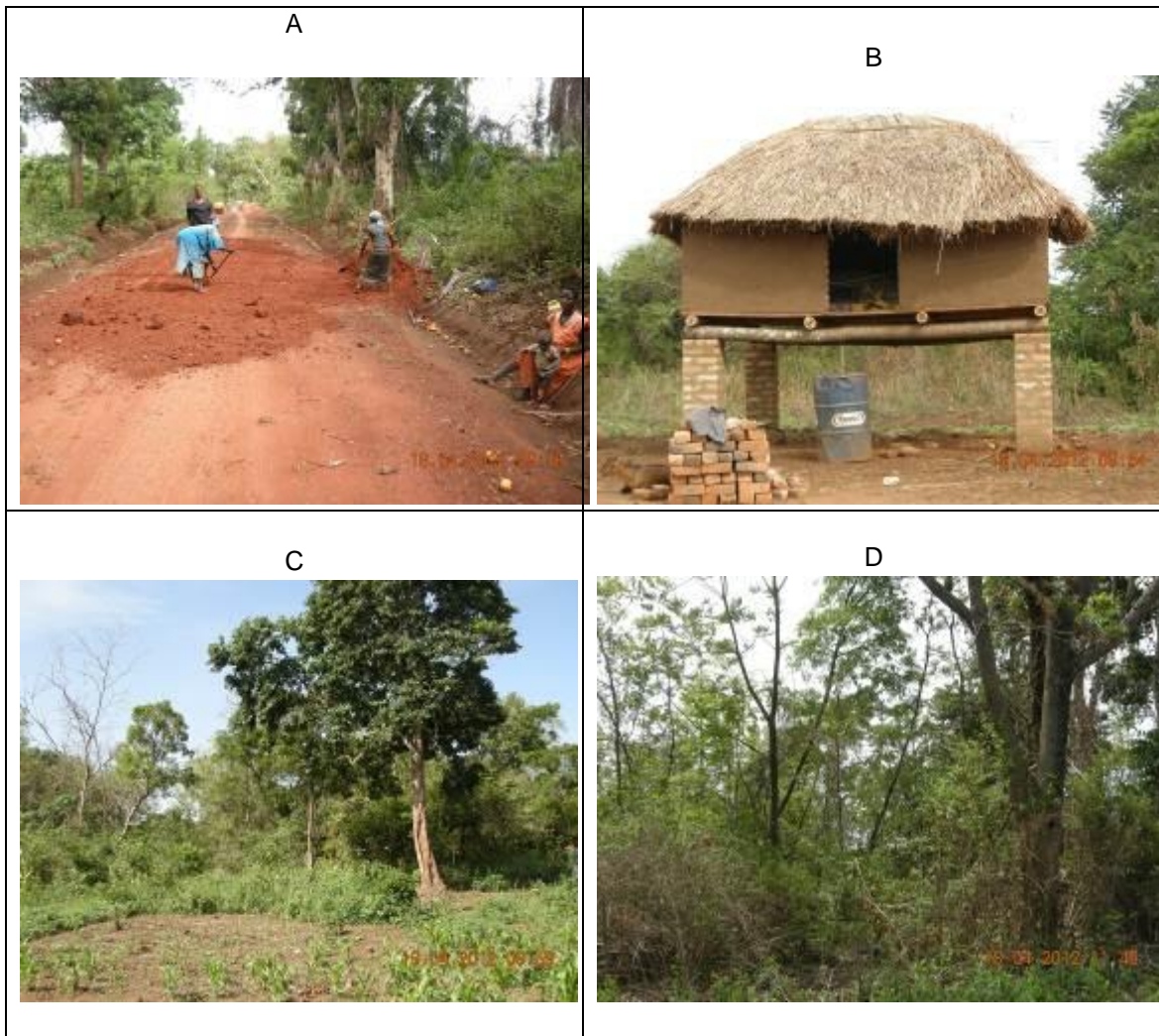


Figure 5.4: A: Women fixing a road under the safety nets program, B: a granary in one of the homes visited C: *Milicia excelsa*, (on IUCN redlist) tree preserved in a home garden D: typical natural vegetation in Yambio

The main vegetation includes young tropical rainforest with relics of moist woodland savanna. Dominant species include *Celtis zenkeri*, *Chrysophyllum albidum*, *Mildbraediendron excelsum* and *Holoptelea grandis*, *Eleis guinense*, *Phoenix reclinata*, *Anogeissus*, *Khaya sp. (Mahogany)* and *Milicia excelsa*. The latter two species are on the IUCN redlist and are important as sources of high quality timber. Other common species are *Terminalia glaucescens*, *Albizia zygia*, *Combretum binderianum*, *Bridelia scleroneuroides*, and *Dombeya quinqueseta*.

5.2.4 Upper Nile State

Upper Nile is one of the ten states of South Sudan. The White Nile flows through the state, giving it its name. The state also shares a similar name with the region of Greater Upper Nile, of which it is part along with the states of Unity and Jonglei. It has an area of 77,773 km². Malakal is the capital of the state. The town of Kodok, the location of the Fashoda incident that ended the "Scramble for Africa", is located here.

Upper Nile is subdivided into 12 counties. These include Baliet, Fashoda, Longechuk, Maban, Malakal, Manyo, Maiwut, Melut, Nasir, Panyikang, Renk and Ulang County. The ERCRP is being implemented in Panyikang county.

5.2.5 Warrap State

Warrap, sometimes spelled Warab, is one of the ten states of South Sudan. The state is located in the Bahr el Ghazal region. It is bordered by the disputed region of Abyei to the north, by Unity State in Greater Upper Nile Region to the east, by Lakes State to the south, by Western Equatoria State in Equatoria Region to the south west. The states of Western Bahr el Ghazal and Northern Bahr el Ghazal lie to the west.

Warrap State has an area of 31,027 km². Kuajok is the main town of Warrap state. The counties that constitute Warrap State include Gogrial East County, Gogrial West, Tonj South County, Tonj North County, Tonj East County and Twic county. The project is being implemented in Tonj North county by World Vision.

The state is home to the Twic, Jur Chol, Bongo and Rek subtribes of Nilotic ethnicity. The Twic and Rek are Dinka tribes. Other towns in the state are Gogrial, Kuajok, Tonj, Thiet, Turalei, Akuon, and Panliet.

The main religions in Warrap State are Catholicism, Evangelical Christianity, Protestantism and other forms of Christianity. A sizable proportion of the population practices animism.

5.2.6 Western Bahr el Ghazal State

Western Bahr el Ghazal is one of the ten states of South Sudan. It has an area of 93,900 km² (36,255 sq mi) and is the least populous state in South Sudan. It is part of the Bahr el Ghazal region. Its main town is Wau. The state shares international borders with Sudan to the north and the Central African Republic to the west.

Local ethnic groups include the Balanda Boor, Balanda Bviri (Balanda Viri, Balanda Bagari), the Jur Luo, Ndogo, Kresh, Bai, Baggara Arabs, and many others. Despite the common element "Balanda" in their names, the first two ethnicities are not related.

This state, and Raga County in particular, is the part of South Sudan that was most affected by the slave trade conducted by nearby Muslim sultanates from the 18th century on and by Mameluk Egypt in the second half of the 19th century, and Raga County is the only part of South Sudan with a significant number of Muslims and Arabs. Traditionally, the northern part of Raga County falls within the "Baggara belt", the 1400 kilometre wide section of the central Sahel in which cattle herding Arabic speaking tribes conduct seasonal nomadic migrations. When the slave trade soared in the 1860's and 1870's, the region's population was decimated, plunging by 75 percent to about 400,000.

Depopulation was due to several factors all related to wars that were provoked by the upsurge in slaving promoted by Egypt, factors including: actual capture of inhabitants, emigration of refugees, and epidemics. The population according to the 2008 census is lower still. This may be partly due to the second Sudanese civil war, 1983-1999, which devastated most of South Sudan, exacting a toll of two million dead civilians and hundreds of thousands of refugees.

Western Bahr el Ghazal like other ten states of South Sudan is subdivided into counties. These include Jur River County, Raga County, and Wau County. The ERCRP is being implemented in Raga county.

Wau is the capital city of the state. Raga is located in the western part of the state. Acongeong is located northeast of Wau. Deim Zubeir is located in the central part of the state.

5.3 Climate

5.3.1 Rainfall, Humidity and Temperature

Although South Sudan lies within the tropics, the climate ranges from arid in the north to tropical wet-and-dry in the far southwest. Temperatures do not vary greatly with the season at any location; the most significant climatic variables are rainfall and the length of the dry season. Variations in the length of the dry season depend on which of two air flows predominates, dry northeasterly winds from the Arabian Peninsula or moist southwesterly winds from the Congo River basin.

From January to March, the country is under the influence of the dry northeasterlies. By early April, the moist southwesterlies have reached southern Sudan, bringing heavy rains and thunderstorms. In September the dry northeasterlies begin to strengthen and to push south and by the end of December they cover the entire country. Yambio, close to the border with Zaire, has a nine-month rainy season (April-December) and receives an average of 1,142 millimeters of rain each year.

Temperatures are highest at the end of the dry season when cloudless skies and dry air allow them to soar. The far south, however, with only a short dry season, has uniformly high temperatures throughout the year.

5.4 Geology

According to Buursink (1971), the following represents an elementary synthesis of the geology of these areas grouped per geologic period:

Precambrian

The largest proportion of the so called Basement Complex in Sudan and South Sudan in general and Ethiopia consists of folded metamorphic rocks which are intruded by foliated and non-foliated metamorphic rocks. The rocks of the Sabaloka series mainly consist of rhyolites and trachytes, and frequently occur in close association with, younger or contemporaneous sodic granites or syenites, which may form ring structures, as at Sabaloka on the Nile (Delany, 1955). The time stratigraphic position of the Basement Complex is not fully established as yet. Delany (1960) considers the Basement Complex of Sudan as Precambrian.

Paleozoic

There are no known Paleozoic rocks overlying the basement in South Sudan. Throughout the Paleozoic and early Mesozoic the rocks of the Basement Complex were exposed to sub-aerial denudation, the resulting topography was accidented, present-day mountain forms partially reflect this 'Tassilian' relief (Delany, 1960).

Mesozoic

The 'Continental Intercalaire' in South Sudan is represented by continental Lower Cretaceous deposits with its characteristic flora and fauna (Furon and Lombard, 1964). At present the tendency exists to correlate the Continental Intercalaire with the 'Nubian Sandstones'. The Nubian formation consists of yellow and brown-bedded sandstones with intercalations of mudstones, varying in thickness from 50 to 600 meters. Both the Continental Intercalaire and the subhorizontal Nubian Sandstones lie with marked unconformity on the Basement rocks (Delany, 1960).

5.5 Soils

The country's soils can be divided geographically into two categories. These are the clay soils of the central region, and the laterite soils of the south. Less extensive and widely separated, but of major economic importance, is a third group consisting of alluvial soils found along the lower reaches of the White Nile and Blue Nile rivers.

Agriculturally, the most important soils are the clays in central South. Known as cracking soils because of the practice of allowing them to dry out and crack during the dry months to restore their permeability, they are used for irrigated cultivation. East of the Blue Nile, large areas are used for mechanized rainfed crops. West of the White Nile, these soils are used by traditional cultivators to grow sorghum, sesame, peanuts, and cotton. The southern part of the clay soil zone lies in the broad floodplain of the upper reaches of the White Nile and its tributaries, covering most of Aali an Nil and upper Bahr al Ghazal states. Subject to heavy rainfall during the rainy season, the floodplain proper is inundated for four to six months--a large swampy area, As Sudd, is permanently flooded--and adjacent areas are flooded for one or two months. In general this area is poorly suited to crop production, but the grasses it supports during dry periods are used for grazing.

The laterite soils of the south cover most of western Al Istiwai and Bahr al Ghazal states. They underlie the extensive moist woodlands found in these states. Crop production is scattered, and the soils, where cultivated, lose fertility relatively quickly; even the richer soils are usually returned to bush fallow within five years.

5.6 Hydrology

South Sudan is drained by the Nile and its main tributary, the White Nile (Al Bahr al Abyad). The longest river in the world, the Nile flows for 6,737 kilometres from its farthest headwaters in central Africa to the Mediterranean. The importance of the Nile has been recognized since biblical times; for centuries the river has been a lifeline for Sudan.

The White Nile flows north from central Africa, draining Lake Victoria and the highland regions of Uganda, Rwanda, and Burundi. At Bor, the great swamp of the Nile, As Sudd begins. The river has no well-defined channel here; the water flows slowly through a labyrinth of small spillways and lakes choked with papyrus and reeds.

The White Nile has several substantial tributaries that drain southern Sudan. In the southwest, the Bahr al Ghazal drains a basin larger in area than France. Although the drainage area is extensive, evaporation takes most of the water from the slow moving

streams in this region, and the discharge of the Bahr al Ghazal into the White Nile is minimal. In southeast Sudan, the Sobat River drains an area of western Ethiopia and the hills near the Sudan-Uganda border. The Sobat's discharge is considerable; at its confluence with the White Nile just south of Malakal, the Sobat accounts for half the White Nile's water.

5.7 Biological Resources

5.7.1 Ecological zones

According to Harrison and Jackson (1958) classification, South Sudan is classified as savannah woodland (high and low rainfall), flood region, montane zone, and semi-desert. Savannah woodland is sub-divided into low rainfall savannah and high rainfall savannah. Low rainfall savannah occurs mainly in the north and is only represented in the south by a small area in the northern parts of Upper Nile State. High rainfall savannah covers most of Southern Sudan with the exception of the floodplain around the Nile and the montane region of Didinga and Imatong Mountains. High rainfall savannah woodland is further divided into two sub-zones, savannah woodland and savannah woodland recently derived from rainforest.

5.7.2 Biodiversity

Data for Southern Sudan is limited. Due to the conflict, little natural resources data has been collected in the last 25 years. Besides limited data on the larger, more charismatic animals, data is also deficient on plant diversity, avifauna, reptiles, amphibians, and fisheries. For example, Itto (2000) states that there is inadequate information on Southern Sudan's fisheries resources to make rational policy decisions and to set regulations on resource exploitation.

Much of Southern Sudan's wildlife is found outside of protected areas. According to Salter (2006), a number of Southern Sudan's wildlife populations (notably White-eared kob and Tiang, but including several other species) undertake seasonal migrations outside protected areas. Even if adequately protected in national parks and game reserves (which is currently not the case), these species are vulnerable to hunting pressure and habitat loss when travelling outside protected areas (Figure 2.2).



Figure 5.5: The Giant edible rat caught in the savannah woodlands

5.7.4 Endangered, Rare and Endemic species

The following list (<http://www.animalinfo.org/country/sudan.htm>) includes all mammals which occur in Sudan (including South Sudan) and are rated as Critically Endangered (CR), Endangered (EN) or Vulnerable (VU) in the 2012 IUCN Red List of Threatened Animals.

Table 5.1: List of threatened species

Critically Endangered	Endangered	Vulnerable
Addax (<i>Addax nasomaculatus</i>)	Chimpazee (<i>Pan troglodytes</i>)	African elephant (<i>Loxodonta africana</i>)
African wild ass (<i>Equus africanus</i>)	Dama gazelle (<i>Gazella dama</i>)	Barbary sheep (<i>Ammotragus lervia</i>)
Burton's gerbil (<i>Gerbillus burtoni</i>)- endemic to Sudan	Giant African Water Shrew (<i>Potamogale velox</i>)	Cheetah (<i>Acinonyx jubatus</i>)
Four-spotted gerbil (<i>Gerbillus quadrimaculatus</i>) - endemic to Sudan	Grevy's zebra (<i>Equus grevyi</i>)	Desert pipistrelle - Bat (<i>Pipistellus ariel</i>)
Lowe's gerbil (<i>Gerbillus loweri</i>) - endemic to Sudan	Nubian ibex (<i>Capa nubiana</i>)	Dorcas gazelle (<i>Gazella dorcas</i>)
Principal Gerbil (<i>Gerbillus principulus</i>) - endemic to	Slender-horned gazelle (<i>Gazella</i>	Dugong (<i>Gugong dugon</i>)

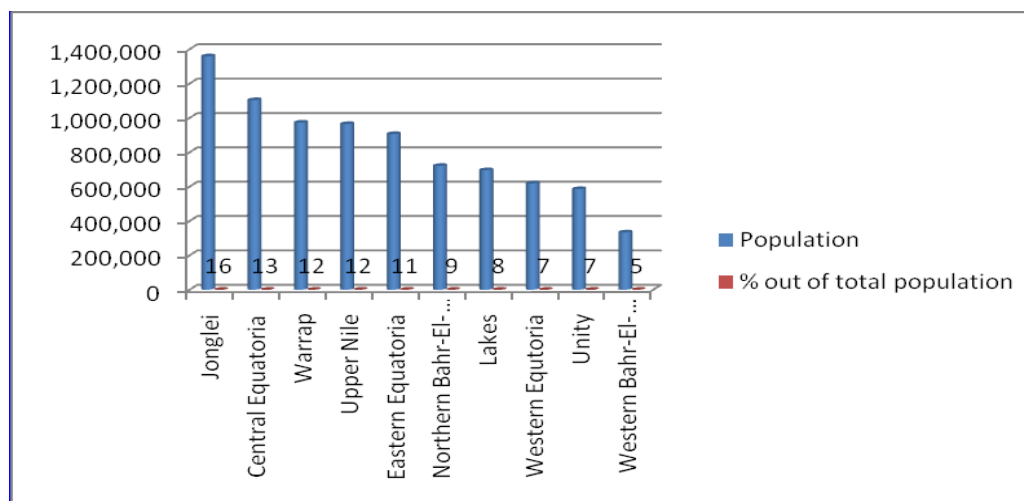
Sudan	<i>leptocerus</i>)	
	Wild dog (<i>Lycaon pictus</i>)	Large-eared free tailed bat (<i>Otomops martiensseni</i>)
		Lesser horseshoe bat (<i>Rhinolophus hipposideros</i>)
		Lion (<i>Panthera leo</i>)
		Red-fronted gazelle (<i>Gazella rufifrons</i>)
		Soemmerring's gazelle (<i>Gazella soemmerringii</i>)
		Spotted-necked otter (<i>Lutra maculicollis</i>)
		Tomb cat (<i>Taphozous hamilton</i>)

5.8 Social-economic environment of South Sudan

5.8.1 Demography

According to the disputed results of the 2007 Population and Housing Census of Sudan, South Sudan has a total population of 8, 260,490 with an average household size of 6.3. The sex composition of the population reveals that the proportion of male is slightly higher (about 52 %) than females (about 48 %). In terms of ethnic composition there are many tribes in South Sudan of which the Dinka, Nuer, Murle, Mundari, Toposa and Boya are the main agro-pastoralist groups. The distribution of population across the states, presented in Figure 3.2 demonstrates that Jonglei where 16.4 % of South Sudan's population living, Central Equatoria (13.4 %), Warrap (11.8), and Upper Nile (11.7 %) are relatively densely populated states. While Northern Bahr-El-Ghazal, Unity, Lakes and Eastern and Western Equatoria are moderately populated. On the other hand, Western Bahr-El-Ghazal is the sparsely populated State.

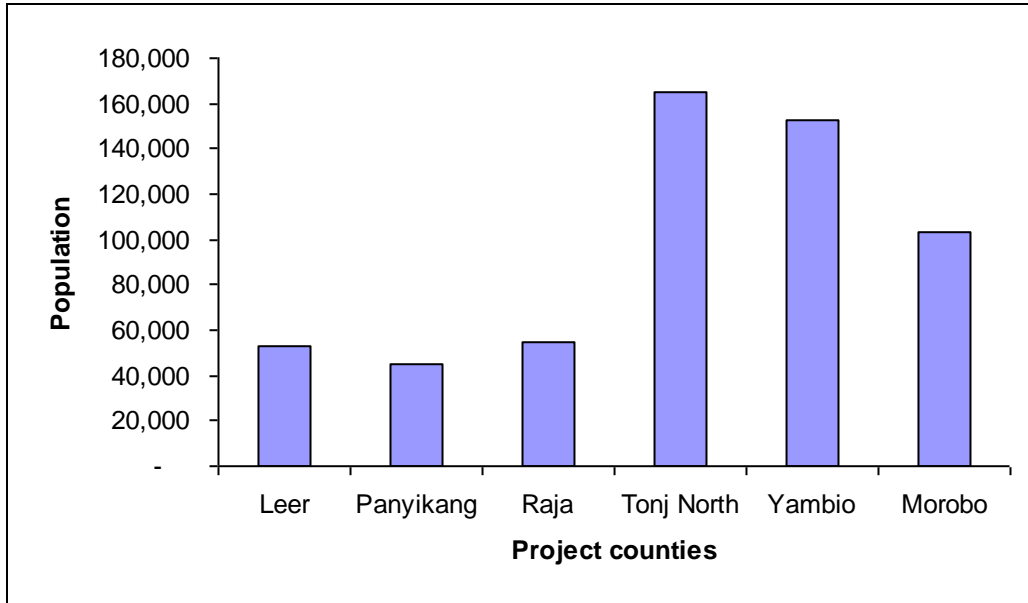
Figure 5.6: Distribution of Population by States, South Sudan



Source: Compiled from the 2007 Population and Housing Census of Sudan

According to the 2007 Population and Housing Census of Sudan, Tonj North is the most populated county contribution 28.8% of the total population in the participating counties whereas Panyikang is the least populated with 7.9% of the total population (Figure 5.7).

Figure 5.7: Population per project participating county in EFCRP



Source: Compiled from the 2007 Population and Housing Census of Sudan

5.8.2 Socio economic Status

South Sudan remains one of the least developed regions in the world according to the UNDP World Development Index 2005. The Gross National Income per capita is estimated to be less than \$90 per year. Key education and health indicators are among the lowest in the world. Infrastructure is virtually non-existent, and a public administration system has to be developed from almost scratch. Low levels of income and purchasing power, together with disruption associated with conflict and very limited infrastructure, have constrained economic activity and market development. High levels of vulnerability arising from two decades of civil war, have forced a sizeable proportion of the population to rely on humanitarian relief assistance to meet their livelihood needs.

Inadequate transport infrastructure poses a major problem for movement of people and commodities within and between states. Although efforts have been made to rehabilitate some of the main trunk roads, the conditions of most of the main roads, especially in the wet season, hinder transportation of goods particularly perishable products. High

transportation cost is a disincentive to farmers in potential surplus production areas from expanding production. However, the situation of various socio-economic infrastructure and the livelihoods conditions of the people of South Sudan have substantially changed since the signing of the Comprehensive Peace Agreement (CPA) in January 2005.

5.8.3 Health and Nutrition

Health and education are quite rudimentary and almost entirely dependent on humanitarian support. High rates of acute malnutrition above the emergency level continue to occur in South Sudan despite the improvement in food security. Current nutrition programs have focused mostly on Supplementary and Therapeutic Feeding programmes to treat moderate and severe cases of acute malnutrition, as well as address needs of malnourished pregnant and lactating mothers. It is evident that a comprehensive preventative approach; focusing on all predisposing factors, need to be used in addressing malnutrition instead of only relying on the curative approach. This requires the collaboration of RSS, state governments and all NGOs and UN agencies.

5.8.4 Agriculture: Crop Production

The country's economy, like the case in other developing countries, is heavily dependent on Agriculture. The Agriculture sector provides the main source of livelihood to the people and there is a tremendous potential to expand to a commercial scale since about 90% of its total area is considered suitable for agriculture, 50% of which is prime agricultural land. Agriculture in South Sudan is predominantly rainfed with annual rainfall levels increasing from the north to south and from east to west ranging from less than 500 mm/year in the semi-arid lands of Northern Bahr el Ghazal and Western Equatoria to around 1,800 mm/year in the Green Belt zone (areas around Yei, Maridi and Yambio, Tambura to Kajo-Keji).

Soil and climatic conditions allow for a wide variety of food and cash crops. The nature of crop production varies according to different agro-ecological zones of the country. The Green Belt Zone is the main high potential region for crop production, with the highest levels of rainfall. Main crops include maize, sorghum, finger millet, cassava, sweet potato, and groundnuts. Rice production was, before the war, introduced and greatly expanded in the Awel rice scheme. During the war the rice scheme collapsed but rice was adopted by farmers outside the scheme. Soybean and cowpea are common but relatively new crops, introduced to a large extent by emergency seed support interventions. Some white seeded sesame is cultivated, coffee is grown commercially and there are a few tobacco plantations. Fruit trees include banana, plantain, pineapple and citrus. Vegetables include onion, okra, amaranthus, cabbage, carrot and cucumber.

Minor crops such as sweet potatoes, yams, coffee, mangoes, papayas are also grown for home and some localized commercial use. Teak is a common non-native plantation tree species grown for timber. Nonetheless, agricultural production methods remain largely poor, limiting households to cultivate an average of 0.5-3.5 feddans, with each feddan producing only 0.9 ton of cereal per year (FAO/WFP, 2008). In general agricultural production is mainly affected by poor seed supply, timing and methods of weeding, use of inputs, pest and disease and security challenges at local level.

5.8.5 Forestry

South Sudan also ranks among the best timber wood exporting countries to the international market. Some of the states with best Teak and natural trees for timbers are Western Equatoria and Central Equatorial states. In Central Equatoria some of the existing Teak plantations are at Kegulu, the other oldest planted forest reserves are Kawale, Lijo, Loka West and Nuni. While Western Equatoria has its resources, Mvuba trees at Zamoi. However, much of the forest cover and biodiversity has been lost due to 50 years war (FAO/WFP, 2008). Table 5.2 shows the acreage under central forests reserves and Protected Areas in South Sudan.

Numerous reports have also documented that the status of forests especially in and around towns in South Sudan is decreasing. Deforestation is increasing due to the continuous clearing of land for crops and cutting of wood for energy. Natural forests and woodlands in most areas have been stripped bare of trees leaving landscapes strewn with patchily distributed trees of little value. Most of the products used in most urban areas are collected from nearby teak plantations. Communities in these areas collect their wood products from natural forests.

Moreover, the consumption patterns of households in most of the South Sudan shows that on average a household consumes approximately 0.3 to 0.6m³ of firewood and approximately 50 kg of charcoal per week. As there are few alternatives for fuel or construction, households are dependent on forest resources. However, the status of forests and woodlands for instance around and in proximity to Bahr el Ghazal and Upper Nile are less degraded. *Khaya* (Mahogany), *Milicia*, and *Phoenix reclinata* trees are abundant and extend from Rumbek County to Yirol County.

Table 5.2: Acreage under central forests reserves and Protected Areas in South Sudan

Area under Forest Reserves, National Parks and Game Reserves In Southern Sudan

Central Forest Reserves						
State	Reserved Forest		Under Reservation		Total	
	Number	Area(Ha)	Number	Area(Ha)	Number	Area(Ha)
Upper Nile	26	204,488	13	361,093	39	565,580
Unity	0	0	1	2,179	1	2,179
Jonglei	1	204	4	9,089	5	9,293
West Bahr-el-Ghazal	12	304,730	0	0	12	304,730
North Bahr-el-Ghazal	0	0	11	23,396	11	23,396
Lakes	3	12,240	0	0	3	12,240
Warrap	1	641	0	0	1	641
West equatoria	13	61,958	5	12,364	18	74,322
Central Rquatoria	12	58,353	6	21,153	18	79,506
East Equatoria	4	120,165	9	13,633	13	133,798
Total Forest Reserves	72	762,779	49	442,907	121	1,205,685

Source: Ministry of Agriculture and Forestry

Game Reserves In Southern Sudan

State	Game Reserves	Date	Location		Total Area (Ha)
Western Equatoria	Asansa	1939	26,22E	8,54N	90,000
Western Bahr el-Ghazal	Celco	1975	26,22E	8,16N	550,000
Jonglei	Zaraf	1939	30,24E	8,44N	970,000
Upper Nile	Panyikango	1939	31,20>E	9,09N	48,000
Western Bahr el-Ghazal	Nominitina	1939	27,20>E	6,45N	21,000
Western Equatoria	Bangagei	1939	27,30>E	5,50N	17,000
Western Equatoria	Bira kabusi	1939			50,000
Total Game Reserves					1,746,000

Source: Ministry of Agriculture and Forestry

5.8.6 Food Security and Livelihoods

The livelihood system in South Sudan is predominately subsistence small-holder agriculture among which about 12-15% of the population depends on fishing for their livelihoods (FAO/WFP, 2008). Employment opportunities both in the public and private sector are few, but are increasing with the current political stability and economic growth. Petty trading provides a source of income for many household in the rural towns and around market centres. The total land area is over 100 million hectares (FAO/WFP, 2008), of which about half is arable, rainfall is plentiful in most parts of the country and soils are relatively fertile. Sorghum is the most important crop. Livestock production provides an important livelihood base for large groups of people but is hampered by disease and environmental degradation. The road network is poor and many areas of the country are not accessible by road, particularly in the wet season which provides a major obstacle for marketing and commercialization of agricultural production. Poverty escalates during the dry season and in most parts of the country periods of 3-6 months per year of food deficit is common. During these periods most families move around for income generation, i.e. selling of charcoal, doing casual labour etc.

5.8.7 Critical habitats

Due to the species richness and presence of species of global conservation concern, the young tropical rainforests in Yambio county, particularly Bangusa Payam may be classified as critical habitats for biodiversity conservation. Key large mammals of the forests and some woodland savannah areas include Waterbuck (*Kobus defasa*), Bushbuck, oribi, duiker, Uganda kob (*Kobus kob*), warthog (*Phacocoerus ethiopicus*), hartebeest (*Alcelaphus* sp.), giant eland (*Tragelaphus derbianus*), buffalo (*Syncerus caffer*), and various species of primates including the Black and White colobus monkey. A rich diversity of avifauna, reptiles, amphibians, and invertebrates also occurs here. However, the high levels of illegal hunting have decimated most of the wild life populations in these areas.

5.8.8 Chemical use by farmers

There is no evidence of use of inorganic fertilizers by farmers in the project areas. This is because the yields are still good and also practice shifting cultivation. However, some NGOs have introduced fertilizers (particularly Urea) in Yambio county for trial purposes even when there is no documented need for them (Figure 5.8). The fertilizer has been distributed to about 600 farmers, which is an overly big number for trial purposes.



Figure 5.8: Fertilizer that has been introduced in Bangusa Payam, Yambio county for trial purposes.

Although we did not find any evidence of use of pesticides in the project areas by farmers, the State MAF confirmed the use of pesticides to control pests including the *Zonocerus* sp. the elegant grasshopper that attacks cassava. The Department of Plant Protection staff are the only permitted people to keep and apply the pesticides when there are disease outbreaks. This is intended to control abuse of pesticides if otherwise left in the hands of farmers.



Figure 5.8: Leaves of a cassava plant eaten away by the *Zonocerus* sp. (Elegant grasshopper)

6. PUBLIC CONSULTATIONS AND DISCLOSURE

6.1 Introduction

Consultative meetings were held with relevant stakeholders and regulatory institutions, as well as the local communities in the respective counties between January to April 2012 to facilitate public participation in environmental and social aspects of EFCRP activities and operations within the context of the GoSS environmental laws, regulations and policies and WB safeguard policies. The consultation process has ensured stakeholder awareness of the operations and activities of the EFCRP and enabled their input into this EA.

At national level, key stakeholders consulted included the World Bank, Ministry of Environment and Ministry of Agriculture and Forestry. At State level, consultations were held with County, Payam, Boma and State officials in the States where the project is operating. NGOs implementing the project were also consulted. Choice of Stakeholders consulted was based on their direct roles, technical expertise and responsibility in ensuring that the EFCRP operations in their areas of jurisdiction comply with development plans of the State, and meet the regulatory instruments and procedures of the country at large. Appendix 1 shows some of the stakeholders consulted.

6.2 Salient issues raised and remarks made during the consultations

1. There is limited cross-sectoral coordination of activities between the forestry and agriculture departments in the counties to minimize environmental damage while carrying out agricultural activities. This is exacerbated by the failure of implementing NGOs to emphasise agroforestry and forestry related activities as they work with farmer groups to improve agricultural productivity.
2. Ideally there should be tree nurseries in every Payam to supply tree seedlings for interested farmers but due to lack of finances, the forestry departments at county level are unable to carry out their activities including establishment of tree nurseries. Furthermore, most NGOs tend to emphasize agricultural activities, neglecting the forestry/environmental aspects of their activities.
3. The Agriculture Departments at county level lack facilitation to monitor the activities of the farmer groups and be able to advise them on environmentally acceptable farming practices. This was evident in Morobo county where there is one motor cycle only donated by FAO specifically for FAO activities.
4. There is hardly any use of pesticides nor inorganic fertilizers in most of the counties under the EFCRP. Farmers tend to use locally prepared infusions of red

chilli (*Capsicum frutescens*), Paw paw leaves (*Carica papaya*) and Vernonia leaves (*Vernonia amygalina*) to control pests that attack their crops especially vegetables. Other farmers use Tobacco (*Nicotiana tabacum*) or Neem tree (*Azadirachta indica*) leaves infusion to control pests. In some cases they physically remove infected crops and either burn or bury them. However, it was noted that pests are a major problem affecting yields in all the project sites visited.

5. According to MAF in Juba, the major pesticides used include Malation, Pyrethrins, and anti-termite control pesticides. There is a forest in Renk which provides a roosting place for Quelea birds that invade farmers' crops in Raga county. The MAF intends to use Quelea tox and Diazinon if funds are available. Quelea birds can also be controlled either by spraying or use of fire balls in the roosting place before they mature. Mist nets for small holder farmers can also help.
6. Some of the key challenges that the Plant Protection Department faces include lack of appropriate legal framework, lack of mechanism to regulate the importation and use of pesticides, lack of manpower, lack of facilities including spraying equipment, and laboratory and vehicles to facilitate movement. The MAF also lacks monitoring mechanisms for chemicals coming into the country and used by farmers.
7. There is rampant deforestation mainly for charcoal burning, firewood and timber. This was quite evident in Morobo and the practice is rapidly picking up in Yambio. Some of the trees preferred for charcoal burning and firewood include the *Vitallaria paradoxa* (lulu). The *Vitallaria paradoxa* is a globally threatened species (IUCN, 2012) and oil from the nuts is highly nutritious and medicinal. Some of the most preferred trees for timber include *Milicia excelsa* and *Khaya senegalensis*. These too are globally threatened species being harvested indiscriminately.
8. There is need for capacity building and trainings in ways of harnessing environmental conservation with farming practices especially when it comes to the issue of pesticides. The RSS does not have a policy or guidelines on the use of pesticides and inorganic fertilizers.
9. There is a general lack of knowledge and appreciation of the importance of keeping woody vegetation on-farm. Most of the trees that are preserved on-farm are kept because they are too big to be cut using hand tools.

10. The main farming practice is shifting cultivation and farmers cultivate a piece of land for 3-5 years before shifting to another place. This is done because of the decreasing soil fertility over the years and also because of the fact that land is plenty due to very low populations. Burning is a common practice as a starting activity in the clearing of land for cultivation.
11. Local people, especially the very poor households are encouraged to participate in activities such as road rehabilitation and are paid money so as to be able to buy food. This is working well in Yambio where food prices have remained relatively high because fewer men are involved in cultivation. Most men are now turning to charcoal burning as a source of income rather than cultivation which takes a while to realise any gains and is also risky in terms of weather adversity and poor or lack of seed supply.
12. There is no record of cultivation in central or state forest reserves by farmer groups in the project counties. This is because the boundaries of the forest reserves are known by the local communities and there is plenty of land elsewhere outside the designated protected areas. This was evident in Bangusa Payam, Yambio where Yatta forest reserve is not encroached upon despite the existences of refugees and an army barracks who are both involved in cultivation.
13. According to consultations with the farmer groups, county authorities and implementing NGOs, there has been no displacement of communities or activities of farmers to enable implementation of project activities. There is also no record of minority ethnic groups or distinct cultural entities that could have been neglected or ignored during project implementation.
14. County officials typically expressed priority for expanding land under cultivation as the first step towards increasing production, and did not place emphasis on increasing productivity to achieve the same objective.



Figure 6.1: Consultative process with farmers in (A) Morobo and (B) Yambio counties under AAH-I

7. PEST MANAGEMENT

This section gives a general overview of the pest situation in the project operation areas and the existing pest management approaches and practices. A more detailed Integrated Pest Management Framework for the MAF and projects in the agricultural sector will be presented in a separate document.

7.1 Existing Pest Management Approaches and Practices

7.1.1 Common pests in the project operational areas

The crops that are commonly grown in the project sites include rice, maize, root crops (mainly cassava), ground nuts, millet, and sorghum. Vegetables grown include cabbage, tomatoes, onions and other different kinds of vegetables. These crops attract a variety of pests that need to be managed in order to avoid damage, leading to low crop yields. Common pests in Morobo and Yambio counties that attack these crops include army worms, green grasshoppers (*Zonocerus* sp.), stem borers and maize ear worms. Rodents pests including ground squirrels (*Xerus erythropus*) and cane rat (*Thryonomys swinderianus*) are more common in Morobo and tend to feed on root tubers especially cassava but with minimal damage. In Raga county, the Red-billed Quelea (*Quelea quelea*) birds are the most problematic pests while growing rice and other cereals.

7.1.2 Existing Pest Management Approaches and Limitations in the project sites

Management of pests in the counties is done by the Department of Plant Protection staff in the States. This is intended to ensure appropriate application of pesticides and also prevent abuse. Farm and crop management techniques are also used to control pests but there are limitations and problems that the farmers face in using these methods. Below are the existing and potential pest management efforts and their limitations.

7.1.2.1 Growing a Healthy Crop by Starting with Healthy Seed

A crop that germinates from seed that is healthy is likely to be less vulnerable to pest damage. Also, a crop grown from seed that has been bred from resistant strains is less likely to be damaged during plant growth and crop storage. Some farmers don't have access to good seed at the time of planting and as a result they use seed from the previous harvest. Farmer groups are given 'healthy' seed to plant but this is not always the case and this leads to crop failure.

7.1.2.2 Good farming practices to ensure vigorous crops

A plant growing in good garden conditions is generally less vulnerable to pest damage than a plant growing under stressed conditions. Good farming practices include timely and recommended land/soil preparation and planting. Limitations and constraints for the farmers include lack of appropriate skills/knowledge, erratic and unpredictable rainy

seasons, lack and/or limited farm inputs and resources to adequately and timely prepare their gardens.

7.1.2.3 Making the Crop Unattractive or Unavailable to Pests

This strategy includes adjusting planting times to ensure that crop development does not coincide with pest appearance. The success of using this strategy requires good knowledge of the seasons and the ability to forecast the right time for planting. The farmers need the appropriate training and information through the extension workers to ensure that they plant at the right times.

7.1.2.4 Crop Diversity or Rotation, Early Planting

Crop rotations or multiple cropping removes the chance for the re-appearance of persistent pests. This strategy depends on the availability of seed to the farmers who, sometimes, are in short supply of adequate and good quality seed. It was noted during the surveys that crop diversification and rotation was practiced to some extent. Some of the crops were difficult to sell due to lack of markets or very low prices. The farmers mentioned lack of markets as one of the reasons why they preferred to stick to the crops that had ready markets. This justifies the need to find mechanisms for linking the farmers to market outlets. Feeder road repairs as part of the community safety nets programs of the EFCRP is a good initiative especially in the highly productive areas Bangusa and Yambio Payams in Yambio county.

7.1.2.5 Biological/ecological control

This is achieved by conserving and enhancing natural biological/ecological controls already in the field and in selected situations, through natural enemies of pests. The use of botanical pesticides such as Chilli (*Capsicum frutescens*), *Vernonia amygalina*, Neem (*Azadirachta indica*) and Tobacco (*Nicotiana tabacum*) is practiced in Morobo county. These are used to control pests mainly on vegetables such as tomatoes and cabbage. The farmers need to be trained in available and appropriate biological controls that can be used to prevent and control pests.

7.1.2.6 Physical Control

Physical controls include hand picking of pests, uprooting infested crop, using fire to remove pests on crop residues and frequent weeding. These methods are commonly used by the farmers. However, there is need to enhance their application to ensure that they are used in a systematic and coordinated manner.

7.1.2.7 Use of pesticides

Pesticides may be used with care to ensure their toxicity to non-target organisms is as low as possible. The effectiveness of pesticides should be as selective as possible. Certain

pesticides of natural origin are compatible with integrated pest management (IPM), causing minimum disturbance to natural biological and ecological pest control mechanisms.

It was noted that farmers use pesticides although under the guidance of staff from the Plant Protection Departments. The farmers therefore need to be guided and trained to understand the limitations and environmental consequences of using pesticides. They should be knowledgeable of pesticides that are compatible with IPM and that do not degrade the natural biological and ecological pest control systems. The farmers need to be equipped with information on pesticide application quantities and methods; prevention of chemical poisoning/accidents and effects of high pesticides residues in crops.

7.1.3 Extent to which the Existing Pest Management Approaches are Consistent with IPM

Pest management approaches and practices that are consistent with IPM include the physical, biological and chemical pest control techniques presented in Section 7.1.2 above. There is a draft Pesticides policy with MAF that is yet to be presented to the Council of Ministers for consideration. It's expected to lead to the establishment of a Pesticides Council, which will be consistent with the requirements of IPM. The draft policy supports efforts to use recommended chemicals and to ban/control illegal importation of pesticides that are not approved by the Pesticides Board. Some of the pesticides management approaches and practices that are not consistent with IPM include overuse of and over-dependence on chemical control methods; and limited use of physical and biological methods due to lack of technical knowledge and supervision. The use of unlisted or unapproved pesticides and stockpiling of obsolete pesticides, as reported by some States MAFs are not consistent with IPM. These inconsistent approaches and practices emanate from the following:

- (i) Lack of training and limited knowledge of IPM practices and benefits by the farmers
- (ii) Inadequate technical supervision of the farmers by the extension workers due to shortage of trained personnel to support IPM
- (iii) Poor information availability and information management on pesticides and their uses
- (iv) Lack of systems and controls to enforce IPM approaches and practices in the various States and county level. This leads to isolated and independent use of pest control methods as is happening in some counties.

8. ENVIRONMENTAL AND SOCIAL ISSUES, IMPACTS AND MITIGATION

8.1 Environmental Issues and Impacts

Direct impacts of agricultural practices on the environment arise from farming activities, which contribute, to soil erosion, loss of nutrients and loss of natural vegetation. Shifting cultivation is also an important cause of land degradation. Leaching from use of pesticides and fertilizers is an important source of contamination of water bodies (both surface and ground water).

One of the aims of the EFCRP is enhancement of agricultural productivity with a focus on increase in yields, production of better quality farm products, and higher income to farmers. Some of the key activities involved include cultivation of high yielding varieties, improved agronomic practices, harvesting and storage of agricultural produce (harvesting activities and development/operation of storage facilities), Transportation and processing of agricultural produce (operation of transportation facilities, setting and operation of agricultural processing units), and marketing including establishing market facilities and linkages.

Environmental impacts of agricultural activities and the respective mitigation measures have been outlined in the Table 8.1 below. These specific activities include cultivation of high yielding varieties, diversification of crops, harvesting and storage of agricultural produce, transportation and marketing.

Use of high yielding varieties on the same piece of land can result into increased use of pesticides and fertilisers. They can also result into potential reduction in gene pool due to the replacement of local or wild varieties of crops. However, farmers are still practising shifting cultivation and the prevalence of pests is also fairly high.

Agricultural produce is generally transported by road. Long travel times and lack of refrigeration facilities result in huge losses of perishable food items (like tomatoes) which have a low shelf life. Enhancement in transportation by improving the road infrastructure and construction of stores where produce can be collected and picked for sale can be very useful in this respect.

Table 8.1: Environmental Impacts and Mitigation measures for Agricultural activities

Sector	Activities	Issues	Impacts	Mitigation measures
Agricultural productivity	Cultivation of high yielding varieties	Increased use of pesticides/fertilizers	<ul style="list-style-type: none"> (i) Potential soil and water contamination (ii) Associated health and safety hazards (iii) Possible increase in pesticide residues in food chains (iv) Pesticide/fertilizer containers disposal 	<ul style="list-style-type: none"> (i) Prior assessment of pests existing in the project area and development of pest management strategies accordingly (ii) Promote integrated pest management techniques and practices – use of biological pesticides and new generation pesticides and herbicides (iii) Ensure use of Personal Protective Equipment (PPE) while handling, using and storage of fertilisers and pesticides (iv) Ensure appropriate disposal of hazardous waste like pesticides with containers (v) Assess and revive traditional practices where suitable to control pests e.g. the use of infusions of red chilli, Tobacco and Neem leaves
		Biodiversity	<ul style="list-style-type: none"> (i) Loss/gradual extinction of indigenous varieties of crops and farming practices-erosion of gene pool of the country (ii) Bio piracy and illegal introduction of high yielding varieties without going through national safeguards (iii) Loss of globally threatened species including <i>Khaya spp.</i>, <i>Milicia excelsa</i> and <i>Vitallaria paradoxa</i> 	<ul style="list-style-type: none"> (i) Avoid undertaking project activities close to areas considered to be biodiversity hotspots or protected areas to minimise potential risks to biodiversity (ii) Ensure that indigenous varieties are not completely replaced in the project areas (iii) Ensure that national and local safeguards for biodiversity protection are stringently followed so that illegal transactions and use of uncertified seeds are avoided (iv) Consultations with local communities to understand local biodiversity issues (v) Ensure that globally threatened species are preserved in gardens and other habitats where they occur

Sector	Activities	Issues	Impacts	Mitigation measures
		Natural habitats	<ul style="list-style-type: none"> (i) Impacts on natural habitats such as forests due to spread of exotics such as <i>Senna</i> sp. in Yambio county (ii) Increased pressure on forests and woodlands for fuel wood, charcoal burning and timber which were originally available in agricultural areas 	<ul style="list-style-type: none"> (i) Thorough biodiversity surveys should be carried out before project activities commence to understand potential risks to biodiversity especially in areas know to be biodiversity hotspots (ii) Creation of awareness and control of agricultural practices to prevent encroachment on such areas
	Harvesting, storage of agricultural produce (a) harvesting activities (b) development and operation of storage facilities/granaries	<ul style="list-style-type: none"> (i) Crop residue and air quality (ii) Wastage of food grain and other agriculture produce (iii) Use of pesticides on stored material 	<ul style="list-style-type: none"> (i) Burning of crop residue leads to air pollution and loss of resources that could be used as fuel or other uses (ii) Damaged agriculture product due to pest attack or moisture etc will lead to large amount of solid organic waste, disposal of which can be an issue (iii) Greater use of pesticides to protect the stored agriculture produce may lead to food contamination 	<ul style="list-style-type: none"> (i) Crop residue should not be burned in the field. Usage of residuals for fuel or animal fodder should be explored (ii) Use of pesticides on stored grain should be avoided (iii) Storage facilities shall be developed as per standard criteria for specific agricultural produce to minimize its damage
	Safety nets program with focus on road rehabilitation	<ul style="list-style-type: none"> (i) Murrum borrow pits (ii) Traffic inconveniences and potential accidents 	<ul style="list-style-type: none"> (i) Loss of vegetation at identified borrow pots leading to soil erosion (ii) Delays and inconveniences in traffic movement due to road rehabilitation 	<ul style="list-style-type: none"> (i) Use designated borrow pits sites to source murrum in consultation with local authorities (ii) Minimise vegetation loss during murrum excavation and transportation (iii) Allocate specific hours of day time for work to minimize traffic movement disruption (iv) Avoid earthworks during periods of high rainfall, if possible (v) Construct control structures such as

Sector	Activities	Issues	Impacts	Mitigation measures
				sumps and settlement ponds around drainage points to trap sediment

8.2: Social Impacts

8.2.1 Positive social impacts

8.2.1.1 Increase in incomes for farmers

Farmers are able to earn some income from the sale of their produce on the market. On average, income earned even exceeds SSP 400 (USD 100) per month for some farmers in Yambio. A fairly well off farmer in Yambio informed us that he is able to hire workers to work in his farm fields for about SSP 400 per month. He is able to cater for all his family needs and take children to school.

8.2.1.2 Social cohesion

With stable incomes, households are able to have stable families. This enhances social cohesion, proper planning and taking care of the children without so much hassle as would be the case without income.

8.2.1.3 Improvement in food security

As the yield improves with provision of good seed, farmers are able to improve their food security especially when they get bumper harvests from their gardens. Yambio county is one of the most productive areas among the project sites.

8.2.1.4 Employment (safety nets)

Through the safety nets program being implemented by the project, people are able to earn income through the rehabilitation of feeder roads especially those from highly productive areas. This helps farmers transport their farm produce easily to markets.

9. ENVIRONMENT AND SOCIAL MANAGEMENT AND MONITORING PLAN

9.1 Purpose Environmental and Social Management Plan

This Environment and Social Management Plan (ESMP) describes the environments in which the project is operating and the range of activities that will be conducted during the implementation of the project and which have the potential to give rise to environmental issues or adverse environmental impacts. The purpose of this ESMP (Table 9.1) is to document environmental impacts, mitigation measures and monitoring procedures that will allow the project to:

- a) Reduce potential impacts arising by incorporating environmental impact appraisal procedures and impact mitigation strategies in the project activities' implementation programs;
- b) Where the risk of potential impacts cannot be avoided, implement effective mitigation measures that will minimise and reduce to an acceptable level any residual impacts that might arise;
- c) Conduct an environmental monitoring program for all potential impacts that will provide adequate data to evaluate the effectiveness of the negative impact avoidance strategies and mitigation measures and will clearly and promptly indicate any loss of efficacy or failure of these and allow corrective action(s) to be taken;
- d) Identify any protection or preservation activities or sites that may be required to protect sensitive environments such as critical natural habitats and forest areas, or cultural, historical, archaeological or sacred sites. Develop an impact avoidance strategy and measures to be taken that will ensure that these sites are not affected by any project related operations or activities.

The ESMP sets out the main activities that are to be implemented through the ESA process. However, it is to be appreciated that the implementation of the plan of action may be slightly modified to suit changes or emergencies that may occur on sites during project implementation. The plan therefore should be considered as the main framework that must be followed to ensure that the negative impacts are kept minimal or under control. In this regard, a certain amount of flexibility should be allowed to maximize its implementation to the best advantage.

In this section, the recommended measures and/or practices for avoiding, managing and mitigating the negative impacts of the project activities are presented and these are representative of the project implementation sites under the different NGOs.

Table 9.1: Environmental and Social Management Plan

S/N	Potential impact	Process/description	Cause of Impact	Mitigation measures	Responsible Institution	Standards/Regulations
1	Water pollution	Deterioration of water quality	Pesticides and fertilizers	(i) Prior assessment of pests existing in the project area and development of pest management strategies accordingly (ii) Promote integrated pest management techniques and practices – use of biological pesticides and new generation pesticides and herbicides (iii) Ensure use of PPE while handling, using and storage of fertilisers and pesticides (iv) Ensure appropriate disposal of hazardous waste like pesticides with containers (v) Assess and revive traditional practices where suitable to control pests e.g. the use of infusions of red chilli, Tobacco and Neem leaves	MAF, Implementing agencies, Farmer groups	WHO standards on pesticides FAO guidelines MAF guidelines on use of pesticides and fertilizers World Bank safeguard policy
2	Biodiversity	Disturbances/loss of species or communities (terrestrial, wetland or aquatic)	Agro-chemicals and land clearance/shifting cultivation practices	(i) Avoid undertaking project activities close to areas considered to be biodiversity hotspots or protected areas to minimise potential risks to biodiversity (ii) Ensure that indigenous varieties are not completely replaced in the project areas (iii) Ensure that national and local safeguards for biodiversity protection are stringently followed	MAF, Implementing agencies, Farmer groups	MAF forestry policy World Bank safeguard policy IUCN guidelines

S/N	Potential impact	Process/description	Cause of Impact	Mitigation measures	Responsible Institution	Standards/Regulations
				<p>so that illegal transactions and use of uncertified seeds are avoided</p> <p>(iv) Consultations with local communities to understand local biodiversity issues</p> <p>(v) Ensure that globally threatened species are preserved in gardens and other habitats where they occur</p> <p>(vi) Control hunting practices</p> <p>(vii) Minimise number of trees cut in cultivation plots/feddans</p>		
3	Habitats	Loss of wildlife habitats, breeding grounds etc	Land clearance/shifting cultivation practices	<p>(i) Thorough biodiversity surveys should be carried out before project activities commence to understand potential risks to biodiversity especially in areas know to be biodiversity hotspots</p> <p>(ii) Creation of awareness and control of agricultural practices to prevent encroachment on such areas</p> <p>(iii) Project should avoid areas of sensitive habitats such as forests and wetlands</p> <p>(iv) Species of special conservation concern must be protected</p>	MAF, Implementing agencies, Farmer groups	<p>IUCN guidelines</p> <p>World Bank safeguard policy</p> <p>MAF agricultural policy framework</p> <p>WCMC guidelines</p>
4	Aquatic fauna	Disturbance/loss of water animal species or communities and their habitats	Agro-chemicals & farming practices	<p>(i) Restrict project activities to areas that are not sensitive to habitat modifications.</p> <p>(ii) Avoid wetland sites and</p>	MAF, Implementing agencies, Farmer groups	<p>MAF forestry policy</p> <p>World Bank safeguard policy</p>

S/N	Potential impact	Process/description	Cause of Impact	Mitigation measures	Responsible Institution	Standards/Regulations
		Eutrophication		gallery forests		IUCN guidelines
5	Nuisance	Noise, dust, traffic interference, soil erosion, accidents	Road rehabilitation (safety nets program)	(i) Use designated borrow pits sites to source murrum in consultation with local authorities (ii) Minimise vegetation loss during murrum excavation and transportation (iii) Allocate specific hours of day time for work to minimize traffic movement disruption (iv) Avoid earthworks during periods of high rainfall, if possible (v) Construct control structures such as sumps and settlement ponds around drainage points to trap sediment	MAF, Implementing agencies, Farmer groups	
6	Social disruptions and spread of diseases	Social impact	Improved/Increased incomes	(i) Farmers should be encouraged to save their incomes or invest in money generating activities.	Implementing agencies, Farmer groups	

9.2 Environmental and Social Monitoring Plan

The Environmental and Social Monitoring Plan is designed to ensure that the management plan is implemented through participation and input of all the relevant stakeholders. The basic principles of environmental monitoring are to ensure that the mitigation measures are followed up and implemented through the planned activities and regular checks and monitoring.

Monitoring efforts, during the operation period have to ensure that the operating and performance standards of agricultural productivity enhancement activities are followed and achieved. Monitoring activities should include regular inspections to ensure that the activities follow the required environmental and social safeguards.

Monitoring activities, the responsible persons or institutions to ensure compliance are presented in Table 9.2.

Table 9.2: Environmental Monitoring Plan

S/N	Environmental issue	Monitoring required	Time/Frequency	M & E Indicator	Applicable standard/regulation	Responsibility
1	Ensure that environmental considerations and recommendations have been incorporated into the design report	Check and/or participate in preparation of project design specifications	During draft and detailed design preparation	EIA report recommendations and EMP	World Bank safeguard policies	MAF, Implementing agencies
2	Surface and ground water contamination by fertilizers and pesticides	Surface and ground water sampling and testing	Once a month	Concentration of pesticides, nitrogen, phosphates and potassium	As per specified chemical regulations on administration	MAF, Implementing agencies
3	Proliferation of pests	Crop inspections	Quarterly	Pests	IPM	MAF, Implementing agencies
4	Land clearance for agricultural activities	Garden inspections	Once a month	Number of trees left standing in gardens	World Bank safeguard policies MAF agricultural policy framework	MAF, Implementing agencies
5	Biodiversity loss	Biodiversity surveys	Once in six months	Species diversity indices per taxon surveyed		MAF, Implementing agencies
6	Habitat loss	Sensitivity of ecosystems, habitats cleared	Once in six months	Ecosystem/Habitat variability		MAF, Implementing agencies

10. SUMMARY OF THE STUDY

10.1 Aim of the ESA study

The aim of the study was to assess the potential environmental impacts (both positive and negative), of the EFCRP activities in the operational areas of the project. These include Morobo county (Central Equatoria), Yambio (Western Equatoria State), Raga county (Western Bahr el Ghazal), Tonj North (Warrap), Leer (Unity State) and Panyikang (Upper Nile).

The Environmental and Social Assessment (ESA) study was to establish an environmental management plan for mitigating potential negative impacts from the project activities and to highlight measures for enhancing the positive impacts. Key specific objectives for the study were:

- a) To describe in general, the major components of the project
- b) To outline the objectives of the EFCRP activities.
- c) To review environmental policies and procedures of the Republic of South Sudan (RSS) and the relevant World Bank Operational Policies to be triggered by the proposed activities for consideration in the implementation of the project activities.
- d) To forecast the main potential environmental and social impacts of the project activities.
- e) To develop an environmental and social management plan with recommended mitigation measures and strategies for addressing negative impacts in the course of project implementation and operation.

10.2 Positive and Negative Impacts identified

The study has identified and analyzed several negative and positive impacts of the project activities. The positive impacts include; improved food security and poverty reduction for the local community, creation of jobs through the community safety nets program to enable communities buy food and; income generating activities in the trade for agricultural inputs and produce and enhanced economic activities for the project impact areas. Other positive impacts also include improved agricultural practices and utilization of farm inputs and natural resources.

The negative impacts include loss of natural vegetation, loss of biodiversity, pollution of the soil and water sources through agricultural chemicals and pesticides albeit on a very small scale currently. Other negative impacts include deforestation, and loss of globally threatened species including *Khaya senegalensis*, *Milicia excelsa* and *Vitallaria paradoxa* partially due to farming activities. However, it should be noted that some of the negative impacts cannot entirely be attributed to project activities because they would have

occurred, whether the project activities took place or not. These include cutting trees for firewood and charcoal burning.

The study has identified and recommended a number of mitigation measures with which to address the negative impacts and enhance the positive effects of the project. Some of the recommended strategies include the following:

- Enhancing agricultural productivity through improved agricultural practices and technologies and discouraging opening up of new areas as a way of improving productivity. This will contribute to natural resources conservation and encourage sustainable use.
- Controlled and careful use of pesticides and agrochemicals on the household gardens to prevent abuse while achieving the intended result.
- Use of code of best practice for the project activities to ensure environmental protection while encouraging sustainable utilisation of natural resources especially arable land
- Training of the farmers and extension workers in the relevant areas of operation to improve efficiency in the areas of environmental management in relation to agricultural activities.

10.3 Conclusions and Recommendations

The study has analyzed and concluded that the project activities generate considerable socio-economic benefits to the farmers and the communities in the project areas. The study has also established a number of ecological consequences that the project activities are likely to induce albeit on a small scale. However, it is possible to mitigate these negative impacts as long as the recommendations given in the environmental management and monitoring plans are implemented.

The project will bring more positive benefits to the communities provided the negative impacts are mitigated as recommended in the environmental management plan. This is in line with the efforts of the government to improve food security and to enhance the social and economic status of the rural population.

However, it must be appreciated that the farmers will need the support, training and encouragement of the government and relevant stakeholders in order to attain meaningful self-dependence in agricultural production.

Based on the findings of the study, it is concluded that the EFCRP has produced considerable social benefits that include food security, improved and sustainable management of natural resources such as land, improved agricultural management practices and additional income generating activities. These should be enhanced in the

next phase of funding. The negative impacts include loss of trees (vegetation) and disturbance of animal life, and deforestation. These negative impacts will cause environmental and social problems if the project is implemented without adequate conservation measures. It is therefore, necessary that the environmental management action plan be integrated within the activities of the project and monitoring carried out to ensure compliance.

To this end, it is recommended:

- (a) That the Ministry of Agriculture and Forestry and all stakeholders to the proposed development project should adopt the recommendations advanced in this report
- (b) That the Ministry will have to mobilize the required inputs, technical expertise and the appropriate consultants to implementation of the mitigation measures outlined in this report alongside implementing agencies.
- (c) That the project activities will require careful implementation and as such, the implementing NGOs should ensure the integration of necessary mitigation measures at the appropriate time during the project implementation.
- (d) That the Ministry ensures that farmers are taught proper farming practices including the application of agricultural chemicals and pesticides to ensure that the environmental concerns are addressed.
- (e) Environment and natural resources management are the underpinning of sustainable agricultural development and will need to be incorporated into the planning and implementation process. Of concern is the current tendency to expand the area of land under cultivation rather than intensify production on smaller areas. While some extension will be necessary, this should be done on the basis of land use planning to ensure the best use of natural resources and avoid over exploitation.

11. REFERENCES

- Andrew G. 1948.** The geology of the Sudan, in: Tothill J. D. 1948.
- Buursink, J. 1971.** Soils of Central Sudan. Stuttgart, Germany
- Delany F. M. 1955** Ring structures in the Northern Sudan. *Eclogae Geol. Helv.* 48: 133-148.
- Delany F. M. 1960.** Sudan. *Lexique Strat. Int.* 6 : 77-105. C. R. 21 st Int. Geol. Congr. Copenhagen.
- Furon R., Lombard J. 1964.** Geological map of Africa (1/5,000,000), Explanatory note. UNESCOASGA.
- GOSS 2010.** Draft Environmental Protection Bill, 2010. Ministry of Environment. GoSS, Juba.
- Grove A. T., Warren A. 1968.** Quaternary landforms and climate of the south side of the Sahara. *Geogr. J.* 134: 194-208.
- Harrison M.N. and Jackson J.K. 1958.** Ecological classification of the vegetation of the Sudan. *Forests Bulletin No.2 (New Series).* Forests Department, Khartoum.
- Itto, A. 2000.** Report of the Natural Resources Management and Utilization Committee. Juba.
- Salter, R.E. August 2006.** STEP: Report of Wildlife Conservation Policy Advisor. International Resources Group. Washington, DC.
- UNEP 2007.** Sudan: Post-Conflict Environmental Assessment. United Nations Environment Programme, Post Conflict Branch, Nairobi, Kenya.
- USAID, 2007.** Southern Sudan Environmental Threats and Oportunities Assessment: Biodiversity and Tropical Forest Assessment, International Resources Group, Wahington DC.
- World Bank 1999b.** Bank Procedures 4.01; Environmental Assessment. World Bank, Washington D.C.
- World Bank 1999c.** Good Practices 4.01: Environmental Assessment. World Bank, Washington, D.C.
- World Bank 2003.** IFC Environmental and social guidelines for Occupational Health and Safety. Washington D.C.

APPENDICES

Appendix 1: Consultations: Summary of key issues and list of stakeholders

Consultations were held with a range of stakeholders as part of the report preparation process between January and April 2012. The key issues raised by different stakeholder groups are summarized below.

S.No.	Stakeholder Group	Key issues raised
1.	Ministry of Agriculture, Directorate of Forestry	<ul style="list-style-type: none"> • Loss of trees, some of high value, due to poor coordination of activities between the forestry and agriculture departments • Risk of Quela Bird infestation on farmers field • No appropriate chemicals (Quela Tox, Diazinon) are available due to shortage of finance for protecting Quela Bird • Limited cross-sectoral coordination between the Forestry and Agriculture departments in the counties • Lack tree nurseries at community level due to lack of finances • Less consideration of forest conservation and environmental protection by implementing NGOs • Need for capacity building and trainings in ways of harnessing environmental conservation with farming practices
2.	Ministry of Agriculture, Directorate of Plant Protection	<ul style="list-style-type: none"> • RSS does not have a policy or guidelines on the use of pesticides and inorganic fertilizers. • Lack of appropriate legal framework, lack of mechanism to regulate the importation and use of pesticides, lack of manpower, lack of facilities including spraying equipment, and laboratory and vehicles to facilitate movement. • Lack of monitoring mechanisms for chemicals coming into the country and used by farmers. • Major pesticides being used in some parts of the country are Malathion, Pyrethrins, and anti-termite control pesticides. • Use of communities indigenous knowledge and botanical plants as a pesticide • Lack of adequate pesticides, this aggravate crop loss due to pest attack
3.	Forestry Department in Morobo County	<ul style="list-style-type: none"> • Need for greater emphasis on agroforestry and forestry related activities when NGOs and Agriculture Department work with farmer groups to improve agricultural productivity. • Having tree nurseries in every Payam would help to supply tree seedlings for interested farmers but currently there is no money to set-up nurseries. • Rampant deforestation mainly for charcoal burning, firewood and timber. • Limited cross-sectoral coordination of activities between the forestry and agriculture departments

		<ul style="list-style-type: none"> • Lack of knowledge and appreciation of the importance of keeping woody vegetation on-farm • No record of cultivation in central or state forest reserves by farmer groups in the project counties • No displacement of communities or exclude of farmers from project implementation benefit
4.	Forestry Department in Yambio County	<ul style="list-style-type: none"> • Rampant deforestation mainly for charcoal burning, firewood and timber. • Trees used for charcoal burning and firewood include the <i>Vitallaria paradoxa</i> (lulu). • Preferred trees for timber include <i>Milicia excelsa</i> and <i>Khaya senegalensis</i>. • All these are endangered species • No record of cultivation in central or state forest reserves by farmer groups in the project counties • No displacement of communities or exclude of farmers from project implementation benefit • Preference to extensive farming than intensive one
5.	Agriculture Department staff, Morobo County	<ul style="list-style-type: none"> • County level staff can monitor the activities of the farmer groups advise them on environmentally acceptable farming practices • Lack of transport facilities is hindering staff movement and their ability to help farmers address environmental impacts. • Quelea tox and Diazinon to be made available for dealing with Quelea birds, also provide mist Nets to small farmers • No record of cultivation in central or state forest reserves by farmer groups in the project counties • Preference for extensive farming rather than intensive one
6.	Agriculture Department staff, Yambio County	<ul style="list-style-type: none"> • Preferring expansion of area under cultivation leads to increased productivity than adopting intensive farming • Lack of knowledge and appreciation of the importance of keeping woody vegetation on-farm • Households are encouraged to participate in activities such as road rehabilitation and are paid money so as to be able to buy food
7.	Farmers Groups, Morobo County	<ul style="list-style-type: none"> • Negligible use of pesticides and inorganic fertilizers • Use locally prepared infusions of red chilli (<i>Capsicum frutescens</i>), Paw paw leaves (<i>Carica papaya</i>) and Vernonia leaves (<i>Vernonia amygalina</i>) to control pests that attack their crops especially vegetables. • Also use Tobacco (<i>Nicotiana tabacum</i>) or Neem tree (<i>Azadirachta indica</i>) leaves infusion to control pests. • Physically remove infected crops and either burn or bury them. • An increase in pest prevalence is being noticed and this is affecting yields. • No communities have been displaced or excluded from project implementation.
8.	Bangusa Payam,	<ul style="list-style-type: none"> • Yatta forest reserve has not been encroached, though there

	Yambio	<p>are refugees and an army barracks in the area.</p> <ul style="list-style-type: none"> • preferring extensive farming than intensive farming
9.	Farmers Groups, Lainya County	<ul style="list-style-type: none"> • Shifting cultivation practiced. • A piece of land cultivated for 3-5 years before shifting to another place, when soil fertility declines. • Burning is a common practice as a starting activity in the clearing of land for cultivation. • Poor benefiting from payments from road rehabilitation, able to buy food • No encroachment into Reserve Forest areas
10.	Raga County	<ul style="list-style-type: none"> • Risk of Quela Bird on farmers field • No appropriate chemical (Quela Tox, Diazinon) are available due to shortage of finance • Lack of knowledge and appreciation of the importance of keeping woody vegetation on-farm • Very poor households are encouraged to participate in activities such as road rehabilitation and are paid money so as to be able to buy food

Details of stakeholders consulted are presented below.

Name/Contact	Designation
Baiga Ayume Anda	Kaya Boma Chief, Kimba Payam, Morobo County, Central Equatoria State
(a) Cheka Henry Stephen	Ag. Assistant Commissioner of Forestry, Morobo County
(b) George Ruese Yairo	Forestry Overseer, Morobo County
Christine Rojjo Samson	Assistant Commissioner for Agriculture Morobo County
Lukasara & Loro Farmers groups supported by AAH-I	Kendila Boma Gulumbi Payam Morobo County
Rose Ayozu Darius	Payam Extension Officer for Gulumbi Payam
Richard Sebit Ephraim	AAH-I Agriculturalist
Logu-Dapa Farmers Group Supported by NPA	Kenyi Village, Kenyi Boma, Kenyi Payam Lainya County
Mr. Timothy Thwol Onak	Director General, Forestry, MAF
Alexander Ali Natana	Ag. Director for Plant Protection, MAF/RSS
Abdelrahman Tamim Sartak	Pesticide Chemist MAF/RSS
Miuro Mivule	Project Director AAH-I

Name/Contact	Designation
Faustino Mukhundu Payam Yambio Boma Ngido Yambio County Western Equatoria State,	Chairman of farmers' group
Joseph Eriminio Abiambu Yambio	Senior Conservator of forests, Yambio County
Anthony Tungo Peter Yambio County Rimenze Boma Bangusu Payam Western Equatoria State	Agricultural Payam Extension worker for Bangusu Payam, Yambio County Western Equatoria State
Rev. Elinama Phillimon	ECS Deanary Makpandu Rimenze Boma Bangasu Payam Yambio County
Director General/State MAF, Western Equatoria State	Western Equatoria State, Yambio
PIU staff	MAF Juba
Bedilu Amare World Bank	Environmental Specialist World Bank

Appendix 2: Integrated Safeguards Data Sheet for EFCRP

INTEGRATED SAFEGUARDS DATASHEET APPRAISAL STAGE

I. Basic Information

Date prepared/updated: 05/20/2011

Report No.: AC6341

1. Basic Project Data

Original Project ID: P113586	Original Project Name: Southern Sudan Emergency Food Crisis Response Project	
Country: Sudan	Project ID: P125381	
Project Name: Southern Sudan Emergency Food Crisis Response Project		
Task Team Leader: John Jaramogi Oloya		
Estimated Appraisal Date: December 2, 2010	Estimated Board Date: June 23, 2011	
Managing Unit: AFTAR	Lending Instrument: Emergency Recovery Loan	
Sector: Crops (60%); Other social services (30%); Public administration- Agriculture, fishing and forestry (10%)		
Theme: Global food crisis response (100%)		
IBRD Amount (US\$m.):	0.00	
IDA Amount (US\$m.):	0.00	
GEF Amount (US\$m.):	0.00	
PCF Amount (US\$m.):	0.00	
Other financing amounts by source:		
Borrower		0.00
Special Financing		2.20
Financing Gap		0.00
		2.20
Environmental Category: B - Partial Assessment		
Repeater <input type="checkbox"/>		
Is this project processed under OP 8.50 (Emergency Recovery) or OP 8.00 (Rapid Response to Crises and Emergencies)		
	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>

2. Project Objectives

The original project was formulated in the context of the 2007-2008 food price crisis and was designed to extend the reach of the MDTF-funded projects in the agriculture sector. The development objective of SSEFCRP is increased access to food for consumption by food insecure populations or groups living in six Counties of Southern Sudan. Main project activities include re-capitalizing and providing farmers with technologies to increase production of selected staples and provision of food-insecure households with cash and/or food for work to implement public works that promote agricultural productivity, like patching of roads, construction of grain storage facilities, etc.

3. Project Description

The proposed additional financing will fund increased production of staples (ii) social safety net measures targeting the food insecure population; and (iii) project

implementation including technical assistance, operating costs, equipment, and goods. The proposed grant is being undertaken under the Global Food Crisis Response Program (GFRP) and will be financed out of the Food Price Crisis Response Trust Fund (FPCR TF) and the Multi-Donor Trust Fund (MDTF).

4. Project Location and salient physical characteristics relevant to the safeguard analysis

Project will be located in the following States: Western and Central Equatoria State, Northern and Western Behr el Ghazal, Jonglei and the Lakes.

5. Environmental and Social Safeguards Specialists

6. Safeguard Policies Triggered	Yes	No
Environmental Assessment (OP/BP 4.01)	X	
Natural Habitats (OP/BP 4.04)		X
Forests (OP/BP 4.36)		X
Pest Management (OP 4.09)	X	
Physical Cultural Resources (OP/BP 4.11)		X
Indigenous Peoples (OP/BP 4.10)		X
Involuntary Resettlement (OP/BP 4.12)		X
Safety of Dams (OP/BP 4.37)		X
Projects on International Waterways (OP/BP 7.50)		X
Projects in Disputed Areas (OP/BP 7.60)		X

II. Key Safeguard Policy Issues and Their Management

A. Summary of Key Safeguard Issues

1. Describe any safeguard issues and impacts associated with the proposed project. Identify and describe any potential large scale, significant and/or irreversible impacts:
2. Describe any potential indirect and/or long term impacts due to anticipated future activities in the project area:
3. Describe any project alternatives (if relevant) considered to help avoid or minimize adverse impacts.
4. Describe measures taken by the borrower to address safeguard policy issues. Provide an assessment of borrower capacity to plan and implement the measures described.

5. Identify the key stakeholders and describe the mechanisms for consultation and disclosure on safeguard policies, with an emphasis on potentially affected people.

B. Disclosure Requirements Date

Environmental Assessment/Audit/Management Plan/Other:

Was the document disclosed **prior to appraisal**?
Date of receipt by the Bank
Date of "in-country" disclosure
Date of submission to InfoShop
For category A projects, date of distributing the Executive
Summary of the EA to the Executive Directors

Resettlement Action Plan/Framework/Policy Process:

Was the document disclosed **prior to appraisal**?
Date of receipt by the Bank
Date of "in-country" disclosure
Date of submission to InfoShop

Indigenous Peoples Plan/Planning Framework:

Was the document disclosed **prior to appraisal**?
Date of receipt by the Bank
Date of "in-country" disclosure
Date of submission to InfoShop

Pest Management Plan:

Was the document disclosed **prior to appraisal**?
Date of receipt by the Bank
Date of "in-country" disclosure
Date of submission to InfoShop

*** If the project triggers the Pest Management and/or Physical Cultural Resources, the respective issues are to be addressed and disclosed as part of the Environmental Assessment/Audit/or EMP.**

If in-country disclosure of any of the above documents is not expected, please explain why:

C. Compliance Monitoring Indicators at the Corporate Level (to be filled in when the ISDS is finalized by the project decision meeting)

OP/BP/GP 4.01 - Environment Assessment

Does the project require a stand-alone EA (including EMP) report? Yes
If yes, then did the Regional Environment Unit or Sector Manager (SM)
review and approve the EA report?
Are the cost and the accountabilities for the EMP incorporated in the
credit/loan?

OP 4.09 - Pest Management

Does the EA adequately address the pest management issues? Yes

Is a separate PMP required?

If yes, has the PMP been reviewed and approved by a safeguards specialist or SM? Are PMP requirements included in project design? If yes, does the project team include a Pest Management Specialist?

The World Bank Policy on Disclosure of Information

Have relevant safeguard policies documents been sent to the World Bank's Infoshop? No

Have relevant documents been disclosed in-country in a public place in a form and language that are understandable and accessible to project-affected groups and local NGOs? No

All Safeguard Policies

Have satisfactory calendar, budget and clear institutional responsibilities been prepared for the implementation of measures related to safeguard policies?

Have costs related to safeguard policy measures been included in the project cost?

Does the Monitoring and Evaluation system of the project include the monitoring of safeguard impacts and measures related to safeguard policies?

Have satisfactory implementation arrangements been agreed with the borrower and the same been adequately reflected in the project legal documents?

D. Approvals

<i>Signed and submitted by:</i>	<i>Name</i>	<i>Date</i>
Task Team Leader:	Mr John Jaramogi Oloya	
Environmental Specialist:		
Social Development Specialist		
Additional Environmental and/or		
Social Development Specialist(s):		
<i>Approved by:</i>		
Regional Safeguards Coordinator:	Ms Alexandra C. Bezeredi	
Comments:		
Sector Manager:	Ms Karen Mcconnell Brooks	
Comments:		

Appendix 3: Questionnaire used during the socio-economic studies

MAF/EFCRP SURVEY QUESTIONNAIRE

SOCIO-ECONOMIC SURVEY FOR SELECTED HOUSEHOLDS

Name of interviewer: _____

Date of interview: _____ Village: _____

Boma: _____ Payam: _____

County: _____ State: _____

Personal Information

What is the nature of occupancy?

Land Owner _____

Tenant _____

Licensee _____

Co-owner _____

Other _____ (please specify)

(Tick appropriate response)

Household Head _____

(Surname, First Name)

Sex: _____

Date/Year of Birth: _____

Age: _____ (exact/appropriate)

Where were you born? _____

When did you come here? _____

Are your parents alive? Yes/No _____ If alive, which of them is?

Where do/did your parents live?

Marital status (tick appropriate response):

Single
Married

(No. of spouses): ____

Divorced
Widowed

Tribe: _____

Village: _____

Main occupation of head of household: _____

Where do you work? _____

Other working persons in household:

Any other working person in household?:

Yes
No

Main occupation: _____

Where do you work? _____

Religion:

Catholic

Protestant

Muslim

Other _____ (please specify)

Household Members

How many household members do you have?

(i) Below 18 years? _____ Males: _____ Females: _____

3- Crop protection

Which practice do you use for land preparation (ploughing, simple slashing, burning)

Health & Vulnerability

Are there disabled or chronically ill people in the household?

YES NO

If YES: Type of disability/illness: _____

Type of care required: _____

Number of births and deaths in the household over the last 12 months:

Births: _____

Deaths: _____ Cause: _____

Has a child under age of 5 died in the household in last 3 years?

YES NO

If YES, Cause: _____

What are the 3 commonest diseases that affect the family?

How much do you spend on treating the above commonest diseases? : _____

What is the nearest health facility known to the family?: _____

Is it actually used by the family? YES NO

If NO, why not? _____

Do you practice family planning? YES NO

Have you heard of HIV/AIDS? YES NO

Do you know how HIV is contracted? YES NO

(verify knowledge if correct response given)

Do you know how HIV is avoided? YES NO

(verify knowledge if correct response given)

Do you have any disadvantaged or vulnerable people in your village? YES NO
(get details if positive response given)

Welfare Indicators

(Tick appropriate response)

Does everyone in the household have at least two sets of clothes?	Yes	No
Does anyone in the household own a radio?	Yes	No
Does anyone in the household own a mobile telephone?	Yes	No
Does anyone in the household own a fixed telephone?	Yes	No
Does the household own a bicycle?	Yes	No
Does the household have any other transport vehicle other than a bicycle? If yes, what type of vehicle? _____	Yes	No
If someone in the household had a serious problem, is there anybody in this settlement that you could ask assistance from?	Yes	No

Where do you get drinking water from? (Tick appropriate response)

Communal borehole,
River
Tap Stand
Spring
Other

Distance from residence _____ meters

What fuel do you use for lighting in the household?

Firewood
Charcoal
Solar
Kerosene
Electricity
Other

What fuel do you use for cooking in the household?

Firewood
Charcoal
Solar

Kerosene

Other

Expenditure Patterns

Rank the following items according to which you spend most money on per month (1= Most spent on; 7= least spent on)

Item	Rank
School fees	
Healthcare/medical expenses	
Food	
Clothing	
Transport	
Dependants	
Rent	

EFCRP Project Information

1. Do you know about EFCRP
2. Are you the beneficiary of this project?
3. Do you have any relatives benefited from this project?
4. What possible impact /advantage anticipate or observe from this project
5. What is perception/attitude on the implementation of this project

Ethnobotanical uses

Uses of plants in forests/woodlands in order of priority

S/N	Local name of plant	Scientific name	Uses	Parts used
1				
2				
3				
4				
5				
6				
7				

8				
9				
10				

Authentication:

"I
confirm that on this date I responded to questions asked
by.....regarding project. I can confirm that I am the head
of household and own or have a right to the land/property/crops discussed in the questionnaire".

Appendix 4: World Bank Safeguard policies

OP/BP	Safeguard	Policy objectives
4.01	Environmental Assessment*	Help ensure the environmental and social soundness and sustainability of investment projects. Support integration of environmental and social aspects of projects in the decision-making process.
4.04	Natural Habitats*	Promote environmentally sustainable development by supporting the protection, conservation, maintenance, and rehabilitation of natural habitats and their functions.
4.09	Pest Management	Minimize and manage the environmental and health risks associated with pesticide use and promote and support safe, effective, and environmentally sound pest management.
4.11	Physical Cultural Resources (PCR)*	Assist in preserving PCR and in avoiding their destruction or damage. PCR includes resources of archeological, paleontological, historical, architectural, religious (including graveyards and burial sites), aesthetic, or other cultural significance.
4.12	Involuntary Resettlement*	Avoid or minimize involuntary resettlement and, where this is not feasible, assist displaced persons in improving or at least restoring their livelihoods and standards of living in real terms relative to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher.
4.20	Indigenous Peoples*	Design and implement projects in a way that fosters full respect for indigenous peoples' dignity, human rights, and cultural uniqueness and so that they (1) receive culturally compatible social and economic benefits, and (2) do not suffer adverse effects during the development process.
4.36	Forests*	Realize the potential of forests to reduce poverty in a sustainable manner, integrate forests effectively into sustainable economic development, and protect the vital local and global environmental services and values of forests.
4.37	Safety of Dams	Ensure quality and safety in the design and construction of new dams and the rehabilitation of existing dams, and in carrying out activities that may be affected by an existing dam.
7.50	Projects on International Waterways	Ensure that the international aspects of a project on an international waterway are dealt with at the earliest possible opportunity and that riparians are notified of the proposed project and its details.
7.60	Projects in Disputed Areas	Ensure that other claimants to the disputed area have no objection to the project, or that the special circumstances of the case warrant the Bank's support of the project notwithstanding any objection or lack of approval by the other claimants.