EU DELEGATION in South Sudan

Rural Infrastructure Strategy in South Sudan

FWC BENEFICIARIES 2013

Lot 2 Transport & Infrastructures Europaid/132633/C/SER/Multi Specific

Contract Nr 2015/356308

Final Report

3 July 2015

An EU funded project managed by
the EU Delegation in South Sudan

Mission implemented by
TRANSPORT & INFRASTRUCTURE
EXPERTISE GROUP

Rural Infrastructure Strategy in South Sudan
Specific Contract Nr. 2015/356308/1

DISCLAIMER

This report has been prepared with the financial assistance of the European Commission. The views expressed herein are those of the consultants and therefore in no way reflect the official opinion of the European Commission.

Report prepared by

Mr. Vincenzo Comito
Mr. Richard Edmunds
Mr. Geoffrey Njeru

Reviewed by

Mr. Hugo Ruiz

Contractor´s name and address

TRANSPORT & INFRASTRUCTURE
EXPERTISE GROUP EZHZ (TIEG)
Mr. Michel Doumont, Project Director
Staré Grunty 186, SK - 841 04 Bratislava, Slovakia
Tel. +421 (0)903 294 937
Fax : +421 (0)2 64 360 171
E-mail : lot2@tieg-eeig.eu

TABLE OF CONTENTS

Contents

Abbreviations and Acronyms 6

EXECUTIVE SUMMARY 8

INTRODUCTION: BRIEF SITUATION ANALYSIS 10

1. CHAPTER ONE: RURAL INFRASTRUCTURE STRATEGY IN SOUTH SUDAN AND MAIN OBJECTIVES AND METHODOLOGY 12

1.1 Focus on rural infrastructure 12
1.2 Principles for Transport 13
1.3 Market Development 14
1.4 Transport Sector in South Sudan 14
1.5 Overall Sub-Sectoral Objectives 15
1.6 Global and Specific Objectives of Assignment 15
1.7 Methodology 16
1.8 Data Collection and Analysis Programme 17
1.9 Submission of Final Report 17

2. CHAPTER TWO: NATIONAL TRANSPORTATION IN SOUTH SUDAN: VISION, GOALS AND POLICY 18

2.1. Vision 18
2.2. Goals 18
2.3. Transport Sector Policy 20
2.4. Intermediate Means of Transport 21
2.5. Transport and Rural Development 21
2.6. Environment 23
2.7. Legal Framework 23
2.8. Transport Institutional Policy 23

3. CHAPTER THREE: RURAL TRANSPORT INFRASTRUCTURE AND MARKET DEVELOPMENT FOR IMPROVED AGRICULTURE, FOOD SECURITY AND LIVELIHOODS IN SOUTH SUDAN 24

3.1 Introduction 24
3.2 The National Vision on Agriculture, Food Security and Livelihoods 24
3.3 Overview of Rural Infrastructure Experiences and Needs in South Sudan 25
3.4 South Sudan: Geography, AEZs and Demographic Characteristics 26
3.5 Rural Infrastructure and Agricultural Markets in South Sudan 28
3.6 The Humanitarian Situation: WFP and Feeder Roads 29
3.7 Supporting Structural Improvement in Food Security and Incomes 33
3.8 Improving Rural Livelihoods and Access to Agricultural Commodity Markets 38

4. CHAPTER FOUR: ROAD SECTOR 42

4.1 Road Sector in South Sudan and challenges 42
4.2 Update on roads programs in South Sudan and Donors intervention in the road sector (March 2015) 42
4.3 Classification of the existing road network 44
4.4 Determination of the current roads conditions and selection of roads for rehabilitation/construction 47

5. CHAPTER FIVE: POSSIBLE SCENARIOS AND OPTIONS IN THE TRANSPORT SECTOR 48

5.1 River Transport 48
5.2 Air transport 48
5.3 Railway transport 49
5.4 Roads 50
5.5 Institutional set-up in the government 50
5.6 Human Resources 50
5.7 Assets 51
5.8 Involvement of private sector 51
5.9 Transport Options and priorities: Methodological Standpoint for an Infrastructure Program 52
5.10 Potential for PPPs 54
5.11 Poverty reduction 55

5.12 INSTITUTIONAL STRENGTHENING 55
5.13 TOP PRIORITIES AND APPROACHES 56
5.14 PRIORITIES AND OPTIONS FOR DONORS' INTERVENTION SCENARIOS IN SUPPORTING THE FUNCTIONING OF AGRICULTURE MARKETS TOWARDS SUSTAINABLE LONGER TERM DEVELOPMENT 57

6. CHAPTER SIX: PROPOSED RURAL INFRASTRUCTURE STRATEGY FOR SOUTH SUDAN, 2016-2010: SCOPE, PRIORITY ROAD SELECTION CRITERIA AND ESTIMATION OF COSTS 58

6.1 GENERAL 58
6.2 ROADS MAINTENANCE 59
6.3 CAPACITY TRAINING 59
6.4 CONSTRUCTION OF TRUNK ROADS AND SELECTION OF FEEDER ROADS 60
6.5 THE ROAD NETWORK AND MAIN CORRIDORS 61
6.6 TRANSPORT COSTS 63
6.7 PRIORITY ROADS SELECTION CRITERIA AND PRIORITY LIST 64
6.8 SCENARIOS AND PRIORITIES 65
6.9 CRITERIA FOR FEEDER ROADS SELECTION AND SCENARIOS FOR ROADS SECTOR 65
6.10 ACTION PLAN, INDICATIVE INVESTMENT PLANS: GOALS AND OBJECTIVES 68
6.11 BUDGETS FOR THE TWO SCENARIOS 69

7. CHAPTER SEVEN: CONCLUSIONS AND RECOMMENDATIONS 72

7.1 CONCLUSIONS FROM THE AGRICULTURE/DEVELOPMENT VIEWPOINT 72
7.2 CONCLUSIONS FROM THE TRANSPORT VIEWPOINT 73
7.3 RECOMMENDATIONS FROM THE AGRICULTURE/DEVELOPMENT VIEWPOINT 74
7.4 RECOMMENDATIONS FROM THE TRANSPORT VIEWPOINT 75

ANNEX 1: KEY INFORMATION OF THE OVERALL REPORT AND MAIN RECOMMENDATIONS 77

ANNEX 2: TOR OF THE PROJECT 88

ANNEX 3: MEETINGS AND INTERVIEWS 94

ANNEX 4: BIBLIOGRAPHY 96

ANNEX 5: TRAFFIC ANALYSIS ZONES FOR SOUTH SUDAN NATIONAL TRANSPORT MASTER PLAN 101

ANNEX 6: SUMMARY OF ESTIMATED PROJECT COSTS (EMERGENCY PROJECT FOR RURAL ROADS, WORLD BANK) 102

ANNEX 7: GOSS - MINISTRY OF TRANSPORT, ROADS AND BRIDGES: LIST OF FEEDER ROADS 103

ANNEX 8: KEY FEATURES OF THE MAIN CORRIDORS 105

ANNEX 9: SCENARIOS 1 AND 2 AND ESTIMATION OF RELATED COSTS 106

TABLE OF ANNEXES

ANNEX 1: KEY INFORMATION OF THE OVERALL REPORT AND MAIN RECOMMENDATIONS ..... **ERROR! BOOKMARK NOT DEFINED.**
ANNEX 2: TOR OF THE PROJECT 88
ANNEX 3: MEETINGS AND INTERVIEWS 94
ANNEX 4: BIBLIOGRAPHY 96
ANNEX 5:TRAFFIC ANALYSIS ZONES FOR SOUTH SUDAN NATIONAL TRANSPORT MASTER PLAN 101
ANNEX 6: SUMMARY OF ESTIMATED PROJECT COSTS (EMERGENCY PROJECT FOR RURAL ROADS, WORLD BANK) 102
ANNEX 7: GOSS - MINISTRY OF TRANSPORT, ROADS AND BRIDGES: LIST OF FEEDER ROADS 103
ANNEX 8: KEY FEATURES OF THE MAIN CORRIDORS 105
ANNEX 9: SCENARIOS 1 AND 2 AND ESTIMATION OF RELATED COSTS 106

TABLE OF TABLES

TABLE 1: INITIAL SOCIO-ECONOMIC DATA BY STATE 12
TABLE 2 - ESTIMATE OF URBAN POPULATION, 2009 13
TABLE 3 - CEREAL FOOD AID DISTRIBUTION ('000 TONS) BY STATE 35
TABLE 4: DONORS' SUPPORT IN THE ROAD SECTOR 44
TABLE 5: *SOUTH SUDAN ROAD NETWORK* 45
TABLE 6: *ROAD CORRIDORS AND LINKS* 46
TABLE 7: AIRPORTS FOR STATE CAPITALS / MAJOR TOWNS ARE: 48
TABLE 8: LEVEL OF ADVANTAGES / DISADVANTAGES AND INVESTMENT COSTS REQUIRED FOR RIVER, AIR AND ROAD TRANSPORT INTERVENTIONS, IF THE PRESENT UNSTABLE AND DIFFICULT ECONOMIC SITUATION IS NOT IMPROVING 53
TABLE 9: NEXT TABLE PRESENTS THE LEVEL OF ADVANTAGES / DISADVANTAGES AND INVESTMENT COSTS REQUIRED FOR RIVER, AIR AND ROAD TRANSPORT INTERVENTIONS, IF THE HUMANITARIAN AND ECONOMIC SITUATION WILL IMPROVE 53
TABLE 10: LEVEL OF ADVANTAGES / DISADVANTAGES AND INVESTMENT COSTS REQUIRED FOR RIVER, AIR AND ROAD TRANSPORT INTERVENTIONS, TAKING INTO CONSIDERATION COSTS SAVING MEASURES FOR HUMANITARIAN SUPPLY (BY KEEPING MAIN ROAD CORRIDORS OPEN) AND PARALLEL CONSTRUCTION OF NEW FEEDER ROADS TO INCREASE AGRICULTURAL ACTIVITIES 53
TABLE 11: INSTITUTIONAL SUPPORT AND STRENGTHENING NEEDS AND PRIORITIES FOR THE SHORT TERM (2016-2020) 56
TABLE 12: MAIN CORRIDORS OF THE ROAD NETWORK 61
TABLE 13: CAPACITY AND COST OF ROAD TRANSPORT 63
TABLE 14: CAPACITY AND COST OF AIR TRANSPORT 63
TABLE 15: SCENARIO 1 – OVERALL BUDGET 70
TABLE 16: SCENARIO 2 – OVERALL BUDGET 70
TABLE 17: ROAD REHABILITATION BUDGET FOR SCENARIO 1 70
TABLE 18: ROAD REHABILITATION BUDGET FOR SCENARIO 2 71

TABLE OF MAPS

MAP 1: ROAD NETWORK IN SOUTH SUDAN 15
MAP 2: IMPRESSIONS OF MARKET DISTRIBUTION IN SOUTH SUDAN 33
MAP 3: MAIN ROAD CORRIDORS 61

TABLE OF FIGURES

FIGURE 1 FOOD SUPPLY CHAINS 35

Abbreviations and Acronyms

AADT	Average Annual Daily Traffic
ADB	African Development Bank
CB	Capacity Building
CBO	Community Base Organisation
CIDA	Canadian International Development Agency
CPA	Comprehensive Peace Agreement
DfID	Department for International Development- UK Aid
EISA	Environmental Impact Statement Assessment
EU	European Union
EUD	European Union Delegation
FDI	Foreign Direct Investment
FRSC	Feeder Roads Steering Committee
FSL	Food Security and Livelihood
GDP	Gross Domestic Product
GFD	General Food Distributions
GOSS	Government of South Sudan
IDA	International Development Agency
IDPs	Internally Displaced Persons
IFAD	International Fund for Agricultural Development
IFIs	International Financing Institutions
JICA	Japanese International Cooperation Agency
KE	Key Expert
LTE	Long Term Expert
MoA	Ministry of Agriculture, Forestry, Tourism, Animal Resources and Fisheries
MoF	Ministry of Finance
MTRB	Ministry of Transport, Roads and Bridges
NGO	Non-Governmental Organization
NPA	Norwegian People Aid
NRC	Norwegian Refugees Council
NRTC	Nile River Transportation Company
PMU	Project Management Unit
RRM	Rapid Response Mechanism
RSDP	Road Sector Development Program
SC	Steering Committee
SIU	Special Implementation Unit
SMOPI	State Ministry of Physical Infrastructure
SRA	Security Risk Assessment
STE	Short Term Expert
SSRA	South Sudan Road Authority
SSRF	South Sudan Recovery Fund
TA	Technical Assistance
TL	Team Leader
ToR	Terms of Reference
TT	Tetra Tech
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDSS	United Nation Department for Safety and Security
UNHAS	United Nations Humanitarian Air Service
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
UNMISS	United Nations Mission in South Sudan
UNOPS	United Nations Office for Project Services
USAID	United States Agency for International Development
VOC	Vehicle Operating Costs
WB	World Bank
WFP	World Food Program
WG	Working Group
WHO	World Health Organisation
WTO	World Trade Organization

EXCHANGE RATES

1 EUR = 1.09318 USD - MAY 26, 2015

1 USD = 7.20 SP (SOUTH SUDANESE POUND) – MAY 26, 2015

Executive Summary

The European Union has funded a Technical Assistance (TA) contract to support the development of a "Rural Infrastructure Strategy in South Sudan".

The main relevant documents were collected and the Team of Experts undertook a desk review in order to develop a more detailed understanding of the scope of the project.

They also identified, in close consultation with the EUD and members of the Steering Committee (World Bank, DfID, and USAID) and other Donors, a list of stakeholders who were met during this specific TA.

The TA's methodology is clearly articulated in the mission's Terms of Reference (ToR) and it was largely discussed among the different key stakeholders that were consulted during the overall mission in South Sudan.

As per the ToR, the team of consultants was requested to prepare and present a strategic vision of rural infrastructure needs in South Sudan.

The global objective of the assignment was to facilitate donors and partners to align behind a single strategic approach to rural transport infrastructure in South Sudan, including feeder roads, trunk roads, bridges, waterways, airports, airstrips, helipads and railways in order to:

i. Facilitate and reduce the cost of delivery of humanitarian aid;

ii. Facilitate the functioning of markets, with options for a gradual transition to a more sustainable longer-term development if and when a more enabling environment exists; and

iii. Support a structural improvement in food security.

The specific objective was to prepare and present a strategic vision of rural infrastructure needs in South Sudan alongside an analysis of current interventions (coverage, duplications, quality) with gaps between the two and identification of blockages (bottlenecks) to delivery.

This assignment delivers a set of practical options outlining key transport investments required from a joint humanitarian and development perspective, depending on the different relative weights put on (i) (ii) and (iii) above.

The focus has included an estimated costing of both the initial capital outlays and future maintenance expenditures, and recommendations have been made.

The team started the mission in Juba (South Sudan) on April 27, 2015 and left the country by May 23, 2015.

The team of experts met with the main stakeholders in Juba and regularly reported to the EUD during the assignment. The team discussed preliminary and more advanced findings, as well as recommendations together with the reference group, composed of the EUD and other Donors/stakeholders.

Two (2) Workshops were held in Juba at the EUD HQs, respectively on May 7 (for the presentation of the Inception Report) and on May 22 (for the presentation of the main findings related to the Draft Final Report).

This Final Report (FR)-submitted in early July 2015-, after the Introduction, has been structured in **Eight (8) Chapters and nine (9) Annexes** as follows:

The **Introduction** refers to a brief situation analysis of the country, and of the transport/roads sector.

Chapter One (1) is focussed mainly on rural[8] infrastructure and on how to develop a rural infrastructure strategy for South Sudan for the next five years (2016-2020) while some main objectives and methodology are outlined.

Some main elements have been taken into consideration in the situation of South Sudan as:

- Keeping the main hubs for humanitarian supplies and development open
- Maintenance of all existing roads which had been constructed according to designs and technical standards
- Building up the capacity within the national and State Ministries by involving counterparts in all working processes required for construction, supervision, management and planning of maintenance of roads.

Chapter Two (2) deals with National Transportation in South Sudan, indicating the vision, goals and policy for the future. Among other issues, a particular focus is given to the Rural Transport Policy and to the need for a thorough reappraisal of the role and scope of policy in the realm of rural transportation.

Chapter Three (3) is dedicated to rural transport infrastructure and market development for improved agriculture, food security and livelihoods in South Sudan. Agriculture/Development and Transport Infrastructure are closely related and the two have to work together to ensure that what the farmers produce gets to the consumer or market in an effective and efficient manner. An overview of rural infrastructure experiences and needs is given for South Sudan, indicating possible solutions.

Chapter Four (4) is related to the Roads Sector in South Sudan and to the main challenges ahead, with particular attention to Donors' intervention in the sector.

Chapter Five (5) deals with the situation of the Transport Sector as a whole, indicating some possible scenarios and options for development. Some transport options and priorities are outlined for the different transport modes, indicating a methodological standpoint for an Infrastructure Program to be developed in the future with some potential to be taken into account in the definition of 2 scenarios for Donors' Intervention in the period 2016-2020.

Chapter Six (6) refers to a proposed rural infrastructure strategy for South Sudan for the period 2016-2020, with the indication of the scope, priority road selection criteria and preliminary estimation of road costs and maintenance for 2 scenarios. A selection of feeder roads following some criteria is specifically indicated, while the suggested efforts or initiatives in the roads sector are described for the next years in relation to the 2 scenarios, pointing out the advantages and disadvantages of each scenario. An Action Plan with indicative investment plans, goals and objectives is outlined together with a budget for each of the 2 scenarios.

Chapter Seven (7) is dedicated to the Conclusions and Main Recommendations, from both the Transport and Agriculture development viewpoints.

Chapter Eight (8) gives the Key Information of the overall Report and the Main Recommendations and it can well be read as an autonomous document.

Nine Annexes complement the Final Report. Specifically the mentioned Annexes are indicated hereafter:

Annex 1 Key Information of the overall Report and Main Recommendations
Annex 2: ToR of the Project
Annex 3: Meetings and Interviews
Annex 4: Bibliography
Annex 5: Traffic Analysis Zones for South Sudan National Transport Master Plan
Annex 6: Summary of Estimated Project Costs (Emergency Project for Rural Roads, WB)
Annex 7: GOSS - Ministry of Transport, Roads and Bridges: List of Feeder Roads
Annex 8: Key Features of the Main Corridors
Annex 9: Scenarios 1 and 2 and estimation of related costs

Introduction: Brief Situation Analysis

South Sudan, with a land area of 648,000 sq km, is endowed with abundant natural resources including a large amount of good quality rain-fed agricultural land, potentially irrigable land, aquatic and forest resources, and significant oil resources. Yet more than 50% of the population is poor and indicators of human being are among the lowest in the world.

Further to the independence and the unresolved internal tensions, South Sudan faces a fragile and unsecured situation. Internal conflict continues to impact a large proportion of the population restricting trade flows and food security. With sharply declining oil revenues, the country is running out of resources to finance its import requirements and domestic costs.

Currently the country hosts about 250.000 refugees, has over 600.000 refugees in neighbouring countries and counts an estimated 1.4 million of internally displaced persons. In total, around 3.9 million people are estimated to be food insecure.

This insecurity is aggravated by many other causes such as low agricultural productivity, limited production, difficult access to the markets, lack of education and knowledge on basic food and nutrition, poor hygiene practices and climate change consequences.

This internal conflict situation combined with long-term structural problems has prorogued a number of overlapping humanitarian and development interventions in favour of the country, which are not synergetic.

The South Sudan states of Eastern Equatoria (Torit) and Jonglei (Akobo) are the closest areas to sea ports and agricultural market accesses to neighbouring countries. The immense potential of agriculture and mineral exploitation makes this part of South Sudan a prime area for attracting foreign investment.

However markets are not functioning properly in many parts of the country. The Greater Upper Nile suffers a food deficit and the demand is met only by trade flows from other states or by imports from Sudan and Ethiopia. The conflict has truncated traditional commercial flows within the states of Jonglei, Upper Nile and Unity, and imports flows from neighbouring countries fail to spread as they did in the past.

Most cereals arrive in Upper Nile from Renk, or even further north from White Nile, Blue Nile and Sennar in Sudan. Traders transport goods using the road up to Melut. The goods are then loaded onto barges to Kodok and eventually to Malakal. Other trading routes used to come from the Blue Nile area through Maban County or go southeast from Gambela in Ethiopia, but these have been cut off by the conflict.

Additional imports come from Abyei to Bentiu, but insecurity and flooding have dramatically reduced the supply.

Commercial flights from Juba to Bentiu (and to a lesser degree to Malakal) were probably the most important supply source for the area. Goods from Ethiopia reach Akobo in eastern Jonglei, usually transported using road up to Metar port (or brought by river from Itang port). Both solutions face seasonal challenges either from falling water levels or flooded roads. Most of the trading routes connecting Akobo to the rest of Greater Upper Nile have been severed by the conflict, as have those to Bor and most of Jonglei.

No trading routes south remain open between Malakal and Ayod along the White Nile trade corridor. Bor traders are no longer supplying Ayod, Waat and Lankien county markets in northern Jonglei (nor Leer by river).

Bor leans commercially towards Juba (and ultimately, Uganda). Other commodities may be sourced from further southeast from Kenya via Kapoeta and Juba. A few products may also be imported from Sudan, travelling all the way from Aweil, Wau Rumbek and Juba before finally reaching Bor.

Markets in Juba, connected to nearby Uganda by the only tarmac road in South Sudan, are performing well. Along the western trade corridor (Nimule-Torit-Juba-Rumbek-Wau- Aweil), markets perform at decreasing levels.

There is a need for promoting regional trade, interconnectivity as well as economic development while the road transport infrastructure is currently in so poor conditions. Fuel and logistical costs are high due to inefficient customs clearance and limited competition in the transport market.

Moreover, the persistent national food deficit, the higher economic burden of importing goods, and the reduced local flow of food because of insecurity and seasonal constraints have made humanitarian food assistance crucial to the most vulnerable communities. The poor road access and the conflict make the aid distribution difficult to the most sensitive regions.

South Sudan faces more bottlenecks than other East African countries because of missing transport links, dilapidated and disconnected infrastructure as well as their lack of maintenance. Only 4,000 of the 17,000 km classified roads are all-weather gravel roads, while the remaining are earth roads many of which are impassable during the rainy seasons. There are also restrictions on the supply of road haulers in country, reflecting the recent history and the relatively small market. In the context described above, the ToR request to prepare and present a strategic vision of rural infrastructure needs in South Sudan.

In South Sudan, the Ministry of Transport, Roads and Bridges (MTRB) is responsible for overall transport sector policy and administration of road, air, rail and river transport. The establishment of the South Sudan Roads Authority (SSRA) to focus on the maintenance and management of road development projects has been developed while the creation of a Road Fund has been, in principle, accepted.

The road network needs to provide two functions in South Sudan. It needs to provide safe and reliable connectivity between the major population centers and cost effective access to all of its agricultural and mineral production areas and/or centers.

There is need to indicate the priority interventions to be undertaken within a harmonized approach among the members of the Steering Committee (European Union, World Bank, USAID, DfID), and with other donors involved in the roads subsector (both trunk and selected feeder roads) in the next 5 years (2016-2020).

1. Chapter One: Rural infrastructure strategy in South Sudan and main objectives and methodology

1.1 Focus on rural infrastructure

The focus is to develop a rural infrastructure strategy for South Sudan for the next five years. The following tables have been prepared for two reasons:

1. To provide an initial sense of the distribution of welfare and socio-economic activity by State across South Sudan;
2. To indicate the need to treat the available statistical data with caution.

The first table gives the first snapshot of the potential demand for transport. The need for caution with the data is shown by comparing the population figures from the 1993 and 2008 censuses.

There is apparently substantial overall growth and redistribution of population.

Table 1: Initial socio-economic Data by State

State	Capital	Area (thous. sq km)	Pop. (1993 census) thous.	Pop. (2008 census) thous.	Percent of population affected by food deprivation	Main economic activity	Food surplus / deficit (t) 2010
North Bahr el Ghazal	Aweil	31	746	721	44%	Livestock and meat	-17,087
Upper Nile	Malakal	77	549	965	69%	Oil	-58,439
Jonglei	Bor	123	797	1,359	48%	Livestock and meat	-101,094
Unity	Bentiu	38	311	586	72%	Oil, meat and livestock	-39,507
Warrap	Kuajok	46	794	973	63%	Livestock	24,979
West Bahr el Ghazal	Wau	91	220	333	74%	Oil	-235
Lakes	Rumbek	43	504	696	54%	Livestock and meat	-9,683
West Equatoria	Yambio	9		152	23%	Livestock and groundnuts	74,523
Central Equitoria	Juba	43	565	1,104	41%	Capital city state	-54,215
East Equitoria	Torit	73	82	906	27%	Livestock and groundnuts	-44,323
Total		**644,392**	**4,929**	**8,260**	**47%**		**225,081**

Source: based on internet research and Roads and River Transport Note, using data from Statistical Yearbook of Southern Sudan 2010 and Household Baseline Survey 2009

Table 2 gives an estimate of the rural population, based on the numbers of households classified as farming households (rather than urban households).

Table 2 - Estimate of urban population, 2009

State	Total Households 2009	Farming Households 2009	Population per Household 2008/9	Rural Population as percentage of Total 2009	Rural Population 1993	Rural Population 2008
North Bahr el Ghazal	148,016	128,248	4.9	87%		
Upper Nile	146,836	98,378	6.6	67%		
Jonglei	201,002	165,007	6.8	82%		
Unity	78,324	60,041	7.5	77%		
Warrap	178,115	157,730	5.5	89%		
West Bahr el Ghazal	61,808	48,723	5.4	79%		
Lakes	103,783	90,056	6.7	87%		
West Equatoria	121,112	106,427	1.3	88%		
Central Equitoria	190,013	125,067	5.8	66%		
East Equitoria	160,178	118,467	5.7	74%		
Total	**1,389,237**	**1,098,154**	5.9	79%	94%	23%

Source: based on Roads and River Transport Note, using data from Statistical Yearbook of Southern Sudan 2010

1.2 Principles for Transport

Hereafter some main principles are outlined for a Methodology to be applied to Transport.

Transport is what is referred to as a “derived demand”; it is derived from the demand for transport in other sectors. In South Sudan these other sectors are primarily governance, health and education, agriculture (including forestry and livestock), food security, petroleum and minerals. Our analysis will always start with the assessment of the demand (or market) for transport.

For at least 20 years the EU, and to a lesser extent other funding agencies, have taken a sectoral approach to transport. This means, first, that it covers all modes of transport (by road, air, water, railway and even pipeline). Second, all those principles that apply to other sectors (good governance, safety, gender equality etc) apply throughout the transport sector as much as anywhere else. There must be a hierarchical approach, starting with a vision for transport and culminating in suitable action plans. The second principle is therefore to take a sectoral approach.

Transport, by whichever mode, broadly comprises “services” and “infrastructure”. In road transport, services are typically divided into passenger and freight and depend on suitable and sufficient vehicles and appropriate organisations providing the services. Infrastructure primarily means roads, but also other infrastructure to support the services and the passengers/commodities to be transported. This will then be the third element of our analysis.

Finally, and because this study is focused mainly on strategy for rural transport infrastructure, it is necessary to consider how infrastructure is constructed, operated and maintained. Our main recommendations are expected to derive from here, but may also emerge from the earlier stages of the analysis.

1.3 Market Development

In simple terms, a market is a mechanism through which goods and services change hands from producer to consumer. It is both a mechanism and an institution that summarizes all sources of demand for a given product from raw material to processed or finished form. A significant proportion of the South Sudanese population comprises smallholder subsistence farmers producing varieties of grain, vegetables and fruits. Their livelihoods are therefore dependent on basic agriculture that includes crop production and livestock rearing. However, markets make more sense to producers to undertake some level of product upgrading and the latter expands markets and stimulates transport infrastructures. In turn, developed transport infrastructure stimulates agricultural entrepreneurship and agricultural growth in general. In the last few years, the EU, in partnership with other donors, has disbursed huge amounts of economic aid towards the development of trunk and feeder roads in parts of South Sudan. However, going by available assessment reports, the sustainability of such effort may not be guaranteed due to a number of factors. The recent conflict is contributing to the increasing number of Internally Displaced Persons (IDPs) who need humanitarian food aid and the reduced oil prices may be reversing the growth gains so far achieved since breaking away from the North. It is with these in mind that the donor community has commissioned this assignment to come up with a realistic rural infrastructure strategy for South Sudan. Such a strategy should be able to address both humanitarian and development needs of the young nation.

1. Points of Departure for Rural Infrastructure

Some main elements to take into consideration in the situation of South Sudan are the following:

- Keeping the main hubs for humanitarian supplies and development open
- Maintenance of all existing roads which had been constructed according to designs and technical standards
- Building up the capacity within the national and state ministries by involving counterparts in all working processes required for construction supervision, management and planning of maintenance of roads

1.4 Transport Sector in South Sudan

South Sudan has three modes of transport which are functional to a certain extent: river, road and air. The railway transport from Aweil to Wau had been repaired during the existence of the Multi-Donor Trust Fund (MDTF) but the bridges were damaged and the railway network has not been working since 2009/2010. Most of the goods within South Sudan are transported by road.

River transport was mainly by barge from Sudan to Juba. However, due to unresolved conflicts with Sudan, river transport from Sudan basically stopped and the little left is done by smaller boats within South Sudan only. Bigger barges are presently only used to transport food supply for WFP and fuel for humanitarian organizations.

The main airports are Juba and Rumbek both of which are declared as ‘international’ airports. Additionally, there are a few smaller airports, mainly connections to the other state capitals and major towns and about 2,100 airstrips. For the airports in Juba and Rumbek, contracts for improvement works have been signed by the Government of South Sudan.

Before CPA signature, rural infrastructure in South Sudan was almost non-existent. Therefore, donors agreed to assist the government in opening up the main roads and strengthening the roads sector. The government was confident in its ability to contribute towards the development of this sector and agreed to carry out maintenance after rehabilitation of roads, which had been funded by donors. It even opened up and rehabilitated some roads with its own funds.

After independence in 2011, most of the donors (except USAID and the World Bank which were involved in construction of trunk and feeder roads, including China, whose agreements for road

construction were in progress) shifted the focus to rehabilitation of feeder roads with the aim of building up agriculture as the second economic pillar of the country.

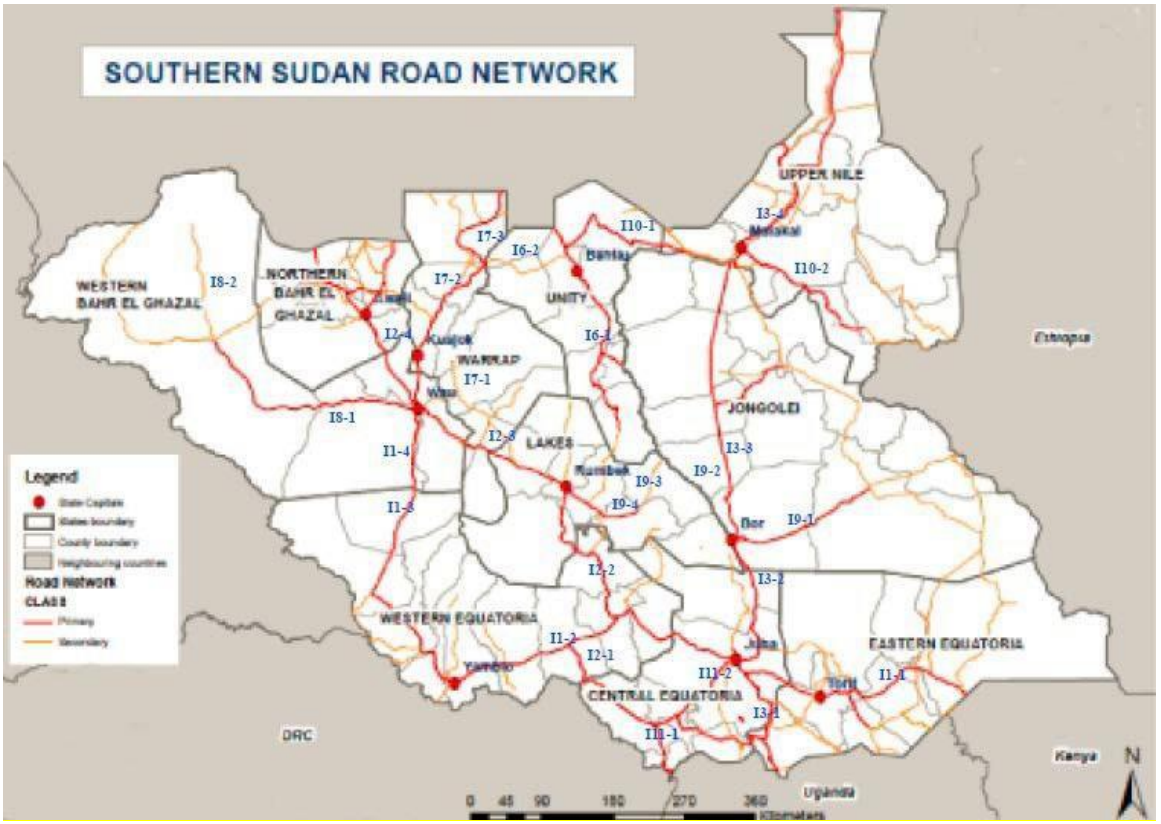
This approach had a severe set-back in 2012 when oil production stopped due to disagreements about pumping fees and oil revenue went down. At the end of 2013, fighting erupted in Juba and quickly spread to other parts of the country. Consequently, donors, UN agencies and NGOs had to evacuate non-key staff and scaled down activities to a minimum. It took almost 6 months until activities fully resumed. The oil revenue did not recover any more due to reduced oil production coupled with the falling international oil prices. As a result, the government has since 2012 not been able to fulfill its commitments in regard to road maintenance.

1.5 Overall Sub-Sectoral Objectives

Hereifter are indicated the main objectives of the Rural Infrastructure Strategy:

- **i.** Improving rural livelihoods by providing sustainable access to agricultural markets through a sustainable road maintenance regime-connecting rural communities to markets; opening up of agricultural potential areas; improving livelihoods of rural communities
- **ii.** Improving food security and incomes

Map 1: Road Network in South Sudan



1.6 Global and Specific Objectives of Assignment

1.6.1 Global objective

The global objective of the assignment is to facilitate donors and partners to align behind a single strategic approach to rural transport infrastructure in South Sudan, including feeder roads, trunk roads, bridges, water ways, airports, airstrips, helipads and railways to:

iv. Facilitate and reduce the cost of delivery of humanitarian aid.

v. Facilitate the functioning of markets, with options for a gradual transition to a more sustainable longer-term development if and when a more enabling environment exists.

vi. Support a structural improvement in food security.

1.6.2 Specific Objective

The specific objective is to prepare and present a strategic vision of rural infrastructure needs in South Sudan alongside an analysis of current interventions (coverage, duplications, quality) with gaps between the two and identification of blockages (bottlenecks) to delivery.

The assignment should deliver a set of practical options outlining key transport investments required from a joint humanitarian and development perspective, depending on the different relative weights put on (i) (ii) and (iii) above.

The focus should include an estimated costing of both the initial capital outlay and also future maintenance expenditures, recommendations should be made on harmonised standardisation of intervention quality (including capacity building interventions around maintenance).

TheToR of this Project are attached in **Annex 2** for reference.

1.7 Methodology

1.7.1 Research Design

The assignment entailed basically collection and analysis of qualitative and quantitative data pertaining to donor interventions in the transport and agriculture sectors in South Sudan with special focus on rural transport infrastructure and agricultural markets as they impinge upon food security and livelihoods. This called for employment of mixed research methods namely desk-top review of relevant documents, interviews with key informants (donors, implementing partners, GOSS officials, road engineers and consultants, civil society representatives, etc) and field interviews with other stakeholders such as transporters, traders and farmers. The team therefore sought and compiled data corresponding to each item of the ToR. However, due to a time constraint and security concerns, the initially scheduled 2 field visits could not be accomplished.

About 70% of the data required for the assignment was sourced through desk-top review of the available documents. Most of these have been prepared by the respective donors and/or development implementing partners (EU, World Bank, USAID, UNOPS, WFP, DfID, , etc.) while others have been prepared by the Government of South Sudan (GOSS) through the relevant ministries. The other 30% of data needs were met through meetings and interviews with the mentioned key stakeholders as well as the Ministries of Agriculture, Forestry, Cooperatives and Rural Development (MAFCRD), Ministry of Transport, Roads and Bridges (MTRB), South Sudan Roads Authority (SSRA), Trade Mark East Africa and the National Bureau of Statistics. Content analysis was employed in analyzing the primary and secondary data collected.

1.7.2 Document Review and Meetings/Interviews

Analysis of the available and accessible documents, plus interviews with key personnel associated with the management of the project will constitute the principal tools for data collection. Most of these documents are attached to this Report as **Annex 3 (Meetings and Interviews) and Annex 4 (Bibliography).**

1.7.3 Data Analysis, Synthesis and Report Writing

Given the high possible amount of quantitative and qualitative information collected in the different documents and/or during the stakeholders' interviews, there is an obvious need for a framework where all the information can be stored, organized and classified by type of activity.

Short field visits around Juba have been selected and provided the field and needed information in order to respond to the expected results.

Hereafter some elements are delineated about the strategy intended to be applied during the Project.

1.8 Data Collection and Analysis Programme

1.8.1 Activity 1: Inception and Desk Phase

- Identification of stakeholders, key beneficiaries at all levels and selected meetings with donors and key implementation players and representatives of Government and the civil society.
- Desk-top review of all documents pertaining to the development of the Transport sector.
- Preparation of Inception Report for submission to the EUD and Steering Committee for comments
- Interviews with selected Government officials, donor representatives and beneficiaries.

1.8.2 Activity 2: Data Analysis, Synthesis and Report Writing Phase

- Meetings and interviews with main stakeholders.
- Meetings and interviews with other players and beneficiaries.
- Draft Final Report.
- Presentation of Draft Final Report to Steering Committee.
- Comments by stakeholders to Draft Final Report.
- Finalization and submission of Final Draft Report.

1.9 Submission of Final Report

- Take into account comments from the Steering Committee members to the Draft Final Report, consolidation of the Final Report and submission to EU Delegation.

2. Chapter Two: National Transportation in South Sudan: Vision, Goals and Policy

2.1. Vision

In presenting the national transportation vision, goals and policy, this chapter also looks at the anatomy of transport services, infrastructure and primary roads network. The Ministry of Transport was created in September 2011 out of the Ministry of Transport and Roads after the Republic of South Sudan (RSS) attained Independence in July 2011. Prior to this period, management of certain aspects of the transport sector in the Government of Southern Sudan (GOSS) remained the responsibility of the Government of National Unity (GoNU). This limited the ability of the GOSS to develop very critical institutions and structures vital for the effective development and management of the transport sector.

Furthermore, the GOSS public service recruitment and appointment guidelines were to some extent influenced by the historical development of the civil governance structures such that the Public Service Guidelines, January 2007 provided for making contribution to the war effort as one of the criteria for recruitment and appointment into the civil service. This quite often led to recruitment and appointment of individuals with none or less than the desired skills, resulting in poor performance on the jobs which such individuals held.

Additionally, the split of the then Ministry of Transport and Roads into two ministries; namely Ministry of Roads and Bridges and Ministry of Transport also posed challenges for the effective functioning of the Ministry, hence creating a situation that needs to be addressed.

Although, a number of efforts have been made towards institutional and staff capacity building as well as development of a Transport Sector Policy in October 2007, under USAID funded Sudan Infrastructure Program Capacity Building Component, there are still key urgent objectives to be targeted:

(i) Strengthen the Ministry of Transport to ensure that it plays its role of effective coordination and regulation in the transport sector;

(ii) Create capacity commensurate with the transport requirements of the economy by ensuring that sufficient resources are invested in the transport sector;

(iii) Allocate available resources among the various transport modes so that the resultant modal mix meets transport requirements at optimum cost to both the provider and the user;

(iv) Encourage and promote increased private sector participation in the provision, management and maintenance of transport infrastructure and services;

(v) Ensure safety standards in all modes of transport by enforcing appropriate safety measures under an improved management regime;

(vi) Introduce sound management through appropriate policies and institutions in the transport sector that will lead to rapid sustainable development and poverty reduction;

(vii) Recognise and account for environmental concerns within the transport sector in line with the national environmental action plan.

2.2. Goals

The purpose is to translate high-level policy goals into more tangible quantified or otherwise measurable objectives, and to define on what basis achievement will be measured.

Setting concrete measurable, or at least verifiable, objectives is fundamental to the success of the program.

Objectives should reflect the desired change from the baseline situation. An analysis of the current situation has to be developed, linking this to the expected results is the basis for setting

realistic and measurable (or at least verifiable) objectives. It is essential that the baseline is known at the outset and that objectives are precise enough to allow verification of their achievement.

In the case of expenditure programs, objectives are ideally expressed in terms of expected effect of the program on the situation it is meant to influence, that is, as a change from the baseline position. This way of expressing objectives helps to link them to the problems to be solved or the needs of the target population.

Different levels of precision and specification of objectives are needed for different purposes. Three different types of objectives and indicators can be distinguished:

- General objectives/Outcome or impact indicators. These are the policy goals of a program or a activity, expressed in terms of its outcome or ultimate impact, and usually measured by global indicators such as rates of economic growth, unemployment, competitiveness, etc.
- Specific objectives/Result indicators. These are the more immediate or intermediate objectives of a program or activity, i.e. the targets that first need to be reached in order for the general objectives to be achieved. Specific objectives are expressed in terms of results, i.e. the direct and short-term effects of the sectoral program or policy.
- Operational objectives/Output indicators. Operational objectives refer to the actual deliverables that the programs or activity is expected to produce for its beneficiaries. Their achievement is, usually under the direct control of those managing the intervention, and can be directly verified.

Ensuring coherence between the different levels of objectives for an activity is necessary to ensure that the operations carried out actually contribute to the achievement of the general transport policy objectives as efficiently as possible.

2. 2.2.1 Sector Capacity Building and Strengthening

There is a need in South Sudan for enhancing technical and managerial capacity in the transport sector.

The reforms in the sector necessitate human resources development to face challenges posed by developments in science and technology as far as transport sector is concerned. A concentrated action is necessary to:

- ensure availability and sustainability of local technical and managerial capacity to manage the transport and the roads sector;
- review or develop training programs to meet needs of local capacity building and strengthening;
- conduct an Institutional Review of the Ministry, critically examining the current organizational structures and staffing levels and performance status of the Ministry, its mandate and aligning the various functional Units/Departments, identifying and streamlining the roles and responsibilities within the Ministry structure to ensure an effective and efficient Ministry;
- develop of a comprehensive Strategic Plan to guide the action plans and operations of the Ministry.

3. 2.2.2 Allocation of Resources

A sound economic base is fundamental to sustainability. Transport investments should continue to be subject to cost-benefit analysis, expanded to encompass environmental and social externalities. The need for economic & social justification applies not only to infrastructure but also to decisions on the purchase and use of vehicle fleets, as well as the organization of the logistic chain, whether in the public or the private sector.

Ensuring the medium/long-term sustainability of facilities requires that capital assets be maintained adequately. In infrastructure, and particularly in roads infrastructure, this can be sometimes hampered by inadequate budgeting and follow-up related to maintenance.

4. 2.2.3 Private sector participation

Private sector participation in infrastructure has become more and more popular in the last 15 years in developing countries and also in South Sudan some PPP (Public Private Partnership) schemes should be encouraged, with the establishment of a PPP Law for all the sectors, like in many other countries. Normally a Central PPP Unit is located under the umbrella of the Ministry of Finance or directly at the Prime Minister's level. The tool of PPP can induce concessions of 30-40 years, both for construction and operation of transport projects.

5. 2.2.4 Safety

As far as Road Transport and Safety are concerned, the specific objectives in the coming years should be the following:

- Ensure road safety engineering aspects are compulsory in the construction, rehabilitation and maintenance of roads;
- Establish lead agency and other relevant institutions responsible for road safety management;
- Improve the awareness of the need for better road safety behaviour among the road users through publicity and trainings;
- Conduct awareness campaigns on road safety;
- Encourage education of children on road safety in primary and secondary schools;
- Establish data collection and analyses mechanism.

2.3. Transport Sector Policy

2.3.1. Scope of Rural Transport Policy

The foremost need is for a thorough reappraisal of the role and scope of policy in the realm of rural transportation. This reappraisal should involve three key developments in strategic thinking:

- Recognition that the range of initiatives and policies which could be adopted is considerably greater than has generally been exploited to date in South Sudan. For instance, efforts to enhance off-road mobility could include the introduction and promotion of non-motorised modes of transport other than head-loading and, in many cases, the development of the footpath network.
- Broadening of the definition of the problem beyond 'mobility' to encompass the wider concept of 'accessibility'. In other words, the core problem should be seen as the scale and nature of the transport task rather than the inadequacy of the transport system per se'. This apparently semantic point does, in fact, have important policy implications. It opens the door not just to policies to improve people's mobility by making transport faster, less burdensome and cheaper, but also to those which reduce or obviate the need to travel, generally by the location of facilities and the delivery of services and goods closer to rural communities.
- Acknowledgement that policies appropriate to reducing the rural transport must be location-specific. That they must, in other words, respond more closely to the specific physical, cultural and socio-economic characteristics and needs of the target areas in South Sudan.

Calling for a move away from 'project- based planning' towards 'area-based planning' methods, for a more open-minded and imaginative response to rural transport which takes local factors into account.

These shifts in perspective imply a substantial reorientation of the focus of policy in relation to rural transport. First, they suggest that the scope of policy to enhance the mobility of rural

people and their goods should be extended beyond rural road infrastructure. This is not to say that roads are not deserving of continuing attention. It is, rather, to recognize that complementary measures are required for the most effective functioning of the entire transport network in South Sudan. Full utilisation of a feeder road will, to a great extent, depend on the local transport system feeding it. The transport demand of rural households, as identified at the community level, can indicate two broad categories of need for enhanced mobility. First, there is need to be able to transport relatively small loads over relatively short distances and sometimes over difficult terrain. Second is the need to make less frequent but longer journeys (of people and goods) to facilities such as markets and hospitals. There are three ways in which the mobility of rural households can be enhanced, to address these needs:

- Greater use of intermediate means of transport
- Development of local transport infrastructure
- Expansion of local rural transport services.

These shifts in perspective imply, however, that the scope of rural transport policy should not be limited to measures to enhance mobility. Policy should encompass measures to reduce the need for travel and transport, primarily by locating facilities and services closer to the communities that need access to them.

Enhanced mobility and provision of services and facilities may be regarded as the two complementary elements of a comprehensive rural transport policy. This in turn leads to the need for recognition of the fact that the range of possible interventions to address the rural transport burden in South Sudan are complementary rather than competitive, and they are likely to be most effective when applied in an integrated manner. This signals a move towards area-based planning, identifying the appropriate mix and balance of interventions to address location-specific rural transport needs.

2.4. Intermediate Means of Transport

These are collectively called intermediate means of transport (IMTs) - intermediate, that is, between walking (with loads carried on the head) and conventional, expensive and high-capacity vehicles.

In a world of scarcity, like in many peripheral areas of South Sudan, the principal advantage to the rural household of a cheap, low-capacity vehicle over the conventional motor vehicle is quite simply that it is more likely to be available, affordable and usable.

The value of IMTs in rural areas is testified to both by the number of places where they have evolved spontaneously, and by the positive impact they have had in those areas (in some areas of Zimbabwe, Ghana, India, etc…).

Strong constraints exist to the development and dissemination of low-cost vehicles. The adoption of appropriate policies and measures by governments, NGOs and development assistance agencies would contribute to addressing these constraints and to stimulating a greater use of IMTs. Such policies and measures fall under four general categories:

- Education and awareness;
- Production and supply
- Affordability
- Import policy

2.5. Transport and Rural Development[21]

To continue to define rural transport in terms of ‘roads and motor vehicles’ and to concentrate policies and investments on the development of rural road networks, is not enough. Rather the

need is for the Government of South Sudan and development agencies to adopt a broader vision, and to complement rural road investment with other measures which address in a more holistic way the totality of the accessibility needs of rural populations.

There is growing evidence that both the Governments in the different States of South Sudan and the development agencies are becoming persuaded of the wisdom of this course of action.

There remains nonetheless, much potential for the wider replication of both the location-specific planning techniques which can be proposed and the policy measures and interventions to be recommended.

The holistic approach entails the rational planning of interventions, and the allocation of resources, in response to the real accessibility needs of the communities, in particular areas of South Sudan.

The interventions will include a mix of measures to enhance mobility and to provide facilities which will reduce the need for travel and transport. The balance of mix will depend on the local conditions prevailing in the area. This area-based planning approach can provide an entry point to more comprehensive, rural development planning responsive to local needs.

It is worth remembering in the South Sudan's context that many of the measures proposed do not involve necessarily a major financial outlay. In many cases, in fact, the efficiency and sustainability of the interventions are likely to be enhanced if relatively low-cost, labour-intensive strategies are chosen for specific areas. This does, however, require a shift in the role of government services in South Sudan away from implementation and towards the provision of advice, support, training, credit, equipment and materials. Services of this nature can generally be most successfully delivered by an effective, well resourced, decentralized system.

The transport burden faced by rural communities in many parts of South Sudan is of substantial proportions. It often acts as a constraint (either actual or potential) on economic activity as well as on the social development of rural communities.

Concerted action to reduce the drudgery and waste of time associated with long hours spent walking and carrying loads will make a substantial contribution to increasing agricultural productivity, together with enhancing the welfare of rural dwellers.

Considering the central role of transport infrastructure, and realizing the size of traffic, infrastructure investments will be crucial, both for emergency measures and for future development.

A national transport policy strives to stimulate population integration and enhancement of regional equity, by way of providing transport systems, which will not only enable South Sudanese to exchange goods and services among themselves but also enable them interact more freely within their region, country and with abroad. A comprehensive transport policy will ensure compliance with the national, social and economic development objectives and goals, emphasizing the following:

i) Support national humanitarian aid and development programs for sustainable economic-social growth in target areas, to be expanded later on the whole country, in order to foster economic reforms, meeting basic needs, human resources development and creation of employment;

ii) Apply a participatory approach in the provision of transport infrastructure and services by involving all the stakeholders (i.e. government, operators and users) in playing their role in the development of the sector;

iii) Provide effective institutional arrangements, laws and regulations, capacity buildings and the possible use of appropriate technology and selected labour intensive techniques in roads construction/reconstruction and maintenance;

iv) Support appropriate development strategies including key-development directions, land use densification and efficiency and integrated economy through, among others, establishing a strong infrastructure base and services in all major towns and other centers of socio-economic activities and growth;

v) Facilitate sustainable development by ensuring that all aspects of environment protection and management are given sufficient emphasis at the design and development stages of transport infrastructure and when providing services.

vi) Safety and security.

2.6. Environment

The Policy has to be specifically aimed to provide:

- Integration of environmental considerations in sectoral, structural, regional and socio-economic planning at all levels;
- Sound management of the environment and natural resources;
- Guidance for national action plans and for healthy environmental practices on the national level effort;
- Sustainable development;
- A common approach to environmental issues.

2.7. Legal Framework

Supportive legislation line with the implementation of a National Transport Policy (NTP) is required.

If and when necessary, the existing legislation should be reviewed and where necessary new rules and regulation be developed in favour of investment, safety, security and sustainable environmental protection in the transport sector. Moreover, coordinated efforts of the institutions responsible for enforcement of traffic rules and regulation will be given a deserving emphasis.

2.8. Transport Institutional Policy

A fundamental requirement for an effective transport system is an institutional framework that ensures provision of effective, reliable and integrated transport services.

The ultimate goal of the institutional policy for the transport sector is to improve/re-engineer the administration of the sector in South Sudan on the basis of a new definition of respective roles of the government, specialized transport subs-sector authorities, and transport enterprises, improving the overall efficiency in the transport sector, with particular reference to roads (trunk and feeder roads), rivers, airports/airstrips and railways re-development.

The government should disengage itself from the operational activities, allowing private sector participation and market competition, opening room also for joint ventures in the construction industry. Therefore, for the medium-term interests of the sector, it is important to effectively separate, streamline and consolidate policy for the Ministry responsible for transport matters, regulation (for regulators) and operations (for operators).

3. Chapter Three: Rural Transport Infrastructure and Market Development for Improved Agriculture, Food Security and Livelihoods in South Sudan

3.1 Introduction

Rural transport initiatives require holistic, user-focused, gender-sensitive approaches to improving infrastructure and transport services. Local limiting factors, priorities and suitable options should be determined with stakeholders (Starkey, 2002).

Agriculture and transport infrastructure are closely related. The two have to work together to ensure that what the farmers produce gets to the consumer or market in an effective and efficient manner. Agricultural communities in South Sudan (over 80% of the population) and across the globe are usually poor as what they produce rarely meets household subsistence needs for the greater part of the year. With most of them cultivating areas of less than 1 hectare and producing an average of 700kg per hectare for grain crops, poverty is likely to remain a common feature of these communities in the foreseeable future until remedial measures are taken. Poverty in South Sudan is worsened by isolation and little mobility due to poor transportation network and facilities and excessive rainfall which renders many roads impassable (about 60% of South Sudan is under water for most of the year). As a result, agricultural produce cannot reach the market and people cannot travel adequately to search for employment to meet the recurrent food shortfalls. Poverty alleviation, therefore, requires less isolation, improved mobility and greater access, achieved by complementary transport and infrastructure. Improving rural mobility is essential so that the communities can easily obtain their daily needs (food, water, fuel, shelter, jobs, etc), access services (education, health, finance), reach markets, gain income and participate in social, political and community activities. However, investments in this sector have tended to concentrate on infrastructure while neglecting transport services, as evident in national and donor budgets. An integrated approach is needed in infrastructure developed that integrates motorized and non-motorized transport.

Rural transport involves different modes of movement and technologies. To date, donor intervention in land transport has generally received most attention relative to water transport which is crucial in the case of South Sudan. Between walking and carrying and large-scale motorized transport (cars, trucks and buses) is a range of intermediate means of transport (IMT) that includes bicycles, motorcycles, carts, animal transport and small boats. These increase transport capacity and reduce drudgery at relatively low cost. Nevertheless, these may be unavailable or unaffordable particularly to the rural poor especially women who may have low incomes but high transport burdens. Unaffordable rural transport and poverty form a vicious circle. Lack of mobility restricts income generation and demand for goods and services; low demand constrains the provision of cheap transport and use of intermediate means of transport; lack of affordable options in turn restricts mobility.

Efficient rural transport systems involve complementarity between small and large-scale transport modes operating to and from hubs within villages, market centres or towns. Intermediate means of transport are important for on-farm, within-village and village-to-market transport and short urban and peri-urban movements. With higher transport demand, larger motorized vehicles are justifiable particularly for rural-urban linkages. Trucks, buses, trains, planes and water vessels depend on local 'feeder' transport for consolidation and dispersal of passengers and goods as is seen at transport hubs (markets, nodes, terminals, lorry parks, bus stations, ports, etc).

3.2 The National Vision on Agriculture, Food Security and Livelihoods

"…people should be supported to cultivate, produce and sell food…" Under-secretary, MRTB, 7 May 2013.

Comprehensive National Agricultural Development Master Plan (CAMP)

This is the latest GOSS 40-year blueprint on the agricultural and related sectors that contains

the national vision and aspirations. Done with the collaboration of JICA, the document identifies 800 feeder roads with an agricultural component and has earmarked them for development throughout the country. These translate to 18,000 km in all 10 states. The stakeholders from the donor community include EU, JICA, CIDA, GIZ and USAID.

The prosperity of the agricultural sector in any country is heavily dependent on the transport sector. The provision of transport is primarily the responsibility of any government but South Sudan is not only the youngest nation in the world but is also currently entangled in the global oil crisis amid internal political instability. The transport sector, just like other sectors, will have to rely on donor support for the foreseeable future. Initially, such support seems to have registered little impact since it was largely disjointed and uncoordinated. For this reason and as a way forward in the short, medium and longer terms, donors and partners in South Sudan seek to align behind a single strategic approach to rural transport infrastructure, including trunk and feeder roads, Pursuant to this goal, donor intervention in improving transport infrastructure with respect to agriculture, food security and livelihoods has had two main objectives. The first is to improve rural livelihoods by providing sustainable access to agricultural markets through a sustainable road maintenance regime that connects rural communities to markets thereby improving the livelihoods of rural agricultural communities as well as opening up areas with untapped agricultural potential. One of the expected results is improved food security and incomes for rural communities which subsequently reduces the cost and need for humanitarian food aid.

3.3 Overview of Rural Infrastructure Experiences and Needs in South Sudan

Land, water/river, rail and air transport systems in South Sudan are all underdeveloped. Road transport is the most commonly used mode of transport in South Sudan and the main trunk roads (A1 and A2) provide interstate and international connection. Weather (rains) and lack of maintenance are the greatest obstacles to road connectivity and currently, an estimated 18,000 km of road in the country await development. River ports require substantial rehabilitation and upgrading and the commercial vessels being used are old. River transport is currently limited to transportation of fuel and aid cargo between Juba and Malakal. However, river transport remains the main access to the northeastern part of country. The railway line length in South Sudan is just 260 km, which is an extension of the line passing through Babanusa in the northern part of Sudan. Air transport has been the main means of transport for humanitarian operations, until the interstate roads were reopened. However, many of the airports have gravel airstrips, which lack maintenance and are not accessible during rainy seasons. The three airports in Juba, Malakal and Wau are yet to meet ICAO service and safety standards. That is to say that there is a substantial transport infrastructure deficit in the country. There is an urgent need for improving access to evenly share the elusive peace dividends, reduce insecurity, enhance trade, and attract investments.

After the signing of the Comprehensive Peace Agreement (CPA) in 2005, the development partners established a Multi Donor Trust Fund (MTDF) for South Sudan, administered by the World Bank which helped to repair and maintain about 2,500 km of critical interstate roads and upgrading of the Faraksika-Mambe-Yambio road (170 km). The WFP and UNOPS have been providing financial and technical assistance for demining and road repair works. This operation has helped to open up the roads that had been closed to traffic due to dilapidation and there is now improved movement of goods and people. However, due to lack of maintenance, all the investments seem to have been lost and the roads have again become impassable. USAID supported the construction of the first asphalt road connecting Juba to Nimule (the border with Uganda), which is about 192 km long. USAID also provided long term capacity building and policy development support. After the independence of South Sudan in July 2011, development partners, including the World Bank, USAID, European Union, and DfID of the United Kingdom, channeled their support towards the improvement of feeder roads with the objective of enhancing agriculture-based growth and ensuring food security. The World Bank, China's EXIM Bank and the African Development Bank (AfDB) have forged partnership to improve part of the Juba- Nadapal-Eldoret corridor connecting South Sudan to Kenya and the port of Mombasa. The AfDB is also supporting

the development of the Kampala-Juba-Addis corridor, which overlaps with the Juba – Nadapal road.

China's EXIM Bank is also emerging as a major donor for the roads sector by providing a loan in the amount of US$700 million to construct a 500 km-long road connecting, Juba Yerol, Rumbek and Ramciel (the future capital of South Sudan). The EXIM Bank has also provided some financing for upgrading of the Juba airport. A private sector-driven initiative has expressed interest in supporting the upgrading of the Juba-Yei-Kampala road. JICA is preparing to build a permanent bridge over the White Nile River in Juba. JICA has also provided Technical Assistance to the River Transport Department to improve operations at the Juba Port. The Government of South Sudan (GOSS) was financing urban roads that helped to construct about 60 km of asphalt roads in Juba and short sections of roads in other major towns, such as Wau. The GOSS has also been helping to finance road improvement works in some of the states in the north and the oil production areas (GIZ/Altai Consulting, 2013: 22-230). For instance, GOSS committed approximately $15M for 1,000 km of trunk road maintenance assessment and feeder road design in the three Equatoria States in a the three-year program (October 2013-September 2016) where the first year was spent on assessment and design and the other two years will be on construction support. Unfortunately, this project is four months behind schedule due to the 2014 evacuations.

6. 3.3.1 Trunk and Feeder Roads Progress as of February 2015

(i) West Equatoria State (WES)
98 km Ezo-Yubu-Tambura Feeder Road (Road Design 95%; Structural Design 35%)
42 km Madiba-Kadiba Feeder Road (Detail Survey 100%; Road Design 35%)
250 km Diabio-Yambio-Maridi-Faraksika Trunk Road (Maintenance Plans 100% (awaiting Approval).
180 km Faraksika-Yei Trunk Road (Maintenance Plans 95%)

(ii) Central Equatoria State (CES)
125 km Loka West-Lomuro-Lori Feeder Road (Preliminary Survey; 35% Schematic Design)
35 km Lori-Gaderu-Livolo Feeder Road (Preliminary Survey; 35% Schematic Design)
180 km Mundri-Juba Trunk Road (95% Maintenance Plans)

(iii) Eastern Equatoria State (EES)
98 km Torit-Loronyo-Lafon Feeder Road (Preliminary Survey; 35% Schematic Design)
35 km Lowai-Offrica-Omeyo Feeder Road (Preliminary Survey; 35% Schematic Design)

3.4 South Sudan: Geography, AEZs and Demographic Characteristics

South Sudan has a land area of 648,000 square km and a population of about 12 million inhabitants (figure adjusted after Referendum of 2010). The huge land mass estimated to be bigger than Kenya, Uganda, Tanzania, Rwanda and Burundi combined means that the population density is 18.52 persons per square km while the converse of this is that the per capita land ownership is 0.054 square km per person. South Sudan is endowed with abundant natural resources including high-potential agricultural land, adequate rainfall, acquatic, forest and oil resources. The country has 6 agro-ecological zones (AEZs) and 11 livelihood zones. Administratively, the country is divided into 10 States and more than 50 Counties. Below the Counties are Payams and villages.

However, over 50% of the population is poor with some of the lowest HDI globally. Despite being the world's youngest nation, internal conflicts, now aggravated by the oil crisis, continue to erode any gains made since its break up with the North. Among the worst hit are trade flows and food security. Due to the declining oil revenues, the country cannot finance needed imports, recurrent expenditure or finance new investments in transport infrastructure development. The internal turmoil has generated an estimated 250,000 refugees who constantly need humanitarian food aid and another 600,000 refugees in the neighbouring countries. With about 1.4 million internally displaced persons (IDPs), the country has about 3.9 million food-insecure people (EU/Vam, 2015).

According to the 2010 population estimates of 11.5-12 million, only 17% was urban and 83% rural. Agricultural commodity markets are fragmented and disconnected. Agricultural commodities move unhampered only during the dry seasons. Western Equatoria (Yambio) is the most agriculturally productive area in the country. About 95% of the population comprises smallholder subsistence farmers cultivating 0.5ha-2 ha. Constitutionally, the land belongs to the people with Government as guarantor. The pastoral communities practice communal tenure with a few cases of individual or private sector ownership.

Insecurity, primarily attributed to the internal conflict, is compounded by among others, low agricultural productivity per capita, limited production that is predominantly subsistence, difficult access to markets, high levels of illiteracy, lack of knowledge on basic food and nutrition, poor hygiene practices and climate change problems. The internal conflict and structural problems have led to an overlap of humanitarian and development interventions by donors with little or no symbiosis or harmonization of synergies. Eastern Equatoria (Torit) and Jonglei (Akobo) are key water transit points to neighbouring countries and have rich agricultural and mineral production hinterlands. This is a priority area for transport investments.

Agricultural commodity markets are not fully functional in many parts of the country and food deficits are common in the Greater Upper Nile region. Such deficits are reduced by interstate trade flows as well as those from Sudan, Ethiopia and Uganda. Severe market dysfunctions are experienced in the states of Jonglei, Upper Nile and Unity where goods cannot find their way to consumers due to the internal strife. For instance, cereals and other goods into Upper Nile have originated from Renk, White Nile, Blue Nile and Sennar in Sudan. These are then transported by road to Melut where they are loaded onto barges to Kodok and Malakal. Other trade routes include those from the Blue Nile area through Maban County to Gambela in Ethiopia. The route from Abyei to Bentiu has often been cut off by insecurity and flooding. Commercial flights from Juba to Bentiu and Malakal have for a long time been the most important means of transporting merchandise. Imports from Ethiopia get to Akobo in Jonglei state by road up to Metar port or brought by river transport from the port of Itang. These routes however suffer from low river levels or flooded roads. Also severed by the conflict are trading routes connecting Akobo to the rest of the Greater Upper Nile as well as those to Bor and most parts of Jonglei.

Also closed are trade routes between Malakal and Ayod along the White Nile trade corridor. Traders from Bor no longer supply Ayod, Waat and Lankien county markets in northern Jonglei. Leer is also not reachable by river. Bor depends heavily on Juba and by extension, Uganda, for supplies. Other goods reach Juba from Kenya through Kapoeta. Goods from Sudan get to Bor through Aweil, Wau and Rumbek. So far, the most vibrant markets are found along the Juba-Nimule (Uganda) corridor which is served by the only tarmac road in South Sudan. In contrast, the western Nimule-Torit-Juba-Rumbek-Wau-Aweil trade corridor continues to perform relatively poorly. There is need to promote regional trade and international connectivity to keep fuel and logistical costs low; improve the highly inefficient customs clearance and stimulate competition in the transport market.

At state level, the FRTC is composed of Governor, Finance, Roads and Agriculture ministers. It determines which feeder roads to prioritize. The donors sign contracts with MTRB, NOT with states. The states liaise with MTRB for access funding. Out of all the 2012 road projections, 95% are still undone by 2015. The national projection is 7,600 km in 10 years. At least 5,000 km are targeted for completion. The national vision was to connect the whole country since it is landlocked by establishing linkages to seaports in neighbouring countries. Other road networks to answer to the AU dream of connecting Cape Town in South Africa to Cairo in Egypt include the Pan-African or Trans-African Highway. The **N1 trunk road network** that connects Uganda to South Sudan through the border town of Nimule is part of it. Lately, the LAPSSET initiative intends to connect the Kenyan port of Lamu to Juba through Lokichoggio and Kapoeta. In addition, the Standard Gauge railway line, whose construction has begun in Kenya, will eventually connect Juba and the hinterland towns through Malaba and Kapoeta. The **N2 trunk road network** involves trunk roads other than those connecting international cities.

3.5 Rural Infrastructure and Agricultural Markets in South Sudan

Agriculture in South Sudan is yet to recover from severe disruptions caused by over two decades of civil war. The rural and urban areas are poorly integrated mainly due to a virtual absence of transport and communication infrastructures and markets have been significantly fragmented and disjointed by conflict and insecurity. Consequently, major urban markets are heavily dependent on imports of most basic food staples from North Sudan and Uganda. Khartoum and Kosti are the major centers of procurement for the North-South Sudan trade, while Kampala and Nimule are the major centres of cross-border trade in commodities originating from Uganda and Kenya. Nimule alone accounts for about 80% of all trading activities and commodities entering South Sudan. Together, North Sudan and Uganda account for the bulk of sugar, maize flour, rice, onion, wheat flour and sorghum sold in the four markets. This heavy dependence on importation of food supplies implies that any adverse events on these trade flows, whether market or non-market, are likely to increase the vulnerability of a large percentage of urban households in South Sudan (Ngigi, 2008).

North-South Sudan and Kampala-South Sudan trade are characterized by three distinct marketing channels. The first involves large-scale traders who move large volumes of food commodities (mainly grain cereal; grain legumes; maize and wheat flour; and sugar) using large capacity hired trucks. Goods from Khartoum are also moved by barges down the river Nile. The second channel involves small-scale traders, who individually face quantity constraints in hiring entire trucks, but who usually pool together to share transport trucks. The third channel involves transporter-trader transactions, i.e. truck-owners combining transportation, buying and reselling functions. This third channel is common with bulky perishable commodities such as bananas, onions and potatoes. Domestic agricultural output is an important source of supply for urban markets but is far from reaching its optimal level. However, the farmers are highly disadvantaged by relatively poor road transport infrastructures which pose major constraints in the movement of produce from points of production to points of consumption or market.

The quantity, quality and timeliness of supply to markets is closely linked to the structure of and constraints faced in transportation. Since the trunk roads connecting the major urban markets with major supply sources are impassable during the rainy seasons, commodity procurement by road tends to be concentrated in the dry season. In contrast, water transportation tends to be concentrated in the rainy season when the river water level rises to allow for barge movement. Malakal and Juba, which are well-positioned for river transportation during the rainy season, do not have simultaneously access to road and water transportation. The long distance haul on roads that become impassable during the rainy seasons necessitates the operation of large businesses for better management of procurement schedules.

3.5.1 Bottlenecks/Constraints to Market Development and Food Security

The traders face numerous and varied challenges which range from infrastructural weaknesses that create uncertainties to traders' ability to supply the market and distribute the commodities effectively. Long distances to be covered, poor road infrastructure, insecurity and multiple formal and informal taxes are cited as the major limiting factors. The market is related to food security through availing food supplies to the urban consumers, as well as enhancing access to food through job creation and income growth. The performance of these two food security dimensions depend on traders' level of access to commodity transportation services; condition of transport and communication infrastructure (transportation links); availability of storage; transaction costs; marketing risks due to conflict and insecurity; and cost of protecting the commodities, among others.

Other bottlenecks include: conflict and insecurity; persistent national food deficit; reduced local flow of food items; high import costs; missing transport links; seasonal blockages especially due to floods; dilapidated and disconnected infrastructure and lack of maintenance; restrictions on supply of road hauliers in the country-hence the need for a strategic vision of rural infrastructure needs in South Sudan. Others are lack of regular maintenance; lack of efficient axle-load rule enforcement; road blocks (non-tariff barriers); and limited presence of

private sector operators in both transport and agriculture. High transport costs discourage surplus production and the presence of the *Sudd* (the world's biggest swamp) is responsible for lack of connectivity between East and West of the country.

3.6 The Humanitarian Situation: WFP and Feeder Roads

The World Food Programme (WFP) has an internal humanitarian committee that attends bi-weekly donor meetings. It has 16 aircraft and 4 more in neighbouring countries. South Sudan has 97 localities classified as hard-to-reach places. State ministries of Infrastructure (SMOPIs) have entered iton MoUs with road contractors to leave the construction materials with the respective state governments upon completion of projects so as to use them to rehabilitate the roads. South Sudan has 7 IDP camp states with over 3 million IDPs. By May 2015, 350 million tons of relied food had been delivered to deserving cases. However, there is no indigenous transport market and the available operators come from Kenya, Uganda, Ethiopia and Somalia.

FEWSNET puts the figure of the food insecure in 2015 at 6 million and 2 million tons of food has been purchased from farmers in Yambio. Food prices have risen by 30% in 2014/2015. Up to 70% of household incomes are spent on food. The fuel to transport relief food is paid for in US dollars which are extremely difficult to get in the country today. About 500 litres of milk are sold in Juba every day.

Currently, there were 1.5 million IDPs by early 2015 (OCHA estimates); 514,974 displaced persons outside South Sudan (UNHCR estimates); 117,600 seeking shelter with the UN (UNMISS estimates); and 2.5 million projected to remain in emergency or crisis level food insecurity from January to March 2015 (IPC, September 2014). The last batch of Kamaz trucks for logistics assets augmentation was received in Juba in 2015. So far, 102 WFP fleet trucks and 3 oil tankers have been received in Juba in 2015. The logistics fleet has 149 trucks with 4 fuel tankers and 1 crane. WFP staff has been relocated from Malakal due to elevated insecurity.

The WFP and cooperating partner teams currently deployed in Haat, Akobo, Old Fangak, Mogok, Nyambor, Kuernyang (Jonglei), Nyal, Mankien, Mayendit (Unity), and Kiechkuon (Upper Nile). Other deployments are planned for Kurwai, Jiech, Wai, Gorwai, Lankien (Jonglei), Ganyiel, Thaker, Abiemnhom, Dablual and Kadet (Unity). Other needy areas are Kosti, Maban and Melut- there is a convoy to Kosti every 4 days. 40 trucks got to Melut with 1,444mt of commodities bringing the total delivery from Kosti to 11,000mt. In January 2015, WFP dispatched 121,090 mt of food items of which 17,541mt was airlifted and/or airdropped within SS from Ethiopia.

Over 100,000 mt of food commodities earmarked for delivery in 2015 (WFP, 2015). During the last week of April 2015, 134 mt of relief items were airlifted to Akobo, Bor, Jikmir, Koch, Kotdalok, Kuach, Leer, Malakal, Motot, Nimni, Nyal, Old Fangak, Wai, Walgak, Yida and Yuai on behalf of 20 humanitarian organizations. In April also, 860 mt of relief items were delivered by barge from Bor to Malakal. The other cargo of 200mt destined for Melut was offloaded at Malakal since it could not proceed further north due to insecurity. WFP has 3 main operational clusters (Food Security and Livelihoods; Logistics and Emergency Telecommunications codenamed FSL, LC and ETC respectively. The Logistics Cluster warehouse in Juba is now closed and the dispatch hubs are now Bor and Rumbek. The Emergency Telecommunications Cluster (ETC) provided on-site ICT support/internet connectivity in Bentiu and Yida in April 2015. Also reestablished security telecommunication services in Old Fangak and will try the same in Malakal. In 2014, FSLC reviewed and provided some input to the Common Humanitarian Fund Report. FSLC also completed response plans, achievements and shortcomings for Jonglei, Lakes and Unity states.

The UN Humanitarian Air Service (UNHAS) had airlifted 23.5mt of cargo by 1 May 2015. It has also facilitated 5 special missions of (WFP/cooperating partners' Response Mobile Team deployments to Mogok, Kuernyang and Akobo; UNESCO's mission to Torit and Real-Medicine Foundation's mission to Mogok.

The state of work on some of the main feeder roads is as follows:

- WFP Monitoring Mission to Pageri-Magwi Road in Central Equatoria (65km). Works progressing and Lot 2 will be completed by end of May 2015.
- Juba-Kajo Keji Road (Central Equatoria)-financial evaluation of bids completed. Awaiting approval of Procurement and Contracts Committee
- Monitoring visit to Kworijik-Tendere-Buko Road (50 km) in Central Equatoria. Demining and bush clearing in progress-1st 6km done. This is a priority feeder road under the South Sudan Livelihoods Development Project (SSLDP) under MAFCRD) for improved access to markets. It is funded by IFAD.
- Mundri-Bangolo Road (Western Equatoria) - (67.25 km) - sub-structures and slab culvert about 90% complete despite slowdowns due to fuel shortages.
- Kangi-Kuajok Road (connecting Warrap to WBG) (41.25 km)
- Kuajok-Lunyaker road (50 km) in Warrap State
- Tharkueng-Getti Road (28 km) in NBG State

Besides, WFP facilitated a ToT workshop for HIV/AIDS awareness-raising in Wau and along the Kangi-Kuajok Road (17-18 March and in April 2015).

According to the WFP (2015), Feeder Roads Special Operation-FED/2012/297-100-Doc Ref: RSSJUB0008RP1103:

- The EC, on behalf of EU, has committed 20,300,000 Euros under the SORUDEV programme to rehabilitate rural feeder roads in partnership with WFP as per contribution agreement signed 7 August 2012.
- WFP to act under the framework “Special Operation” (SO) 200379 “Feeder Road Construction in Support of WFP Operations in South Sudan”.
- Objective is to enhance the livelihoods of the rural population in areas with an agricultural potential by creating opportunities to access markets for agricultural produce and inputs together with basic education and health services. The specific objectives are to: (i) rehabilitate feeder roads in Warrap and WBG States; (ii) Develop local capacity to maintain the rehabilitated roads; and (iii) Support the local communities with agricultural inputs in order to enhance agricultural production.
- DFATD (Department of Foreign Affairs, Trade and Development –Canada)-identified the Wau (Fargacika)-Ngisa-Mboro and Ngisa-Bagari-Ngobagari (65km) to be rehabilitated with their funding. Ngobagari-Bagari-Jedid-Wau (18km) also to benefit.

3.6.1 Constraints and Mitigation (WFP, 2015: 4)

1. Failed negotiations between government and Opposition –did not fulfil the 5 March deadline set by IGAD.
2. Volatile security situation with cases of criminality.
3. Potential service providers dissuaded by conflict from bidding for services-FRSO compelled to undertake some activities concurrently.
4. Reduced staff time due to delays, curfews and restricted movement. Lack of interest by international professionals to take up contracts in South Sudan.
5. Breakdown of equipment and tedious procurement of spare parts.
6. Some of the feeder roads are mined –WFP works with UNMAS.
7. Growing staff needs especially for international engineers-delays in appointment of staff or firms for service provision.
8. No WFP MoU with any SMOPI so far-tripartite (WFP, MTRB and SMOPI). There is an agreement between WFP and MTRB laying out general conditions. The envisaged MoU would formalize already existing responsibilities of WFP and SMOPIs regarding the construction and maintenance of feeder roads.

9. Trunk roads quickly get into a state of disrepair during the dry seasons due to overuse and their situation deteriorates with the onset of the rainy seasons.

According to WFP (2015), South Sudan Rapid Market Assessment, South Sudan's fragile economy is mostly dependent on oil but with the sharply declining oil revenues, the country is running out of resources to finance its import requirements and domestic running costs, including the payment of salaries. The shortage of foreign currency is a major issue countrywide and is reflected in depreciating black-market rates against the US dollar.In the Greater Upper Nile, the conflict has had a direct negative impact on the food trade. The fighting and ethnic violence have destroyed market infrastructures and commodity stocks, and displaced most of the traders. The markets in Unity, Jonglei and Upper Nile are a long way from recovery, as many traders have lost their capital and are unlikely to take any risks in a situation where the prospects of a political settlement leading to peace and the return of the population remain uncertain. Huge amounts of in-kind food assistance are likely to have a smoothing effect on price volatility. Some pertinent observations can be made:

Uncertainty and over-reliance on oil exports have led to a depreciating unofficial exchange rate and almost exhausted foreign exchange reserves in South Sudan. The country's dismal macroeconomic performance has placed further pressure on an already stretched internal demand, creating a vicious circle whereby the private sector has little incentive to take on the challenges arising from insecurity, poor infrastructure and lack of US dollars needed to import goods from abroad. The closer markets are to supply sources (including local production), the greater the availability of goods and the lower the prices. Food availability therefore varies across markets which largely depend on imports. Conflict continues to negatively affect trade flows especially in states directly affected by conflict. In the rest of the country, the impact is indirect, through localized insecurity and increasing roadblocks. The import flow from Uganda is vital for South Sudan as it has improved along the Kampala-Nimule-Juba route.

In the past three years, the three conflict states (Jonglei, Upper Nile and Unity) have received over half of all in-kind food assistance, yet markets can barely offset local supply shortfalls. In non-conflict states, production is expected to be good, but food deficits may remain. In these states, the food deficit has been widening amidst dwindling imports in conflict-affected states. Supply chains are restricted by conflict as well as structural market inefficiencies. Cargo aircraft from Juba has partially replaced river and road networks in Unity and Upper Nile states. Where traditional routes continue to function, largely informal trading channels connect conflict-affected states to neighbouring countries, but these areas are virtually cut off from the rest of South Sudan. Supply chains are also active along the main Kampala-Nimule-Juba road and along the western corridor (Juba-Rumbek-Aweil).

The effect of the conflict and poor road network has isolated already fragmented markets. Insecurity, poor infrastructures, numerous checkpoints and corruption have deterred traders from venturing inland or from moving between government- and opposition-held areas. The large variation in prices across markets confirms inefficiencies and food availability fluctuations. Prices are highest in Bentiu and other conflict-affected areas, significantly eroding the already limited household purchasing power. The loss of livelihoods is making humanitarian assistance even more crucial. In-kind food assistance, where delivered in significant amounts, is found to reduce food prices through increased supply, although in conflict-affected areas such as Bentiu, it may have disadvantaged sorghum traders. Financial institutions are weak except in Juba. Traders rarely have access to loans or foreign exchange. In conflict-affected areas, financial institutions are almost non-existent, except for a few money transfer agencies.

There is variation in the capacity of markets to secure adequate food supply and offer a relatively stable market environment to support market-based interventions. Market capacity is low in many places e.g. Akobo, Bentiu and Malakal as a result of the conflict and in Rumbek because of poor road conditions. Capacity is moderate in Yambio and Bor; moderately high in Aweil, Wau, Nimule; and high in Juba and Torit, where there is a larger number of traders and supply is stable. The often indiscriminate violence against the population has not only affected livelihoods but also damaged local production and local food supplies. South Sudan has a huge number of displaced civilians, and household food security is limited in many parts of the

country. Markets are generally functioning poorly in many parts of the country. The major exception is Juba, which is connected to nearby Uganda by the only tarmac road in South Sudan. In general, along the western trade corridor (Nimule-Torit-Juba-Rumbek-Wau-Aweil), markets perform at decreasing levels the further traders have to venture into the countryside.

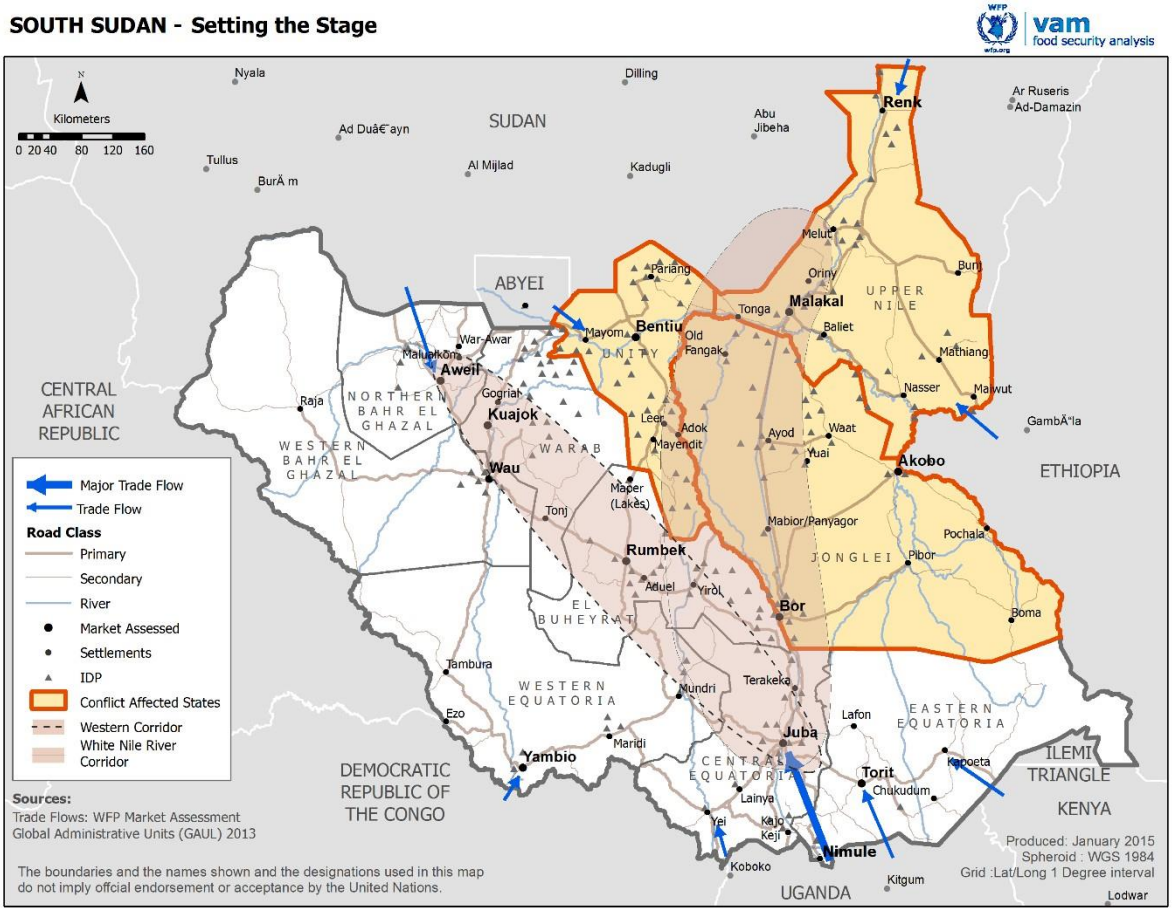
Almost all South Sudanese states have a food deficit and hence require a combination of stable supply flows through functional markets and in-kind food assistance to fill the gaps. Markets are generally functioning poorly in many parts of the country. The major exception is Juba, which is connected to nearby Uganda by the only tarmac road in South Sudan. In general, along the western trade corridor (Nimule-Torit-Juba-Rumbek-Wau-Aweil), markets perform at decreasing levels the further one ventures inside. Increased farm outputs and vibrant markets will ultimately reduce the necessity for humanitarian food aid. At the peak of the 2014 rainy season, transporters were unwilling to lease their trucks to transport goods to Rumbek, resulting in very low market supplies and high food prices. The combined effects of better seasonal road access for traders and normal harvests in non-conflict areas will improve overall food availability in many markets in the future. However, food availability in the Greater Upper Nile states will remain a challenge because of local supply shortfalls and the significant obstacles to imports and movement of goods, especially between government- and opposition-held areas.

From a demand-side perspective, there are grounds for promoting market-based food assistance programmes. Household purchasing power has been severely reduced in recent years, when at least two severe crises have dramatically curtailed the resilience of many communities. The displacement of almost 2 million people has also changed the market landscape in many states, with former market hubs now serving a drastically reduced number of people. In many markets, traders claim to have reduced their supply as a result of this depressed demand. Price differences appear to point to severe supply side deficits. Traders' supply capacity is hampered by lack of foreign exchange. Consequently, time and resources are lost in the chase for US dollars in the black market, because supply chains are organized in such a way that many traders have to directly engage in importing activities by travelling abroad. In addition, traders are not supported by the financial system which is poorly developed and threatened by the conflict. In many parts of the Greater Upper Nile, both in opposition-controlled areas and where control is disputed, there are no banks. Money transfers are rare and run on a very small scale. Elsewhere in the country, one or two banks may be present. The major exception is Juba with its larger number of active financial institutions. These constraints should be borne in mind during the design phase of potential market-based interventions.

Conflict has further isolated many communities in the zone circumscribed by the towns of Bor, Bentiu, Malakal and Akobo. In areas close to the borders (e.g. Renk and Akobo), where import supplies keep flowing, there is potential to explore cash and voucher food access systems so long as the dry season does not bring additional violence. In the greater Equatoria, market-based interventions would seem well placed, with the combination of a good harvest and a secure import flow from Uganda. To a less certain degree, markets in Bahr el Ghazal (particularly Aweil) may also have a response capacity to support market-based interventions.

Food distributions have played a significant role in South Sudan, accounting for 13 percent of total supply for the past two years.

Map 2: Impressions of Market Distribution in South Sudan



Source: WFP/VAM, 2015, p.2.

South Sudan faces the challenging task of state and nation building from scratch. This includes “tackling poverty, low social indicators and the need to build sustainable peace and security for all citizens”, with the ambition of “recovering from conflict and wishing to move onto a fast-track development path” (SSDP, 2011). Based on these aims, the 2011 Development Plan was designed around four pillars, which sought to identify the key priority areas of intervention for the following three years. The pillars were 1) economic development, 2) social and human development, 3) governance and 4) conflict prevention and security.

The biggest economic challenges are related to political instability, tribal conflicts over land resources, an over-reliance on oil production, the under-performance of the agricultural sector, poor infrastructures and road network, a large informal sector, and high import dependency. The latter refers to manufactured goods and food, and also to foreign traders having most control over supply chains. Moreover, the country has to deal with very high adult illiteracy rates (often estimated at 89%), extremely high poverty rates, and a significant part of the population having been displaced with poor livelihoods (Muvawala and Mugisha, 2014).

3.7 Supporting Structural Improvement in Food Security and Incomes

South Sudan has abundant land and water resources suitable for producing diverse crops and livestock, but this potential remains largely untapped. Production varies across the ten states. Greater Equatoria (the states of Western, Central and Eastern Equatoria) has a bi-modal rainfall pattern that enables two to three harvests a year. This contrasts with the uni-modal rainfall pattern and single harvest in most of the rest of the country (FAO/WFP, 2013). Most production is rain-fed and at subsistence level, except for mechanized cereal production (also rain-fed) in the Upper Nile counties of Renk, Melut and Malakal. Annual production varies significantly because of the high rainfall variability across the country. The available food comes from 3 main sources: domestic production, imports and food aid. The main

bottlenecks include the country's poor state of development, low investment in the agricultural sector and poor infrastructure, which are compounded by endemic insecurity. The internal movement of food has severely been disrupted by poor road conditions and general lack of transport.

South Sudan has an estimated 8 million head of cattle together with other millions of goats and sheep and is thought to have the highest livestock-human ratio in Sub-Saharan Africa (SSA). However, most of the cattle stocks are held for traditional prestige and customary ceremonial imperatives, although goats and sheep are important sources of cash income. The main cereal crop grown is sorghum, which accounted for 69% of area sown in 2013, followed by maize (27%). Finger millet and rice make up the remaining 4%. Sorghum is also the main staple, except in the three Equatoria states where the main staples are maize and cassava. Other food crops produced in the country include sweet potato, yams, sesame, groundnut, okra, cowpea, green-grams, pumpkin, *Bambara* nut and a wide variety of vegetables.

The 2014 Crop and Food Security Assessment Mission (FAO/WFP, 2014) estimated the total national demand for 2013/14 at 1,299,000 mt against 891,000 mt of local production, giving an overall deficit of 408,000 mt. The distribution of production and deficits varied widely across the states. Western Equatoria was the only state with a surplus, estimated at 62,000 mt. Western Bahr el Ghazal and Eastern Equatoria had fairly low deficits. Jonglei had the largest deficit at 125,000 mt, followed by Upper Nile (65,000 mt), Unity (64,000 mt) and Northern Bahr el Ghazal (61,000 mt). The IPC analysis in September 2014 revealed a similar pattern, but with a larger national deficit of 653,000 mt. Western Equatoria registered a surplus (19,000 mt); while Jonglei had the largest deficit (147,000 mt), followed by Upper Nile (114,000 mt), Eastern Equatoria (102,000 mt), Northern Bahr el Ghazal (91,000 mt) and Warrap (77,000 mt) (WFP,2015:8).

3.7.1 Humanitarian Food Aid

The persistent national food deficit, the higher economic burden of importing goods, and the reduced local flow of food because of insecurity and seasonal constraints have made humanitarian food assistance indispensable to the most vulnerable communities. In the past three years, the Greater Upper Nile (Jonglei, Upper Nile and Unity) has received over half of all cereal in-kind food assistance in South Sudan. Of the states unaffected by the conflict, Warrap was the top recipient, with a 15 percent share. The remaining six states received less than one third of total distribution. Bahr el Ghazal) required the least food assistance. Meanwhile the relatively high distribution figures for Warrap and Lakes (non-conflict affected states) reflect a combination of poor local production and poor road access during the rainy season. The conflict affected areas were/are the largest recipients of food aid-shows how the conflict has impacted food security. The non-conflict Green Belt states (Eastern Equatoria, Central Equatoria and Western Equatoria and Western Bahr el Ghazal needed the least food aid.

If per-capita consumption needs are similar from one year to the next, the higher the import requirements, the more markets have to supply food. If markets fail to supply enough food, a very likely scenario in conflict-affected states, food availability may become a major problem for households, compounding their limited access to food. Specifically, the Greater Upper Nile states will need to compensate for their local supply shortfalls by importing an average of 119% of the volume of cereal they obtain from production and cereal distributions combined. The highest deficit is expected in Jonglei (151%). In total, 210,000 mt (30,000 mt more than last year) will need to be transported to markets in conflict-affected states, with the limitations to market functioning.

Table 3 - Cereal Food Aid Distribution ('000 tons) by State

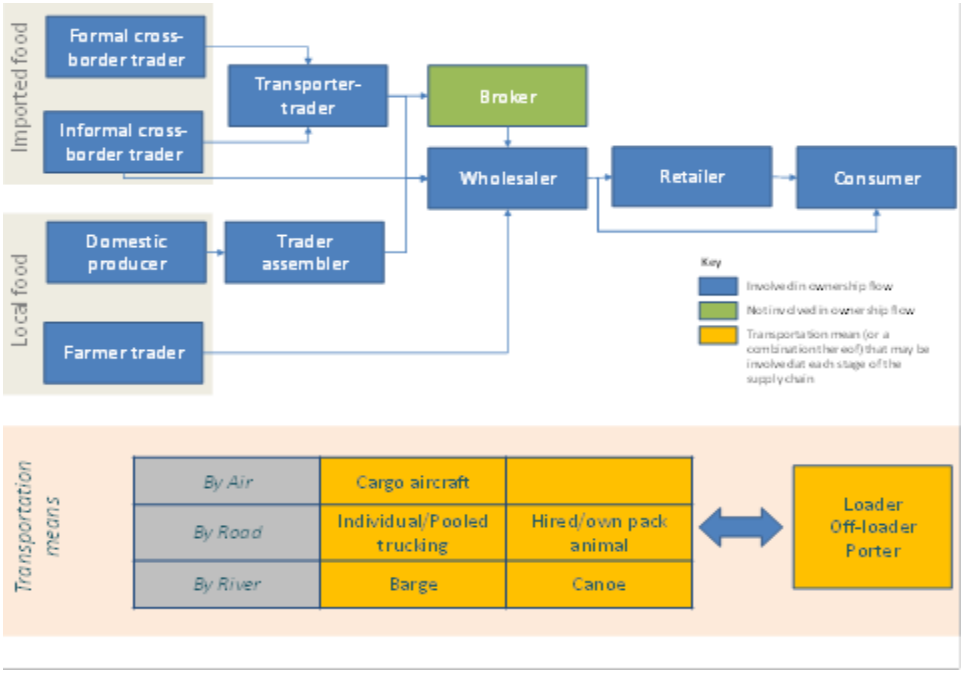
	2012	2013	2014
Central Equatoria	4	4	9
Eastern Equatoria	6	4	4
Western Equatoria	2	3	3
Jonglei	24	10	24
Upper Nile	21	32	25
Unity	12	19	25
Lakes	5	5	14
Warrap	19	25	21
W Bahr el Ghazal	6	6	4
N Bahr el Ghazal	13	11	7
South Sudan	**112**	**119**	**136**

Source: WFP, 2015

Transport is a critical factor because it affects a specific market's supply capacity and the seasonal constraints likely to undermine the stability of supply flows. Since insecurity is jeopardizing traditional trading routes, some supply chains have adapted to the conflict but have acquired huge inefficiencies.

For conflict-affected areas controlled by the central government, aircraft from Juba has become one of the most reliable supply means, partially replacing the insecure rivers and roads in Unity and Upper Nile states. Even when traditional routes continue to function, the largely informal trading channels from Sudan are also expensive, involving hiring loaders, off-loaders and porters at each trading point when the goods change ownership and means of transportation. The same is true in opposition-controlled areas where supply chains have shifted towards Ethiopia, virtually cutting off part of Jonglei from the rest of South Sudan. In other parts of the country, supply chains are concentrated along the main Kampala-Nimule-Juba trading route and other minor routes from Uganda, Kenya and Sudan.

Figure 1 Food Supply Chains



Source: WFP, (2012); WFP, 015.

The further markets are from the capital city, the greater the inefficiencies induced by poor infrastructures and corruption. These inefficiencies affect the supply chains and limit the interaction of global supply-chain operators with South Sudanese markets. For the past couple of years, foreign traders have preferred to sell directly to South Sudanese traders rather than deal with the hassle of duties and transportation (WFP, 2012). South Sudanese cross-border traders generally assemble, purchase and move goods from capital cities and major production areas, venturing as far as Jinja and Mbarara in Uganda and dealing with devalued local currencies that have limited acceptance. The endless chase for US dollars in the black market is one of the most critical and widespread constraints to business in South Sudan. Foreign currency is currently scarce and is no longer accessible through banks. Traders typically change their South Sudanese pounds to US dollars in Torit or Juba and then exchange the dollars for Ugandan shillings to pay for goods and transport in Kampala. This process erodes their capital base thereby increasing the cost of doing business.

Traders also cited high taxation (both official and unofficial) at customs and other checkpoints as one of their main challenges. The issue of checkpoints has been investigated by the National Bureau of Statistics (NBS 2011) and they found that checkpoints were widespread: there were as many as 6 checkpoints between Juba and Nimule, 32 between Juba and Aweil, 24 between Juba and Wau, and 9 between Wau and Aweil. In other words, there is one checkpoint every 25 km. The demand for payment was and still is widespread. As insecurity increases so also does the number of checkpoints.

Domestic production usually relies on short supply chains, with farmer-traders using low-capacity means of transportation and selling directly to customers, retailers and, to a lesser extent, to wholesalers operating in the markets. For imported goods, transporters play a major role, with pooled (for small-scale traders) or individual (for large-scale traders) trucking. Brokers may link foreign suppliers with local traders when supply chains get longer.

Some wholesalers engage directly in cross-border trading, usually by selling off-the-truck cereals. Others run their businesses through stores or stalls of various sizes, mostly depending on the market. Traders in conflict-affected areas operate with very low capacity as the conflict renders investments risky and market conditions extremely volatile. Elsewhere in the country, trader storage capacity also varies, but it is generally much higher than in the Great Upper Nile (e.g. 25 mt in Torit). Wholesalers often play a dual role, also engaging in some retailing. In almost all the non-conflict area markets covered by previous market assessments, traders come from across the region (Sudan, Uganda, Kenya, Ethiopia, Somalia and Eritrea). In many markets, they actually outnumber and out-scale their South Sudanese counterparts.

3.7.2 Trade Flows

Most food imports come from Uganda and enter South Sudan via the Kampala-Nimule-Torit-Juba route. Other smaller but important routes from Uganda include Kampala-Kaya-Yei-Yambio; Kampala-Kitgum-Tseretsenye-Torit and Kitgum-Poger-Torit. Goods from Kenya enter via the Logichogio-Nadapal-Kapoeta-Torit route. Commodities from Uganda and Kenya find their way as far north as Aweil. Previously, the northern markets (Aweil, Wau and Rumbek) were largely supplied from Sudan from sources as far away as Khartoum, South and North Kordofan, and South Darfur, through El Obeid and other markets. In normal times, when roads are accessible, these commodities stream south through Aweil and Wau to Rumbek and onwards to Juba, and from Wau to Yambio in the west.

Even though the conflict has had no direct impact on markets in the Greater Equatoria and Bahr el Ghazal, there have been indirect effects. Immediately after the December 2013 clashes, a large number of traders moved southwards. Traders from Jonglei reportedly moved to Torit and took up business in that market, thereby increasing competition. The conflict has created an environment of insecurity mostly in the form of banditry, especially along the Torit-

Kapoeta route to Kenya, where trucks are reportedly looted with increased frequency. Such insecurity has spread to include other trading routes, with unofficial checkpoints and roadblocks set up to extort money. Up till now, the traders have not found an effective way of dealing with this menace, though those coming from Kenya opt to take the longer route through Uganda to avoid the almost inevitable looting.

The main commodities traded include sorghum and wheat flour from Sudan via Aweil and Wau; maize flour, sugar and cooking oil come from Uganda via the Nimule-Juba-Mundri and Kaya-Mundri-Yambio routes. Equatoria and Bahr el Ghazal have high agricultural potential. Some of the food on these markets is supplied from local production, including groundnuts, *simsim*, roots and tubers, vegetables and fruits. Sales of food aid were also reported but in limited quantities. In general, food supplies are more abundant during the dry season (December to April) when roads are passable. Despite the challenges, food availability across the markets is generally high.

3.7.3 Market Functioning of Main Entreport-Nimule

Nimule is 192 km south of the national capital, Juba. It is the main border crossing to Uganda and the most important route for imports of food and non-food commodities into South Sudan. It also has the longest tarmac road in the country, ensuring easy movement towards Juba. The local market is relatively small, serving local and nearby counties and payams.

Customs officials believe that 80% of all goods imported into South Sudan enter through this border point. Customs clearance is done manually, which causes significant delays. A variety of food commodities traded on this market include maize flour, wheat flour, maize grain, sorghum, rice, beans, vegetable oil, sugar, cabbages, onion, green bananas and livestock. Most of these are imported from Uganda, but among the local produce are vegetables, sorghum, groundnuts and beans.

The conflict has not had a direct effect on trade and markets in Nimule. However, it was responsible for an initial fall in the volume of goods entering the country, as traders sought to reduce their exposure to the risks associated with the volatile situation in Juba. Trade volumes increased when the situation in Juba stabilized.

3.7.4 Market Proximity of IDP Camps

Many IDP sites are located in very remote areas, and others remain geographically disconnected despite being relatively close to main towns (e.g. Mingkman from Bor). Future food security monitoring should assess physical access to market of IDP sites and rural settlements. However, market-based interventions should continue to be contingent upon improved security particularly for the camps between Bentiu and Adok, and those between Malakal and Akobo.

3.7.5 Market Prices

The highest wholesale prices were recorded in the conflict-affected states of Bentiu (SSP10/kg) and Bor (SSP5.6/kg), highlighting the impact of the conflict on food availability and prices in markets in these states. On the other hand, the lowest prices were recorded in Torit (SSP2.8 /kg) and Nimule (SSP3.0/kg) in the non-conflict state of Eastern Equatoria. These markets are located close to or along the main import route from Uganda. Price levels were also low in Akobo, which is close to the source of supply in Ethiopia. Meanwhile, the prices were moderate in Aweil and Yambio, neither of which is directly affected by the conflict. However, both Aweil and Yambio are very distant from the main source of supply, and most of the supply routes are impassable during the rains.

The retail price levels clearly reflect the findings of assessments done by GIZ and FAO. Once again, Bentiu is the most expensive market, followed by Rumbek and Malakal. In the last two

years, sorghum prices more than doubled in Bentiu in October 2014 (up 111%), with a striking month-on-month increase of 36% from September 2014. Prices in Malakal were 45% above the previous year, while in Rumbek, prices fell by 9%.

3.8 Improving Rural Livelihoods and Access to Agricultural Commodity Markets

3.8.1 The EU and Rural Infrastructure: SORUDEV and ZEAT BEAD Projects

UNOPS/EU (2015), Feeder Roads Construction in Support of Trade and Market Development in South Sudan

SORUDEV stands for South Sudan Rural Development; ZEAT stands for Zonal Efforts for Agricultural Transformation; and BEAD refers to Bahr el Ghazal Effort for Agricultural Development. The project, supported by the EU, began with 11 Food Security Thematic Programmes (FSTP) but now there are 9. The WFP is a major market for food items produced by the farmers. Upon delivery of food to the WFP, the Warehouse Receipt System (WRS) can be used to access loans and this also helps the farmers to wait until the prices improve then dispose of the produce. It started with emergency humanitarian support then later on began to focus on development of livelihoods and generation of incomes. For instance, there is negligible vegetable production currently through irrigation along the Nile-done mainly Kenyans who have leased the land.

The *modus operadi* is “no free seeds/inputs” and farm inputs are given on a cost recovery basis. Other assistance is in the form of extension and improved seeds. The GOSS is in the process of establishing Rural Agro-mechanical Service Centres on a public-private-partnership (PPP) basis. UONPS and WFP have been constructing roads to link farmers to markets. GIZ and UNIDO involved in infrastructure development (storage, processing, value addition, etc.). SORUDEV has teamed up with 4 NGOs (Concern Worldwide, Norwegian People’s Aid, Norwegian Refugee Council and HARD-Hope Agency for Rural Development). These liaise with WFP, UNOPS, USAID, etc. in addressing rural infrastructure and market connectivity issues. They are also exploring use of a mix of motorized and non-motorized transport (head, hand, donkey carts, bicycles and motor cycles) to transport agri-produce from farm to market. As part of development of rural financial markets, the project has empowered farmers to join Village Savings and Loan Associations (VSLAs) for easier accessibility to credit and farm inputs.

Trade Mark East Africa contributes to the creation of an enabling environment for business through facilitating value addition. It works in close collaboration with the South Sudan Bureau of Standards and one of its flagship projects is assisting cross-border trade and value addition for women in handicrafts, ghee, shea butter and gum Arabic, fish, and honey. The planned feeder road construction in support of trade and market development is a component of the European Union funded ZEAT-BEAD Action. The objective of this programme is to contribute to improved food security and income of the population of the RSS. The contract for this component was signed in December 2014. The EU, through UNOPS supports the construction of feeder roads to improve rural livelihoods by providing sustainable access to agricultural markets; and to improve food security and income. The main intervention has involved the construction of 120 km of feeder roads and improvement of stakeholder capacity in 4 States (Northern Bahr el Ghazal, Western Bahr el Ghazal, Warrap and Lakes). The criteria considered in selecting feeder road for construction include: existing or potential agriculture activities; connection to market collection areas; proximity to existing components of the SORUDEV and ZEAT BEAD programmes; existing social services and facilities; population density; community participation; construction costs and feasibility; and security of operators.

3.8.2 USAID’s Food Agribusiness and Rural Markets (FARM) Project

USAID established FARM in 2010 to increase agricultural production, build rural markets, and improve public and private capacity in South Sudan to develop commercial smallholder

agriculture. The $54 million project operates in Eastern, Central and Western Equatoria, across the broad swathe of high-potential agricultural land known locally as the Green Belt. The FARM Project contributes to South Sudan's goals of achieving food self-sufficiency, reducing poverty, and promoting economic growth through higher agriculture productivity and market creation.

In the Green Belt's three Equatoria States, USAID's Project helps smallholder farmers grow staple crops to become self-sufficient; develops farmer cooperative organizations to aggregate and better market surplus production; promotes more agriculturally favorable policies; and builds local institutional capacity. FARM's activities also include provision of in-kind grants to community farmer-based organizations for selected crops: maize, beans, groundnut, sorghum, and cassava and supporting them in harrowing and plowing. Farmers have also been trained in Good Agriculture Practices (GAPs), land preparation, crop timing, pest control, harvest and post-harvest practices. The project is also credited for having used environmentally sustainable methods to safely increase land for cultivation.

Despite the volatile political climate of the world's newest nation, FARM is yielding results: Formerly subsistence farmers are boosting productivity and growing surpluses, while new and revived farming organizations are improving management and taking steps towards commercializing key commodities. Across 9 rural counties and 27 payams or townships, FARM is training progressive farmers as community models, distributing improved seed, developing community block farms, introducing mechanization, organizing first-time agricultural fairs, developing market information systems, and helping cooperatives to engage directly in formal markets

These include a total of 13,000 farmers participating through 575 local farmer-based organizations (FBOs) and 130 formal cooperative societies supported at community level. There are 8 regional cooperative unions strengthened as agribusinesses. Farmers have registered about 300% increase in maize yields from 2010-2013 using new seed varieties and changing behavior practices. An estimated 325% increase in per-capita area cultivated by farmers has been registered and over 4,000 female farmers have been trained over the initial three-year period. Cumulatively, about 80,000 men, women, and children have been reached via FARM household activities and 548 public sector officials trained to support market-led agriculture.

In carrying out the above activities, the FARM project at facilitating market and private sector development by training farmers to be business people by boosting their literacy, numeracy and business skills, and establishing local farmer training and extension services. It also conducts value chain and market analyses to identify potential markets for each of the targeted crops; links farmers to markets/traders through fairs and exchange forums, and connecting local institutional buyers to cooperatives.

In this endeavor, other core activities include identifying key feeder roads needing improvement and sharing the information with donors and those implementing infrastructure programs; strengthening the management capacity of farmer organizations and cooperatives; developing an extension service to deliver better production and market services to rural farmers; and supporting county and state governments to develop structures and skills to enable market-led growth.

3.8.3 WFP and UNOPS

According to WFP's Feeder Roads Special Operation (FRSO) 200379 progress update, the initiative's operational period was/is 2011-2018. The objective was to enhance the livelihoods of the rural population in areas with an agricultural potential by providing farm-to-market access, as well as access to education and health services in support of resilience of beneficiary communities to food shocks.

A more ambitious intervention reported in the World Bank/IDA (2014), Project Appraisal Document Report No. PAD646-South Sudan-Eastern Africa Regional Transport, Trade and Development Facilitation Project (Phase 1) received financial assistance of $80 million. This is

the Juba-Nadapal-Eldoret road which is an extension of one of the EAC road corridors, the Biharamulo-Mwanza-Musoma-Sirare-Lodwar-Lokichoggio corridor (designated as EAC corridor No. 3), linking South Sudan, Kenya, Tanzania and Rwanda, and further connecting to the Dar-es-Salaam-Dodoma-Isaka corridor, which joins the Trans East African Highway at Dodoma. The Juba-Kapoeta, which is part of the Juba-Nadapal road, serves the Kampala-Juba-Addis corridor, which links Uganda, South Sudan and Ethiopia, and further connects to the Djibouti port.

However, as it would be complex to develop all these corridors under one program, this specific program would focus on segments within South Sudan and Kenya, through the implementation of interventions aimed at improving the efficiency of the Juba- Nadapal - Eldoret corridor, which has the potential to attract high volumes of trade and traffic, as well as facilitating the development and commercial extraction of natural resources on both sides of the two countries. Further, this approach would strengthen the complementarity of this programme with other initiatives in the sub-region, such as the Kampala-Juba-Addis Ababa corridor development, facilitated by the African Development Bank (AfDB), which shares in common the Juba-Kapoeta section (240 km) and links South Sudan to Djibouti port.

A Feeder Road Technical Committee (FRTC) chaired by the Under Secretary of the Ministry of Roads and Bridges (MTRB) and comprising representatives of development partners and relevant ministries was set up to develop the rural road network. The specific task of the committee was to: (i) liaise with stakeholders to obtain a list of proposed priority roads to develop at National and State level; (ii) design the criteria for selection and prioritization of roads to develop; (iii) produce a list of priority roads to develop; and (iv) develop technical standards and specifications, and implementation plans for the roads. A Feeder Road Steering Committee (FRSC), co-chaired by the Ministry of Agriculture and the MTRB approves the prioritization criteria and a list of priority roads. The aspiration was that the outputs from the FRTC/FRSC work would promote alignment of government and development partner interventions in the rural road network. This work is now clearly out of date and a review of minutes of recent FRSC activities indicates that it meets infrequently and has a passive listening role. It does appear, however, to be one of the few formal “touch points” between the MTRB (with other ministries) and the donor community for the purpose of discussing roads.

3.8.4 State Ministries of Physical Infrastructure (SMOPI)

The SMOPI are responsible for feeder roads within the States. They are not responsible for trunk roads as this responsibility lies with the MTRB/SSRA. State governments have a legal mandate set out in the Local Government Act (2009) to raise revenue from local taxation, land sales and any other means at their disposal. They also receive a proportion of general taxation from central government, although this has been negligible in this financial year. A majority of the revenue is allocated to security taking into account the current situation and currently (2014/15) no revenue is allocated to feeder road works other than for salaries of officials and staff.

The SMOPI are responsible for the preparation of priority lists of proposed feeder roads that are periodically reported to the FRSC. The selection criteria are generally related to agricultural importance, population, estimated costs etc. but the amount of hard data used appears to be minimal and relies on local knowledge and negotiation. Donors take these priority schemes into account when implementing feeder road construction components of their programmes, with validation of the selections built into the early stages of the implementation. An aspiration within most donor-funded projects is for the communities to be sensitized as to the benefits of feeder road, and creation of willingness to maintain this asset for the community benefit. A good example undergoing planning and piloting is the allocation of agricultural land to a community-based “road committee” who periodically share county-based machinery, equipment and trained workforce supplied under the project to increase food production. The surplus is to be sold and the returns re-invested in routine labour-based road and equipment maintenance.

As in the case of EU's ZEAT BEAD, the programme includes the development of "public-private partnerships (PPP)" for wider agricultural purposes including maintenance of the associated feeder roads. In the period since the CPA was signed in 2005, WFP has delivered the greatest value and kilometres of rural roads in South Sudan (RSS), as part of food distribution activities. The purpose of these roads is primarily humanitarian, short-term food distribution, and as such the effort has not had asset or sector sustainability as a driving concern.

4. Chapter Four: Road sector

4.1 Road Sector in South Sudan and challenges

The road sector in South Sudan is facing multiple challenges, as well indicated in the analysis on “Roads and River Transport Strategy” submitted by Nathan Associates Inc. to the World Bank in October 2014. For sure the most visible is lack of road maintenance which translates into very difficult travel conditions during the dry season and closed roads during the rainy season. Routine and regular maintenance to maintain the roads in good condition and minimize the impact of water on the road are not performed. Coupled with insufficient drainage structures implemented and no design standards used during opening and rehabilitation of the roads makes the roads more susceptible to damage during the long rainy season in South Sudan. The damage caused by vehicle traffic during the rainy season is then not repaired and accumulates over time until the roads are mostly impassable. The same occurs with bridges and insufficient drainage structures.

In order to restore the existing network to good working conditions, focus should be laid to prioritize short-term investments by focusing on two types of interventions: (a) reconstruct the key road sections to a higher road standard that protects the roads from the effects of heavy rains and at the same time conduct temporary some quick and short-term rehabilitation measures and (b) develop roads that are also critical to the movement of inputs, consumables and agricultural products but that handle lower volumes (feeder roads). The key objective is to achieving a better and all-season connectivity to all market and production areas in the country.

The costs of providing upgrades, reconstruction and road maintenance in South Sudan are extremely high compared to neighboring countries. Some reasons are the need to have security, the lack of adequate soil for construction and other construction materials, the long distances that materials need to be transported and result in high transport costs, as well as lack of capacity of local construction companies. Many actions are needed in order to reduce costs and maximize the impact of the limited resources available while developing a strong and effective national construction industry.

4.2 Update on roads programs in South Sudan and Donors intervention in the road sector (March 2015)

Road rehabilitation programs in South Sudan started in 2005 with the initial aim to open road corridors for distribution of food supply and later to import materials for development projects. Road rehabilitation started in 2006. Until end of 2013 (begin of the crises) all roads, which had been rehabilitated, were trunk roads connecting state capitals, major towns and border crossings. However, out of a total of approx. 5000 km of roads, which had been opened and rehabilitated since 2005 for only two roads (Faraksika-Yambio gravel road and Nimule-Juba: 191 km asphalt road with approx. costs of 240 mio. US$ for planning, design and construction) designs before construction had been carried out.

For all other roads the design have been done according to the works progress and according to the available funds, i.e. that means that design standards had to be neglected in many cases to remain within the available budget. This lead for example to the following omissions: no proper base or sub-base, the importance of proper drainage systems was not emphasized, therefore drainage systems along the roads were not implemented sufficiently, no proper compaction had been done due to lack of water and for some road rehabilitation contracts compaction tests had been cancelled due to cost saving measures, no proper gravel wearing course with adequate thickness had been used.

The heavy and long lasting rainfalls in South Sudan, coupled with no maintenance activities since 2012 due to lack of budget, quickly destroyed the rehabilitated roads. Therefore these roads are presently in such condition that they require complete reconstruction instead of rehabilitation. Any maintenance activities are not viable and no long-term solution is at present in view.

Since 2012 three main donors for the road subsector (EU, World Bank, USAID) are making efforts to improve quality of works by

- insisting on investigations of the road alignment before construction works start
- submission of a detailed design before start of construction works
- construction works to be done according to the Low Volume Construction Manual

Presently there are only few roads which are developed according to this procedure, e.g. Lui – Amadi – Tali road, Yei – Lasu road / border to Kongo and Magwi – Bongolo road (funded by the World Bank), Kangi – Kuajok road and Kuajok - Lunyaker road (funded by the EU; for Kuajok – Lunyaker road the design had been completed but construction activities didn't start yet). Other roads, e.g. Pageri – Magwi or Mundri – Bongolo road (funded by the Dutch Government) are still rehabilitated by doing the design according to the progress of works. However, improvements of quality of works are done by implementing construction works according to the Low Volume Construction Manual.

Since end of 2013 until now no trunk roads had been constructed or rehabilitated but preparatory works are in progress (e.g. Juba – Yambio – Tambura: gravel road, funded by USAid; Juba – Nadapal: asphalting of road, funded by the World Bank, African Development Bank and China). Works on feeder roads continued in 2014. The main stakeholders for feeder roads presently are: the World Bank, USAid, EU, Dutch Government and CIDA. The feeder roads programs from the World Bank and the Dutch Government are ending in 2015.

All roads which are rehabilitated / constructed now are of much better standard and higher quality than the roads done between 2005 and 2012 (except Faraksika – Yambio road and Nimule – Juba road).

Hereafter is presented the Donors' support in the Road Sector as of March 2015 in South Sudan:

Table 4: Donors' support in the Road Sector

Donor	Funding Allocation (US$ million)	Planned road length (km)	Implementing Agency	Program/Purpose	Remarks
World Bank	38.0	450	MTRB	South Sudan Rural Roads Project (SSRRP)	On-going rural roads
World Bank	50.0	940	MTRB	SSRRP-Additional Financing	Pipe line, multi-year road maintenance & bridges
World Bank	80.0	40	MTRB	SS-EARTTDFP/Kapoeta-Nadapal section + 10-bridges	Bridges inclusive – trunk road
AfDB	10.4	-	MTRB	Technical Assistance Project	Includes feasibility studies and detailed design of the Juba-Mundri-Yambio road
AfDB	100.0	70	MTRB	SS-EARTTDFP/Torit-Lobira section	Pipeline trunk road
AfDB	3.5	-	SSRA	Kampala-Juba-Addis-Djibouti corridor (feasibility studies and detailed design of Kapoeta-Boma-Raad road).	Managed by IGAD Secretariat. REOI published
China EXIM	700.0	515	MTRB	Juba-Terekeka-Yirol-Rumbek	GRSS has confirmed loan financing from C-EXIM – trunk road
China EXIM	150.0	125	MTRB	SS-EARTTDFP /Juba-Torit	Pipeline - GRSS to follow-up formal request for financing trunk road
USAID	3.8	192	UNOPS	Maintenance of Juba-Nimule road	Pipeline
USAID	13.0	-	Tetratech, USA	Trunk and feeder road design of 1000km	On-going Assessment only
USAID	60.0	420	UNOPS	Feeder roads program	Ongoing maintenance program
Canada	18.8	140	WFP	Feeder roads	CAD $20 million Roads under identification
DfID	80	360	WFP/UNOPS	Feeder roads	£50 million planned
EU	25	150	WFP	Feeder roads	€20 million ongoing
EU	38	TBC	UNOPS	Feeder roads	€30 million under negotiation
South Sudan Recovery Fund (SSRF)	34	390	UNOPS	Feeder roads	Nearing completion
SSRF	40		WFP	Feeder roads	Completed
Kingdom of Netherlands	21	140	WFP	Feeder roads	On-going
IFAD	3.8		WFP	Feeder roads	
JICA	80	Bridge	MTRB	Juba Nile Bridge	Restarted after being on hold due to armed crisis
Total	**1,548.50**				

4.3 Classification of the existing road network

The existing road network in South Sudan is classified according to road type as Interstate (including International roads), Primary, Secondary, and Feeder road networks. The distribution of these roads is estimated to be as presented in the following Table.

Table 5: *South Sudan Road Network*

Road Type	Length (km)
Interstate network	6,400
Primary network	1,451
Secondary network	3,822
Feeder network	7,400
Total	**19,073**

To determine the prioritization of the different road sections, the demand and supply sides have been combined by Nathan Associates Inc. by assigning the traffic to the network. This is done in five steps:

- Coding the road network based on identified corridors
- Defining the characteristics and condition of each road section or link, including traffic volumes.
- Assigning intervention and costs by road section
- Loading tons transported between OD pairs onto network links
- Prioritizing links (corridors) in accordance with present and projected freight traffic growth and comparing it with estimated link traffic volumes.

At the beginning of the program, a cost cutting alternative is not to pave all road sections to provide two lanes of travel. For sections that have moderate to low traffic, a single paved lane with wide shoulders could provide an adequate level of service. This potential cost-saving scheme is not considered in the analysis on “Roads and River Transport Strategy” submitted by Nathan Associates Inc. to the World Bank in October 2014.

The interstate network was coded in accordance with the corridors defined by the Strategic Plan of 2006 (Ministry of Transport and Roads. Strategic Plan for Road Sector, 2006, funded by USAID).

Table 6: *Road Corridors and Links*

Link#	Origin	Destination	Length km	Surface
East West Corridor (Lokichogio-Juba-Mundri-Yambio-Tambura-Wau Corridor)				
I1-1	Narus-Kapoeta	Torit-Juba	407	U
I1-2	Juba	Yambio- via Mundri –	418	U
I1-3	Yambio	Bo River via Tambura	586	U
I1-4	Bo River	Wau	107	U
East West Corridor (Lokichogio-Juba-Mundri-Yambio-Tambura-Wau Corridor)				
I2-1	Kaya (Kaya-Yei)	Yei	77	U
I2-2	Yei	Faraksika	231	U
I2-3	Mundri	Rumbek	225	U
I2-4	Rumbek	Wau	222	U
I2-5	Wau	Aweil	152	U
Eastern Corridor (Nimule – Juba – Bor – Padak – Mabior – (Ayod – Malakal) – El Renk Corridor)				
I3-1	Nimule	Juba via Moli	171	P
I3-2	Juba	Bor	174	U
I3-3	Bor	Malakal via -Padak –Ayod	451	U
I3-4	Malakal	El- Renk	340	U
Rumbek –Maper –Bentiu Corridor				
I6-1	Rumbek	Bentiu via Maper	360	U
I6-2	Bentiu-	Ablemnhom via Mayom	135	U
Wau –Warrab –Abyei –Corridor				
I7-1	Wau	Warrap	87	U
I7-2	Wau	Gogrial Abyei	220	U
Wau –Raja- El- Fifi Corridor				
I8-1	Wau	Raja	336	U
I8-2	Raja	El Fifi	380	U
Rumbek –Yirol –Shambe –Bor –Ponchalla Corridor				
I9-1	Bor	Ponchalla	330	U
I9-2	Bor	Shambe ? River?	100	U
I9-3	Shambe	Yirol	70	U
I94	Yirol	Rumbek	110	U
Bentiu – Malakal – Nasser – Jekou Corridor				
I10-1	Bentiu	Malakal viaTonga	260	U
I10-2	Malakal	Jekou via Nasser	320	U
Juba – Yei – Lasu Corridor				
I11-1	Lasu	Yei	72	U
I11-2	Yei	Juba	160	U
Melut – Adar – Kurmuk Corridor				
I12-1	Melut	Adar –Kurmuk (Partly River Transport)	240	U

4.4 Determination of the current roads conditions and selection of roads for rehabilitation/construction

The next step in the process was to determine current road condition, the intervention that would be required for each link to provide an adequate level of service, and its cost.

There is no road condition information available from the government. Road condition estimates by Nathan Assoc. Inc. were based on two documents; the Road Access Map (UN Logistics Cluster. South Sudan-Access Constraints: June 20, 2014), and the Road Assessment Report (Logistics Cluster. UNOPS-Road Assessment Mission 9-18 July, 2013). In these documents, three road conditions were identified; “good”, “bad” and “impassable”, or closed. Accordingly, three interventions were defined, being “maintenance”, which assumed resurfacing, grading and light drainage repairs; “heavy maintenance”, being major road and drainage structure repairs and resurfacing; and “Reconstruction”, which is rebuilding the entire road.

Project priorities were determined on two separate analytical bases: the relative importance of goods traffic for agricultural and mineral commodities as represented by the tons of goods projected to flow between the borders and different regions of South Sudan (imports, exports and domestic trade), and an estimate of potential traffic AADT volumes for various road sections. The results of these were compared and those road sections with the highest AADT and highest potential goods traffic volumes were given the highest priority for improvement.

Potential goods flow on the network have been envisaged. The basis for this analysis is the projections of agricultural, mineral and industrial commodities between origin-destination pairs. These traffic forecasts and analysis were divided into two periods; 2010- 2015 and 2016-2030. The first period reflects the existing emergency situation with high deficits of basic foodstuffs, particularly grains, while the second outlines the development period with more emphasis on economic development and higher growth rates.

The roads with highest priority for 2015 are those connecting to Juba, particularly to Uganda and Kenya. This is followed by sections east of the Nile between Juba and Bor, continuing to Malakal. The next priority is the corridor Juba-Rumbek-Wau and third, Juba-Yambio. Others with significant truck traffic are the northern connections to Bentiu, and Wau to Warrap-Kuajok, Aweil and Raja. As most of the traffic during the early years is south to north, the other roads, mainly to the north, did not show much traffic generation. For other roads with no traffic, like Kaya-Yei and Yambio-Wau, it is unclear how the traffic would develop.

4.4.1 Selection of roads for rehabilitation/construction and traffic analysis zones for South Sudan National Transport Plan

Selection of roads for rehabilitation / construction is performed by the State Ministries but has to be approved by the National Government during the FRSC meetings.

Tendering has to be approved by the National Government. This leads frequently to the situation that neither the National Ministry nor the State Ministries feel responsible for ownership. The National Government insists on the fact that bilateral agreements are developed with the donors and therefore MoUs between the State Ministries and implementers are not accepted. On the other hand the State Ministries are reluctant to take over ownership, especially in regard to maintenance, due to the fact that the funding agreements are signed on national level without involvement of the States.

In **Annex 5** a is presented a “Traffic Analysis Zones for South Sudan National Transport Plan” (2010) where are caractherised the main activities (livestock,oil production,exports, imports, etc…) for each State of South Sudan.

As far as “Rural roads” are concerned, in **Annex 6** some interesting information is given about ‘Detailed costs estimates for Component and Activity Description’ of the “Rural Roads Project”, funded by the World Bank on an Emergency Project Paper of the World Bank (April 17, 2012).

5. Chapter Five: Possible scenarios and options in the transport sector

5.1 River Transport

From Mangalla to Juba bigger boats are facing problems during the dry season, when the water level of the Nile is low. Therefore, talks came up to look for support for dredging activities. Since dredging is extremely expensive, a cost-benefit calculation should be developed before any activities in this regard will take place. It has to be taken into consideration that the Nile is carrying lots of sediments and therefore the river is silting up quickly.

In the past river transport by barges was carried out from Kosti / Sudan to Juba, supplying food, soft drinks, etc., which were cheaper to be imported from Sudan than transported from Uganda or Kenya. Vice versa alcohol, bottled water and equipment for oil companies had been transported by barges from Juba to Malakal. Due to unresolved conflicts with Sudan river transport from the north has stopped. Up to the crise of 2013, river transport was carried out by smaller boats within South Sudan to a large extent; big barges only moved from Juba up to Malakal. These smaller boats have a loading capacity between 20 and 40 tons. This mode of transport has the advantage that boats can almost reach every destination at the riverbanks directly. Smaller boats can also go along the channels and side arms of the Nile, up to Bentiu. It increases the transport business opportunity for local people.

Bigger barges are presently only used to transport food ~~supply~~ for WFP and fuel for humanitarian organizations. It depends on the security situation if these humanitarian supplies can take off but still have to take protection forces with.

Due to the fact that construction of refineries couldn't be completed, no transport of petroleum products is taking place presenly by barges.

In the case of an increase of river traffic the following should be investigated and special precautions have to be foreseen: (i) impact of bigger barges (loading capacity: 1000 tons and more) on embankments along the Nile and possible erosion (embankments not protected); (ii) impact of waves on small boats and canoes used by people and fishermen (danger of small boats being capsized what could create new conflicts) and (iii) developing guidelines and environmental protection measures (especially in case of future transport of petroleum products) to prevent environmental disasters, taking into consideration that more than 100 mio. people depend on the water from the Nile upstream.

5.2 Air transport

Main airports in South Sudan are Juba and Rumbek. Additionally there are few smaller airports, mainly connections to the other state capitals and major towns.

Table 7: Airports for state capitals / major towns are:

	Asphalted	Wide gravel runway	Broad gravel landing strip, not filled up	Remarks
Juba	X		48	Construction works for new terminal and extension of runway ongoing since more than 6 years. Presently the extension of runway and completion of new terminal building is in progress by a Chinese contractor with total costs of about 180 mio US$ (financing: RoSS)
Rumbek		X		Contracts for upgrading airport (construction of terminal building, asphalting of runway) signed by

				the Government of South Sudan and in progress since years. RoSS financed but due to financial constraints slow progress
Wau	X			Air traffic managed by the UN
Malakal	X			Air traffic was managed until recently by the UN
Prelut	X			In case of heavy rains the runways have to be closed for some hours to avoid damages for aircrafts
Aweil		X		
Rubkona / Bentiu		X		
Bor		X		
Yida		X		
Torit			X	
Yambio			X	Land for new airport is assigned already since years ago but due to financial constraints no further activities
Kuajok			X	

Juba International Airport is tower controlled by aviation authorities. Although Juba is an international airport it only fulfils to a limited extent the required standards; e.g. suitable fire protection system is not in place (no water storage for emergency cases, hydrants / fire protection systems are not working), no aircraft maintenance facilities, emergency facilities are not in place (e.g. in case of causalities), no emergency exits at the terminal, no safety glasses at windows. It became apparent during the humanitarian crises that the airport in Juba is seriously congested and lacks of proper technical facilities as well as personnel.

There are additionally about 2100 airstrips spread throughout South Sudan. Those airstrips are mainly managed by the UN or NGOs (e.g. bush clearing) in order to keep the airstrips open for food supply to remote areas. Such air transports are performed in most cases by 10-seater aircrafts. During rainy seasons most of these airstrips are problematic for landing and take-offs. If no aircrafts can land at all and no access by road is possible air-drops for humanitarian goods have to be carried out.

Rules for competition on internal and international market or updated agreements for opening the air space and for facilitating movements of airplanes through South Sudan's skies (e.g. for example fly-over fees are not collected in South Sudan) are not in place. High landing and parking fees are collected in South Sudan and should be utilized for maintaining the basic infrastructure at airports.

No airport in South Sudan is properly equipped for non-visible approach; therefore landings and take-offs only are permitted during daytime (VHR flights only). At airports where control systems (e.g. glide slopes, landing lights) were installed, they are not in function any more (e.g. Prelut, Malakal), and this could become problematic, e.g. for medical evacuations.

5.3 Railway transport

A railway line existed from Sudan, via Aweil to Wau. From the southern side the railway line stopped in Arua / Uganda. To connect the North / South axis from Alexandria / Egypt to Cape Town / South Africa a section of about 800 km is missing in South Sudan. Rehabilitation of the railway line from Sudan to Aweil and Wau had been financed through the MDTF and was in operation until 2009 / 2010 when railway bridges had been destroyed. Due to unresolved issues with Sudan the reactivation of the railway line from Aweil to Wau is presently not a priority any more.

The railway section from Arua / Uganda to Kampala is also not in operation; therefore the plans for connecting this railway section had been put presently aside.

According to verbal information discussions about an agreement to construct a railway line from the neighboring country are in the pipeline with the Chinese.

5.4 Roads

Most of the goods within South Sudan are transported by road.

Before signing the CPA the infrastructure in South Sudan was almost non-existent. Therefore donors agreed to assist the government in opening main corridors. The government was quite confident to be able to contribute to the development and was eager to carry out maintenance after rehabilitation of donor-funded roads, and even opened and rehabilitated roads with own funds. The road network (from interstate roads to feeder roads) is estimated to be about 19100 km.

After independence in 2011 most of the donors (except USAid and the World Bank - which are involved in construction of trunk roads and feeder roads - and China, where negotiations for road construction are in progress) shifted the focus on rehabilitation of feeder roads with the aim to build up agriculture as second economic backbone for the country.

This approach had a severe set-back in 2012 when oil production stopped due to disagreements about pumping fees and oil revenue went down. At the end of 2013 fighting erupted in Juba and quickly spread to other parts of the country. Consequently, donors, UN-organizations and NGOs had to evacuate non-key staff and scaled down activities to a minimum. It took almost 6 months until activities fully resumed. The oil revenue didn't recover any more due to the reduced oil production coupled with the lower international oil price. Therefore the government was not able since 2012 to contribute to maintenance activities.

5.5 Institutional set-up in the government

The Ministry of Transport, Roads and Bridges is headed by the Minister. Two Undersecretaries are dealing with day-to-day tasks. One Undersecretary is responsible for roads and bridges, the other one for river and railway transport and aviation.

For roads and bridges different departments within the National Ministry had been established, such as: safety, planning, construction, etc.

Budgeting for construction and maintenance of trunk roads and bridges is the responsibility of the national ministry (Ministry of Transport, Roads and Bridges).

The State Ministries (Ministry of Physical Infrastructure) are responsible for feeder roads. This institutional set-up is quite problematic, especially during construction for feeder roads and in regard to maintenance. Implementing agencies have to enter agreements with the respective State Ministries in order to get approval for access to water, marram pits, land for road camps or alignment of roads during construction. This is developed in form of a Minutes of Understanding, which are signed between the implementer and the respective State ministry.

On the other hand grant agreements with donors are developed by the National Government and the final approval for road selection is given by the National Government during the FRSC meetings.The selection of feeder roads to be rehabilitated/constructed is based on consultations with the states and on the priority list from the states who are sending the priority lists to the National Ministry). This set-up frequently leads to situations where neither the National Ministry nor the State Ministries are taking over ownership. The National Government insists on the fact that bilateral agreements with donors only can be developed at national level and therefore MoUs between the State Ministries and implementers are not accepted at national level. On the other hand the State Ministries are reluctant to take over ownership, especially with regard to maintenance, due to the fact that the funding agreements for rehabilitation/construction had been signed on national level and in most cases without involvement of the States.

5.6 Human Resources

Lack of experienced and educated staff is a major problem within the government and state institutions. Frequently, even those who are experienced and educated prefer to apply for work in lower positions with an international institution / organisation instead of working for state or national government or for the private sector due to the more attractive and regular payments.

This lowers additionally the already weak human resources in the institutions.

To increase knowledge transfer the EU as well as the Dutch Government have included the provision of having site engineers from the respective state to work with contractors and consultants during construction activities.

Programs funded by the World Bank have set up a Project Management Team, which is headed by South Sudanese but supported by external consultants who are carrying out the design. These examples show that efforts are carried out by donors in regard to practical knowledge transfer.

Other institutions / organisations are not involving the South Sudanese counterparts in any process of procurement, tendering, evaluation and contracting. Those activities are carried out 'in-house' without involvement of South Sudanese counterparts.

This means that the knowledge for all processes in regard to procurement (from drafting BoQs, tendering, up to contract signing and checking of payment certificates) is performed 'in-house' only, without involvement of the South Sudanese counterparts. Therefore the Ministry and State institutions for the road sector are lacking knowledge and understanding of such processes and don't have experience in producing proper tender documents for construction and maintenance in future by themselves.

5.7 Assets

No asset registers in the States or in the National Ministry exist and no efforts are developed by the State Governments or at the National Ministry's level to evaluate the availability, condition and usage of equipment delivered in the course of different programs. One example is a weighbridge, which had been funded for Central Equatoria but where the whereabouts is unknown. Another example is equipment that had been purchased by UNOPS for maintenance activities in Warrap state and which is standing idle since the day parked there (about 4 years ago).

One reason for the lack of commitment could be related to the fact that job descriptions for different positions are not available in the State and National departments involved in road construction and maintenance, and therefore nobody feels responsible. Participation in construction and maintenance training only would increase the personal knowledge but it is unlikely that it would be applied in practice unless job descriptions are in place for key positions.

In 2006 / 2007 a training center for road construction and maintenance had been constructed in Kapoeta but never had been put into operation. Nowadays it is completely abandoned and falling apart. Road construction camps which were built with the purpose of transforming them to maintenance yards never had been used for the intended purpose and are also either falling apart or are not existent any more at all (e.g. Torit, Juba / Gumbo, 55 miles before Bor and a road camp between Faraksika and Yambio).

5.8 Involvement of private sector

In the past mainly oil exploration companies and refineries contributed to construction or maintenance of roads in the areas where they were operating since this was benefiting their purpose. After the shutdown of most of the oil production and the impact from the crises since the end of 2013, as well as of the ongoing political and humanitarian crises, private investments almost came to a standstill.

Major investors are scared to resume activities due to lost property, machinery or equipment, because of little or no business nowadays; exists a very unfavorable land policy for investors, as well as unfavorable credit lines in South Sudan, coupled with a scarcity of hard currency to pay for imported goods. Some examples follow.

An Egyptian investor in Unity invested 24 mio. US$ with the aim to cultivate up to 10000 ha. In the course of the crises, the farm had been invaded and occupied and all equipment and machinery destroyed.

A private investor at the west side of Juba built up a harbour. Due to security issues along the

river and no demand for bigger boats, due to the unresolved border issues with Sudan, further developments had been stopped.

Another company constructed a shipyard for building barges in cooperation with the government. The shipyard never was in operation due to lack of experienced management from the government side.

The European oil company TOTAL, with valid concessions, is not prepared to further invest and develop in the oil sector due to the unstable situation in the country. Although the country has huge potential in mineral exploration, it is unlikely that the volume of transported goods will increase in near future.

The only private investor operating in South Sudan, except the oil companies, is the brewery but it is also struggling to stay in operation due to the constraints to obtain hard currency to import ingredients for their products.

Close to completion of a construction of a refinery, with an expected yield of 7500 barrel/day, it had been destroyed and it has to be expected that it will not be built up again in near future.

5.9 Transport Options and priorities: Methodological Standpoint for an Infrastructure Program

From the methodological standpoint, South Sudan could develop a tentative infrastructure program 2016-2020. Such program would have to be updated on yearly basis, taking into consideration the following two options:

1. Option 1: Concentration on reconstruction of existing road corridors to acceptable, higher quality standard, to maintain access to the main humanitarian distribution centers (e.g. Rumbek, Wunok, Bor), to maintain existing roads, which are built on higher standards (including those roads, which are fitting in the program of reconstruction of trunk main roads and new construction of feeder roads, which are funded by USAID). Less focus is laid on construction of new feeder roads and should concentrate mainly in the Green Belt area.
2. Option 2: Concentrating on keeping existing road corridors open to have year-round access to humanitarian distribution centers, maintenance on existing feeder roads, which had been built on higher standards, and developing new feeder roads.

For river transport no infrastructure investments are recommended in short-term (2016 – 2020), due to the stoppage of river traffic from Sudan to South Sudan and the presently low river traffic, mainly caused by insecurity.

As short-term measures environmental studies, e.g. to update existing water laws in regard to protection of rivers from pollution and cost/benefit analyses in regard to dredging. are recommended.

For airports infrastructure improvement works for Juba (construction of new terminal and extension of runway) and for Rumbek (asphalting of runway, construction of terminal building) had been contracted by the Government of South Sudan. The aim for these two airports is to be fully recognized as international airports. The airport in Wau had been recently asphalted.

If the country recovers from the ongoing humanitarian crises less aircrafts, including operational set-ups are required outside Juba. If oil companies are resuming production, airports mainly would be used by these companies and therefore could contribute towards maintenance of airstrips / smaller airports.

For short-term interventions, assistance should be given to update agreements for facilitating movements of airplanes through South Sudan's.

Comparing investment costs for roads and airports, with benefits in regard to humanitarian aid, shows more advantages in road investments due to the fact that costs for airlifting operations by humanitarian organisations could be reduced by far.

WFP estimated that the costs for humanitarian aid during the rainy season, where most of the roads become impassable, can shoot up from 3 mio. US$ (road transport) to 30 mio. US$ per

month if carried out by air lift.

South Sudanese also would benefit more from road construction since the majority of the population is not able to afford the costs of air tickets and have to use road transport to move within South Sudan.

For multimodal options, the legal set-up should be developed in the short-term before setting up multimodal centers.

Table 8: level of advantages / disadvantages and investment costs required for river, air and road transport interventions, if the present unstable and difficult economic situation is not improving

(L = low, M = medium, H = high):

Investment	Advantages			Disadvantages			Costs		
	L	M	H	L	M	H	L	M	H
River Transport	x					x			X
Airports		x			x				X
Roads			x	x					x

Table 9: Next table presents the level of advantages / disadvantages and investment costs required for river, air and road transport interventions, if the humanitarian and economic situation will improve

(L = low, M = medium, H = high):

	Advantages			Disadvantages			Costs		
	L	M	H	L	M	H	L	M	H
River Transport			x	x					X
Airports			X	x				x	
Roads			x	x					X

Table 10: level of advantages / disadvantages and investment costs required for river, air and road transport interventions, taking into consideration costs saving measures for humanitarian supply (by keeping main road corridors open) and parallel construction of new feeder roads to increase agricultural activities

(L = low, M = medium, H = high):

	Advantages			Disadvantages			Costs		
	L	M	H	L	M	H	L	M	H
River ransport	x					x	x		
Airports		x		x			x		
Roads			x	x					x

Advantages of the planned investments are mainly in the form of:

- Humanitarian main distribution centers are accessible all year round; humanitarian aid supplies can be transported by road all year round
- Agricultural activities can be implemented, especially in the Green Belt (Greater Equatoria)
- The reconstruction of a road from Yei to Kaya (border with Uganda) will increase transport of supplies at a second border crossing. Presently 80 % of all goods for South Sudan are imported through the road Nimule – Juba. Strengthening another border crossing will shorten the supply time

These advantages will contribute to the following benefits:

- reduction of poverty at urban and rural levels (decreasing consumer prices due to reduced transport costs; agricultural products don't have to be imported)
- less costs for transport of humanitarian supplies and storage facilities. Goods don't have to be stored in advance for the time period when roads are impassable
- efficient connections linking the different regions of South Sudan
- reduction of travel time and more comfort
- reduction of Vehicle Operating Costs (VOC)
- begin of harmonized development
- increased transport modes, both for passengers and goods.

If the infrastructures and interventions will not be realized, the main disadvantages can be identified as follows:

- high costs for humanitarian supplies by airlift, especially in rainy seasons and for storage facilities
- high costs for the private sector. Unaffordable high prices can create political conflicts and can increase the demand for humanitarian supply
- agricultural products will be imported if the costs for agricultural products are too high
- potential difficulties to achieve economies of scale
- insufficient amount of traffic
- not harmonized development with consequent economic and social imbalances with further conflicts at national level
- more time required and less comfort to travel from one region to another.

Taking into account the existing situation in South Sudan - with the conditions being of stagnation and further perspectives of deterioration in the short term – and where the resources are limited, efforts should concentrate on the most economic and effective solutions for ensuring humanitarian aid supply, bringing products to markets and developing further agricultural activities.

In relation to the transport sector and to the local capacity for absorbing it, the Consultant suggest s that the more appropriate and sustainable solution is option 1 for the short term (2016-2020), with selected transport interventions, mainly focused on keeping the trunk mains and main corridors open for traffic in the first year, while starting complete reconstruction of these roads and continuing in a smaller scale with feeder roads. Subsequently from 2021 to 2025 option 2, which is broader and widespread in regard to construction of feeder roads, should be promoted and developed in such a way that, with an improved overall situation, all the areas of the country will hopefully benefit, in terms of development from the investments.

For all roads, which had been already constructed (or are in progress), according to design standards, maintenance activities should be foreseen.

5.10 Potential for PPPs

Potential for PPPs could be investigated on a selective basis as mid-term/ long-term option, mainly for airports and for selected roads through concession schemes of 30-40 years, but also for construction and maintenance phases and/or only management of the infrastructures. PPP models would be an advantage for management and operation to transfer knowledge from abroad.

For each proposed PPP project, feasibility studies and financial analyses should be prepared.

Presently there is little (or almost no) interest of serious partners for PPPs. Reasons for this are:

- present instability in the country is scaring off potential investors / partners

- PPPs systems are not yet practiced in South Sudan and laws and guidelines, regulating PPPs, are not yet established
- Laws are very unfavourable for investors to protect huge foreign investments

A PPP Law should be passed in order to guarantee foreign investors; afterwards a PPP Unit will be placed under the Ministry of Finance or under the Prime Minister, as it is the case in most of the different countries (Tanzania, Kenya, etc…).

As regards the PPP potential in the roads sub-sector, this should be in the medium term limited possibly to fast connections, connecting selectively for instance Juba to other main centers and with neighboring countries, like Uganda or Kenya. For this kind of roads, some parameters can be suggested and considered meaningful:

- relationships between and among investments / size of population;
- relationships of investments / potential of economic production;
- traffic of passengers and goods.

Potential development of PPPs in inland water services could be represented by specialized services (including refrigerating rooms) for transporting agricultural and fish products through fast links among the different regions along the Nile.

It has to be taken into consideration that important as they are, inland water transport and airports include not only the infrastructures but also the equipment and services to be provided to the fleets, creating gateways for development.

5.11 Poverty reduction

Of course the interventions of poverty reduction will be more sensitive to inland water transport, and particularly to roads interventions, while a different degree can be attributed to air transport.

As far as the main impacts on poverty reduction are concerned, the following impacts could be identified:

- for roads: reduction of travel time, reduction of VOC, decreased final prices of products for consumers, less storage facilities required for goods, more comfort, etc.;
- for inland water transport: less transport costs due to big volumes of load, decreased final prices of products, less loss of produce due to lack of refrigeration rooms and more time for transportation, etc.;
- for airports: reduction of travel time, more comfort, etc.
- for multimodal centers (roads+ inland water transport): harmonized development in different regions with consequent growth of incomes and of standards of living because of reduced tariffs and commodity prices.

5.12 Institutional Strengthening

A short term (2016-2020) program of institutional strengthening and capacity building could be carried out, focused on the transport sub-modes and also within the MTRB (Ministry of Transport, Roads and Bridges).

The main lines of action in the short term could be represented by the following elements, with particular emphasis on roads and only limited support to, river transport and airports:

- River transport: updating of the inland water law and environmental protection as short-term measure. Depending on the development institutional strengthening, training of key staff and training courses on key issues shall be carried out on medium-term;
- Airports and air transport: new rules for competition on the internal and international market, updating of new agreements for opening the air space and for facilitating movements of airplanes through South Sudan’s skies on the short-term ;and training on key staff and

training courses on key issues on medium-term when the already started modernization/expansion of Juba international airport and related fleets will be completed,

- Airports: High landing fees for parking and landing are collected by the authorities, which should be reinvested in maintenance of airport infrastructures.
- the SSRA needs progressive reinforcing, giving it more financial and technical responsibility, strengthening the road maintenance component of key staff and training courses on key issues;
- MTRB: reinforcement of the key staff including some experts specialized particularly in the following areas:
  a. transport economics, strategic planning and budgeting;
  b. traffic forecasting;
  c. transport and environment issues;
  d. information systems and data banking, e.g. for assets, human resources, etc.
  e. training courses on selected key issues as multimodal transport, safety, PPPs, etc.

Institutional support and strengthening needs and priorities for the short term (2016-2020) could be schematized as follows:

Table 11: Institutional support and strengthening needs and priorities for the short term (2016-2020)

(L = low need, M = medium need, H = high need):

Field	Institutional strengthening			Training		
	L	M	H	L	M	H
Inland river transport	x			x		
Airports and air transport		X			X	
Roads sector			X			X
Ministry of Transport and South Sudan Roads Authority			X			X

5.13 Top Priorities and Approaches

Top priorities

As far as the roads are specifically concerned, a program of investments should be pursued on a selective basis, with particular attention to (i) have all-year access to the main humanitarian distribution centers and better intra and inter-urban connections (particularly between Juba and the most important cities like Wau, Rumbek Bor, etc.) and neighboring countries (Uganda, Kenya, Ethiopia); and (ii) to axes of rural penetration to the production and population areas in Greater Equatoria, in order to facilitate social and economic development.

As it is possible to note from the above, top priority for the period 2016-2020 should be given to roads and river transport as well as airports, on a very selective basis.

As far as priorities are concerned, a parameter which should be taken into consideration is related to the overall development of the different regions of the country, in such a way as to reduce social and economic imbalances.

Of course, population and production (mainly agriculture but not only) in the different regions should be the key factors to take into consideration for establishing the criteria for overall development.

Approach 1: There is need for a new approach that redefines or conceptualizes rural transport

holistically to include movement of rural people and their goods to meet their domestic, economic and social needs by any means (via footpaths, tracks, roads, waterways, air). The new dimension should focus on transport needs and constraints of households and communities. Planning must proceed upon an understanding of those needs and constraints.

At the moment for new feeder roads only the settled areas (e.g. in Greater Equatoria, or in areas with higher potential grain production) should be targeted.

It is expected that communities will carry out the lowest level of maintenance since they will have direct stake. However, in case of crop failures or if grazing cattle is destroying the crops, maintenance will be less attractive for the communities.

Approach 2: upgrading, reconstruction and maintenance (heavy, medium and light). Construction of new roads should then follow. Need for short-haul non-motorized transport from points of production to market (consumers) to meet subsistence needs.

- Nature and scale of transport patterns
- Time and effort spent on different tasks against a backdrop of security and climate.
- Relative importance of motorized and non-motorized transport
- Various methods and technologies for different transport and travel functions
- Extent to which transport is an impediment to enhanced health, welfare, income and total production

5.14 Priorities and Options for Donors' Intervention Scenarios in Supporting the Functioning of Agriculture Markets towards Sustainable Longer Term Development

Donors' Intervention Scenarios

Scenario 1: Concentrate for the short term (2016-2020) on reconstruction of existing main road corridors first, which are essential to have access to the main humanitarian distribution centers. Simultaneously, continue with feeder roads programs in a limited scale (since most of the capacities from implementers and contractors will be occupied by main road reconstruction activities), preferably in the Green Belt area but also spreading including other states on a small scale selective basis to avoid inequity.

There is need to identify agriculturally productive areas and sponsor a convergence of transport initiatives in conjunction with SMOPIs and other stakeholders. This will create a metropolis-satellite situation with respect to the 3 Green Belt states (EE, CE and WE) vis-à-vis the 3 conflict states (Upper Nile, Jonglei and Unity). This should be accompanied by construction of depots at major rural collection centres where farmers can easily drop their produce using the warehouse receipting system (WRS). The gains of the EU's SORUDEV and ZEAT BEAD and USAID's FARM projects need to be consolidated and the lessons learnt replicated in other states.

Scenario 2: Donors investments in rural transport infrastructure (2016-2020 and beyond) may need to focus on a larger scale on areas of agricultural productivity in every State (except those that cannot guarantee security of implementing staff). Then concentrate on keeping main road corridors to humanitarian centers open all year with the assumption that these will form the backbone of interstate connectivity. The construction of new construction and maintenance/ repair of existing feeder roads will be (and indeed are) the responsibility of the State and County governments but would need support in the first years. The trunk roads will also serve the pastoral communities who, until sufficient market sensitization and capacity building are developed, may need neither trunk nor feeder roads.

6. Chapter Six: Proposed Rural Infrastructure Strategy for South Sudan, 2016-2010: Scope, priority road selection criteria and estimation of costs

6.1 General

Road rehabilitation programs in South Sudan started in 2005 with the initial aim to open roads for distribution of food supply and later to import materials for development projects. The first road was the entrance point from Nadapal (Kenya border) to Juba. In 2006 the road from the border town Kaya (Uganda border) to Yei and direction to Juba had been opened. Until the end of 2013 (begin of the crises) all rehabilitated roads were trunk roads; connecting state capitals, major towns and border crossings. Planning and design for rehabilitation / construction of feeder roads were already in process by then but construction didn't start yet. Designs in 2013 were already done according to the South Sudan Low Volume Road Manual (SSLVRM).

Out of a total of approximatively 5000 km of roads opened since 2005, designs before constructions had been done only for two roads (Faraksika-Yambio: gravel road and Nimule-Juba: 191 km asphalt road with approximatively costs of 240 mio. US$ for planning, design and construction); for all other roads the design had been done according to the works progress and to the available funding. Therefore, the roads were not developed according to technical specifications and overall sustainability of the roads couldn't be achieved.

Most of the roads were constructed without proper base and are in such condition that they can't be rehabilitated. The importance of proper drainage systems was not emphasized, therefore drainage systems along the roads were not implemented sufficiently. No proper compaction had been done due to lack of water and for some road rehabilitation contracts compaction tests had been cancelled due to cost saving measures. No proper gravel wearing course with adequate thickness had been used. All those factors lead to the fact that the roads done would require complete reconstruction instead of rehabilitation. Maintenance activities are not viable and no long-term solution is envisaged at the present, because no budget had been foreseen for reconstruction works.

Since 2012 three main donors (EU, World Bank, USAID) are making efforts to improve quality of works by

- insisting on investigations of the road alignment before construction works start;
- asking submission of a detailed design before start of construction works;
- asking construction works to be done according to the Low Volume Construction Manual.

Presently there are only few roads developed according to this procedure, e.g. Lui – Amadi – Tali road, Yei – Lasu road / border to Kongo and Magwi – Bongolo road (funded by the World Bank) and Kangi – Kuajok road and Kuajok – Lunyaker road (funded by the EU; for Kuajok – Lunyaker road the design had been completed but construction activities didn't start yet). Other roads, e.g. Pageri – Magwi or Mundri – Bongolo road (funded by the Dutch Government) are still rehabilitated by doing the design according to the progress of works. However, improvements of quality of works are done by implementing construction works according to the Low Volume Construction Manual.

Since end of 2013 until now no trunk roads had been constructed or rehabilitated but preparatory works are in progress (e.g. Juba – Yambio – Tambura: gravel road, funded by USAid; Juba – Nadapal: asphalting of road, funded by the World Bank, African Development Bank and China). Works on feeder roads continued in 2014.

The main stakeholders for feeder roads presently are: the World Bank (program for feeder roads is ending 2015), USAID, EU and Dutch Government (road program coming to an end this year), CIDA.

All roads which are rehabilitated / constructed now are of much better standard and higher quality than the roads done between 2005 and 2012 (except Faraksika – Yambio road and

Nimule – Juba road).

6.2 Roads maintenance

All road rehabilitation/reconstruction contracts (except the asphalt road from Nimule to Juba) from 2005 up to now are foreseeing maintenance activities to be carried out by communities. However, up to now these initiatives didn't work out well. Maintenance was limited to drainage cleaning and bush clearing activities.

Reasons for this could be:

- Roads had not been properly constructed and therefore simple labor based maintenance activities to maintain the road surface can't be carried out due to the huge workload.
- There are strong rainfalls in South Sudan with the result that the top surface (marram) is washed away quite soon. Communities don't have funding systems for logistics and that means that marram can't be transported from marram pits to the locations where marram had been washed out (marram has to be transported between 5 and 100 km).
- In some areas the distance between two settlements along the road is too far apart
- Farmers are quite busy for 4 to 5 months per year to prepare fields for planting and harvesting, especially before and during rainy seasons. During these periods maintenance activities for roads could come to a standstill.
- Some communities are still 'semi-nomads', staying with their livestock in agricultural areas during rainy season but moving during the dry areas to other places, away from the roads and more inland what means that no maintenance is taking place
- Iimproved feeder roads wifh a connection to major roads are excessively used if trunk roads are impassable, especially during rainy season or if trunk roads are in bad condition due to no maintenance. The higher the number of vehicles per day along a section, the faster the road deteriorates and maintenance intervals should be kept shorter, reaching a point, where communities can't handle the required maintenance activities.

6.3 Capacity Training

For new road construction activities the EU, as well as the Dutch Government, are insisting on having state engineers to work with the consultant and the construction company. The World Bank has a Project Management Team headed by South Sudanese personnel but supported by external consultants who are developing the design. These examples show that practical knowledge transfer is taking place.

Other institutions/organisations are not involving the South Sudanese side in any process of procurement, tendering, evaluation and contracting. This means that the knowledge for all processes in regard to procurement (from drafting the BoQ, tendering, up to contract signing and checking of payment certificates) is performed "in-house" only, without involvement of the South Sudanese counterparts. Therefore the government and state institutions for the road sector are lacking any understanding of such processes and therefore most likely don't know which steps are required to produce proper tender documents for construction and maintenance of roads for themselves in future.

Lack of experienced and educated human resources is another major problem within the government and state institutions.

Road construction camps which were built with the purpose of transforming them to maintenance yard never had been used for the intended purpose and are also either falling apart or are not existent any more at all (e.g. Torit, Juba / Gumbo, 55 miles before Bor and the road camp between Faraksika and Yambio).

No asset registers in the states or in the national ministry are existing. Therefore there is no

commitment within the state government or at the national ministry in regard to availability, condition and usage.

One reason for the lack of commitment could be the fact that job descriptions are not available for employees in the state and national departments involved in road construction and maintenance and therefore nobody feels responsible. Participation in construction and maintenance training only would increase the personal knowledge but as long as there are no job descriptions where responsibilities are written down for different positions no major improvement should be expected in activities in the state and national road departments.

6.4 Construction of trunk roads and selection of feeder roads

6.6.1 Construction of trunk roads

The government also constructed a number of trunk roads, which were mainly awarded to a local construction company. These roads had been also constructed without any designs and disregarding any technical standard, e.g. without proper drainage systems or culverts; nowadays these roads are mainly only open corridors.

The government had initially the vision to connect the state capitals and to construct trunk roads to all border towns.

6.6.2 Selection of Feeder Roads

Selection of feeder roads has to be critically analysed although the envisaged roads are on the priority lists of the state authorities and had been evaluated and approved by the Feeder Roads Steering Committee (FRSC).

Some examples:

- The road from Yei to Lasu (Kongo border) could change easily to a transit route if traffic increases.
- If the section Lui – Amadi – Tali would be connected with the Yirol – Rumbek road it would become the shortest route from Uganda to Rumbek.and to the Bahr el Ghazal states and therefore could change from a feeder road to a trunk road. If the road Pageri – Magwi – Torit is properly maintained the road could be used as trunk road from the state capital to the Ugandan border.
- If the road Mundri – Bongolo would be extended and connected to the Yei - Faraksika road it would be the shortest route from Kaya (Uganda border) to the Bahr-el Ghazal states.

The higher the number of vehicles per day along a section the faster the road would deteriorate and the shorter the time periods for maintenance. It could easily reach a point where communities can't handle the required maintenance activities.

In Annex 7 are listed the Feeder Roads selected by the GOSS -TRB for :

- Central Equatoria State
- Eastern Equatoria State
- West Equatoria State
- Lakes State
- Jonglei State
- Upper Nile State
- Unity State
- Warrap State
- Wbeg State
- Nbeg State

For a Total of 5,359 km

6.5 The Road Network and Main Corridors

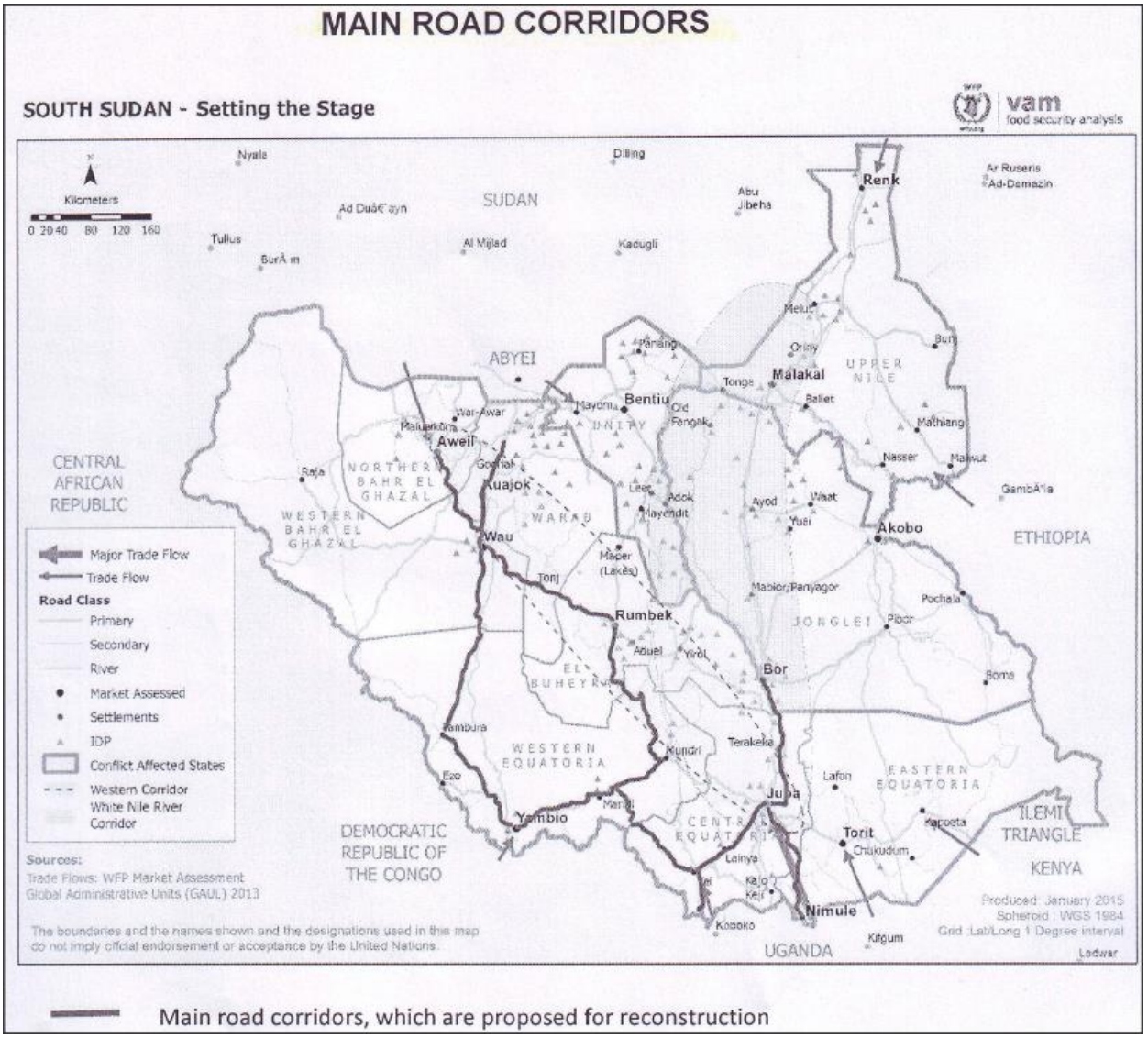
South Sudan's road network is estimated to approximatively 7851 km interstate and primary roads. The secondary and feeder road network was estimated in the "Roads and River Strategy Note" Report (Nathan Associates Inc., October 2014, submitted to the World Bank) to a length of 11222 km. According to the Comprehensive National Agricultural Development Master Plan (CAMP), the latest document on agricultural and related sectors containing the national vision and aspirations, 800 feeder roads with an agricultural component had been identified with an estimated length of 18000 km in all states.

Due to the widespread area of South Sudan and, except around major towns and some sparsely populated areas, it is not possible to construct feeder roads to the extent required and to cover all areas.

Table 12: Main corridors of the road network

Corridor	**Road section**	**Approx. km**
East – West Corrodor: Loiochogio - Juba – Mundri – Yambio – Tambura – Wau	Narus Kapoeta – Torit – Juba	407
	Juba – Yambio (via Mundri)	418
	Yambio – Bo river (via Tambura)	586
	Bo river – Wau	107
East / West Corridor (Lokichogio – Mundri – Yambio – Tambura – Wau	Kaya (Kaya – Yei) – Yei	77
	Yei – Faraksika	231
	Mundri – Rumbek	225
	Rumbek – Wau	222
	Wau – Aweil	152
Eastern Corridor (Nimule – Juba – Bor – Padak – Mabior (Ayod – Malakal) – Renk Corridor	Nimule – Juba (via Moli)	171
	Juba – Bor	174
	Bor – Malakal (via Padak – Ayod)	451
	Malakal – Renk	340
Rumbek – Mapar – Bentiu Corridor	Rumbek – Bentiu (via Mapar)	360
	Bentiu – Abiemnhom (via Mayom)	135
Wau – Warrap – Abyei Corridor	Wau – Warrap	87
	Wau – Gogrial Abyei	220
Wau – Raja – El Fifi Corridor	Wau – Raja	336
	Raja – El Fifi	380
Rumbek – Yirol – Shambe – Ponchalla Corridor	Bor – Ponchalla	330
	Bor – Shambe	100
	Shambe – Yirol	70
	Yirol – Rumbek	110
Bentiu – Malakal – Nasser – Jekou Corridor	Bentiu – Malakal (via Tonga)	260
	Malakal – Jekou (via Nasser)	320
Juba – Yei – Lasu Corridor	Lasu – Yei	72
	Yei – Juba	160
Malut – Adar – Kurmuk Corridor	Malut – Adar – Kurmuk (partly River Transport)	240
	TOTAL KM	6741

Map 3: Main Road Corridors



In **Annex 8** are indicated for the main corridors: distances, time, transit regimes, transport modes, as derived from a Report on Transport of the World Bank (2014).

Concentration of efforts in the road sector

Due to the deteriorated condition of most of the corridor sections, it is suggested to concentrate all efforts in keeping the existing main corridors open and start complete reconstruction of these roads in order to avoid reoccurring and not long lasting spot repairs.

Reduction in transport costs

Keeping interstate and trunk roads passable all year round will reduce the transport costs for humanitarian supply as well as for development projects and the private sector.

Table 13: Capacity and cost of road transport

Route (Road Transport)	Distance (km)	Loading capacity (*)	Transport costs (total) (**) in US$	Costs in US$ per ton	Costs in US$ per km	Costs in US$ per ton & km	Travel time
Mombasa – Juba	1550	40-ft container/ 30 tons	7000	233	4.51	0.15	3 – 5 days, (because of 2 border crossings and import processes)
Juba – Wau (60000 SSP in 02/15: official Exchange rate: 3.14	740	20-ft container/ 30 tons	19108	637	25.82	0.86	2-3 weeks in dry season. In rainy season up to several months
Juba – Bentiu	1100	20-ft container/ 30 tons	13500	450	12.27	0.41	

(*) Loading capacity within South Sudan is frequently reduced due to the bad road condition.

(**)Transport costs are based on information from a private beverage supplier, importing and transporting soft drinks and beer from Mombasa to Juba and within South Sudan. It also has to be taken into consideration that transport costs are increasing during rainy season.

6.6 Transport costs

Based on these costs the transport costs per km and ton within South Sudan are 5.7 times higher than on roads in neighboring countries, where goods are transported on all-weather roads.

During rainy seasons transport costs for humanitarian aid is shooting up since all goods have to be airlifted if the trunk roads are blocked by fallen or stuck vehicles. It has to be taken into consideration that only one stuck truck is sufficient to block the entire section since no other trucks can pass or can turn. Last rainy season 300 trucks were stuck at the road from Mundri to Wau; some of them for up to 4 months. During this period humanitarian organizations had to transport humanitarian supplies by airlift, increasing transport costs by more than ten times compared to road transport

Table 14: Capacity and cost of air transport

Route (by air)	Loading Capacity	Total Cost in US$	Cost in US$ per ton
Airfreight Juba-Bentiu	35 tons	70000	2000
Airfreight Juba-Bentiu	16 tons	31000	1937
Airfreight Juba-Bentiu	6.5 tons	14500	2231

Comparing the flight cost per ton from table above (14500 US$ for 6.5 tons) with the road transport (450 US$/ton) shows that airlifting goods to Bentiu is for example 5 times higher per ton than transporting goods by road.

General Transport, costs and time

A fuel tank from Eldoret (Kenya) – Juba (953 km, driving time: 3 to 5 working days) is transporting 34,000 litres of fuel, which is sold in Juba for 6 SSP. The sales price in Juba includes purchase of fuel in Kenya, transport to Juba, crossing two borders and importing taxes and fees for South Sudan.

In Wau (distance Juba – Wau: 740 km) the fuel was sold in February 2015 for 8 SSP. This means that the transport costs only from Juba to Wau is about 25 % higher than the costs for transport from Eldoret (Kenya) to Juba, including purchase of fuel, transport and import costs. On 34000 liter the costs are additionally 68000 SSP (equal to 21450US$) or 29 US$ pro km. Normally on good all weather roads it should not be more than 4.5$ per km what means 6.4 times less. During the rainy season in 2014 fuel in Wau was sold for 35 SSP/litre because of fuel shortage and long delivery time for new supplies due to the bad roads.

High transport costs and long supply times, especially during rainy season, also hamper private business. Business people outside Juba are forced either to stock up supply months in advance or to have more storage facilities. Additionally, supplies have to be pre-financed. Those factors have a negative impact in the consumer prices. The same applies for humanitarian aid organisations, which either have to stock up supplies months before rainy season starts, what would mean additional and costly storage places or to airlift supplies when roads are not passable.

To further develop the rural infrastructure in South Sudan it is essential from the short-term perspective to have the road main corridors, which are inter-connecting most of the capitals and major towns, reconstructed to appropriate design standards. Without these corridors open many products would either not be available in rural areas or unaffordable for the population.

River transport

River transport to northeastern parts of the country is presently hampered severely by security issues (in the third week of May one South Sudanese logistic company lost 2 barges due to the ongoing crises). Larger barges only can pass the rivers with special protection and provided that the security situation along the river route is relatively safe and are therefore only used by UN-organizations for supplying humanitarian aid and fuel for their operations.

River transport at a larger scale would require dredging (e.g. for the section Juba – Terekeka). Taking into consideration the low river traffic at the moment and the fact that the Nile is taking lots of sediments and therefore the river is silting up quickly a cost-benefit calculation should be carried out before continuing with other activities.

6.7 Priority Roads Selection Criteria and Priority List

The main road corridors, which are leading to humanitarian distribution centers, are:

- Nimule – Juba
- Juba – Yei
- Kaya – Yei
- Yei – Faraksika
- Faraksika – Yambio – Tambura – Wau
- Faraksika – Mundri – Mvolo – Rumbek
- Rumbek – Wau
- Wau – Kuajok – Gogrial – Wunrok
- Wau – Aweil
- Juba - Bor

Therefore, it is essential for humanitarian supplies to reconstruct these roads to ensure that these roads are passable throughout the year. These roads are also of utmost importance for development in rural areas, e.g. for feeder roads, constructed according to design standards and connected to these main roads.

64

Excluding what has been mentioned before, main road corridors following road sections have a history of being impassable during rainy seasons:

- Mundri – Mvolo

- Rumbek – Wau
- Juba – Bor
- Yei – Faraksika
- Gogrial – Wunrok

6.8 Scenarios and priorities

Priorities in **Scenario 1** are focused on complete reconstruction of above road sections, which are known to be impassable during rainy season. The next step for Scenario 1 is to reconstruct the remaining road corridors leading to humanitarian distribution centers. These corridors are also important for access to rural areas and for further development of feeder roads and contribute to the economic development.

Scenario 2 is focusing on keeping open the before mentioned main corridors leading to humanitarian distribution centers. This option is less sustainable and repair costs are reoccurring every season but gives more room for continuation of feeder roads development programs.

Due to the present instability in the country, care had been taken to select only trunk roads where reconstruction is realistically feasible, taking into account that implementers have difficulties in recruiting staff foreseen to work in insecure areas or contractors are scared to lose machinery and equipment or to have excessive idle time due to lack of fuel.

6.9 Criteria for feeder roads selection and scenarios for roads sector

Criteria for feeder roads selection

For the selected feeder roads, the following criteria had been taken into consideration for short-term measures (2016–2020):

- Areas with denser population / settlements
- Areas where the population is known to be more experienced in agricultural activities, e.g. in Greater Equatoria
- Areas where investment costs for agricultural activities are expected to be lower, e.g. in areas where no irrigation is required, in more fertile areas, where higher yields / ha can be harvested or with more than one harvest per year
- Roads which are important to bring agricultural products to markets

Besides the feeder roads mentioned, additionally feeder roads should be selected from the State Ministries' priority list through the FRSC under consideration of ongoing and / or planned agricultural programs.

For **Scenario 1** a total of 250 km is suggested because most of the capacities from contractors and implementers will be absorbed by the reconstruction works for trunk roads.

For **Scenario 2** a total of 500 km of feeder roads is suggested due to the fact that repair works will not absorb all the resources from contractors and implementers.

It should be noted that any improved feeder road, which has a connection to major roads, could be excessively used, especially, if the trunk roads are not reconstructed. The higher the number of vehicles per day along a section, the faster the road would deteriorate and maintenance intervals have to be kept shorter. This could reach a point, where communities can't handle the required maintenance activities.

Scenarios for roads sector

Presently, the bad road network, with impassable inter-state road connections during rainy seasons, is hampering rural development as well as increasing extremely transport costs for humanitarian aid, especially during rainy seasons.

Based on this major bottleneck two scenarios had been developed with main attention on keeping he main road corridors passable throughout the year.

Scenario 1

This is the preferred scenario of reference and suggests

(a) Since reconstruction of bad road sections is taking some time precautions (e.g. for emergency repairs or for pulling stuck vehicles across bad sections) are foreseen for a limited time period to keep the main corridors open

(b) To reconstruct first the road sections of main corridors according to design standards, which are leading to humanitarian centers and which are known to be impassable during rainy season

(c) After having the bad sections reconstructed the remaining sections should be reconstructed according to appropriate design standards

(d) to carry out maintenance of the existing trunk roads and feeder roads, which had been rehabilitated/constructed according to appropriate design standards (mainly constructed after 2013)

(e) to continue in smaller scale with feeder road programs, especially in Greater Equatoria and in areas with denser population

The strategy, to reconstruct the main road corridors, complements also the ongoing USAid funded road reconstruction program.

Advantages:

- Airlifting of goods during rainy season is only limited required (e.g. to insecure areas). It should be taken into consideration that keeping the roads passable throughout the year could save in 2015 and 2016 at least 120 mio. US$ in transport costs for humanitarian aid (minimum 60 mio. US$/year for 2 months by only one major humanitarian aid organization).
- Maintenance of the roads, which had been rehabilitated/constructed according to appropriate design standards will ensure sustainability
- In the course of the years keeping trunk roads open will not be a high cost factor any more since the trunk roads, which require major rehabilitation works, are gradually brought to an acceptable standard
- All feeder roads, which had been constructed according to design standards (mainly from 2013 onwards) are connected to the main corridors
- Travel time will be reduced and continued supplies to rural areas ensured (e.g. travel time to Wau could be reduced to 1 to 2 days for trucks instead of 2 to 3 weeks and in rainy season up to several months at some roads)
- Transport costs will be reduced
- Agricultural products can reach main markets much faster (before products are getting spoilt) and less storage facilities are required at collection points (e.g. less refrigerated warehouses)

- Agricultural products could be produced cheaper; e.g. fuel costs could drop, pesticides to treat grains and consequently to have a positive impact on the harvest could reach agricultural areas in time (pesticides only can be transported by road due to safety

reasons), livestock could be transported in a safer and faster way to abattoirs in towns (presently cattle for Juba is imported from Uganda since it would take too long to transport cattle from Wau to Juba)

- Construction of feeder roads (even in smaller scale) contributes to the development of the country
- Contributing to stability in the country since the consumer end prices could be kept lower due to less costs for transport

Disadvantages:

- Less focus is laid on rehabilitation / construction of feeder roads for the next years

Scenario 2

This option suggests

(a) to keep the main hubs passable for transport of humanitarian supply on a long-term base and includes
- positioning of heavy machinery at bad spots for pulling stuck vehicles through bad spots
- spot repairs (mainly emergency repairs)

(b) to continue parallel with development of feeder roads in a larger scale

(c) to carry out maintenance for those roads, which had been rehabilitated / constructed according to design standards (mainly for roads, which had been constructed after 2013)

Advantages:

- Airlifting of goods during rainy season is only limited required (e.g. to insecure areas)
- Feeder roads can be improved in areas where agricultural programs are ongoing
- Transport along main corridors could be done at least at minimum speed during rainy season (walking pace through bad sections)
- Maintenance of roads will ensure sustainability of roads

Disadvantages:

- Maintenance at the main corridors (trunk roads) is not carried out; only spot repairs and emergency interventions are taking place.
- The costs for these interventions will not have any long-term benefit in regard to improvement of the roads.
- Transport costs still will be very high due to very high maintenance costs of vehicles and the time required for transport
- It is very likely that those feeder roads, which are connected to trunk mains or major roads will be used by all kinds of vehicles as alternative routes due to the better condition of rehabilitated / constructed feeder roads; even if more time is required along these alternative routes. This means that the feeder roads will deteriorate fast unless extensive maintenance is carried out 67
- Due to the higher number of feeder roads to be constructed it has to be expected that some of the new feeder roads might be in areas far away from trunk main roads with connections to small markets only

6.10 Action Plan, Indicative Investment Plans: Goals and objectives

Of course, for a comprehensive analysis and evaluation of the interventions to be developed and funded in the short term (2016-2020) and the medium to long term (10-20 years), the appropriate tool should be related to the definition and subsequent funding of a National Master Plan for Transport for the different transport modes (roads and bridges; river inland ports; airports and air transport; multimodal transport).

Given the limited time frame of this short assignment, an indicative and preliminary Action Plan with an indicative Investment Plans is outlined.

Within the development of a Master Plan for the overall transport sector as a whole and for the specific sub-modes, a priority ranking procedure to set the most important projects/interventions should be developed. For some of them, (pre)feasibility studies should be carried out, based on cost/benefit analysis and/or multi-criteria analysis. At this stage, it is not possible to be more detailed on the above.

Actions for the Short Term (2016-2020)

It is crucial to support infrastructure in the transport sector, including roads and bridges, inland river ports (particularly from Juba up to Malakal) and related access to them, and airports (particularly the state capitals and major towns) with complementary services and infrastructures.

It has to be taken into account that the transport system and infrastructure is necessary for mobility and accessibility across the country. Developing links to key areas of socio-economic development is a vital short and medium/long term objective.

The main objective of the government in the short term is to restore and develop the key road network through reconstruction of those road corridors, which are essential for humanitarian aid supply and further rural development or at least through measures to keep main road corridors open and maintenance of those roads, which were done according to design standards while parallel constructing new feeder roads. On a medium term the main inland river ports and airports should be upgraded.

In fact the broad goals and objectives for roads and bridges could include the following.

Goal 1: Ensure that all main road corridors are passable year round and open up new / feeder roads around the country.

Scenario 1- objectives:

- Keeping 1412 km trunk roads open until these roads had been completely reconstructed to facilitate movement of persons and delivery of goods and services to all States of South Sudan
- Reconstruct 1311 Km of all-weather trunk roads in the period 2016-2020 to facilitate year round access to state capitals (preferred scenario of reference)
- Reconstruct and rehabilitate 820 Km of feeder roads nationwide to assist farmers with delivery of their produce to market to boost the economy, provide empowerment and sustained growth.
- Carry out maintenance of 2339 km of trunk roads and feeder roads, which had been reconstructed according to design standards (mainly roads which had been constructed from 2013 onwards)

Scenario 2 -objectives:

- Keeping 1412 km trunk roads open (long term exercise) to facilitate movement of persons and delivery of goods and services to all States of South Sudan by placing heavy machinery and equipment at strategic locations to be able to pull out stuck or fallen vehicles and carry out only reoccurring spot repairs.

- Reconstruct and rehabilitate 1152 Km of feeder roads nationwide to assist farmers with delivery of their produce to market to boost the economy, provide empowerment and sustained growth
- Carry out maintenance of 1690 km of roads, which had been reconstructed according to design standards

Goal 2: Develop safety pamphlets to promote safety

Objectives:

- Conduct road safety initiatives in cooperation with the safety department at the National Ministry's level in charge to promote safety
- Provision for procurement of weighbridges, which should be placed at strategic locations

Goal 3: Build capacity for sustained and adequate maintenance and develop a long-term strategy for capacity to enhance the maintenance of roads and bridges

Objectives:

- Support the government in building up human capacity by identifying tailor-made trainings (although feeder road programs might not start immediately in all States the capacity should be gradually built up already now)
- Support the government to create an asset register for machinery & equipment, already available, and evaluate the condition of this equipment to reactivate major equipment
- Identify other assets of the government, e.g. existing training centers or road camps and evaluate the condition for possible reactivation

Goal 4: Assist in initiating an environmental study for river protection and carry out a cost-benefit calculation for river dredging

Objectives:

- Support the government in preparing ToR for an environmental study with the aim to update water laws in regard to river protection, taking into account that more than 100 million people between South Sudan and Egypt are depending from the Nile. Carry out a cost-benefit analysis and EISA (Environmental Impact Statement Assessment) for river dredging

Goal 5: Updating existing rules in regard to airport safety

Objectives:

- Support the authorities at Juba airport in developing new systems and rules in regard to airport safety to achieve international standard

6.11 Budgets for the two Scenarios

The planned budget includes:

- Road reconstruction
- Support for safety initiatives in the road sector and provision for supply of weighbridges
- Support to airport authorities to develop new systems and rules in regard to airport safety
- Environmental/Social study for river transport and cost-benefit analysis
- Support the Ministry in charge to built up capactiy in regard to road construction & maintenance

As shown in the overall budget in next tables main focus is laid on road reconstruction.

Table 15: Scenario 1 – Overall Budget

Activity	US$
Improvement of road network option 1	370.865.850,00
Support for safety initiates and provision of weighbridges at strategic points	1.500.000,00
Support to airports for improving aviation regulations (e.g. safety regulations, etc.)	1.500.000,00
Environmental/Social study for river transport and cost/benefit analysis for river dredging	500.000,00
Institutional support to Ministry in charge with regard to construction & maintenance	4.500.000,00
TOTAL estimate	**378.865.850,00**

Table 16: Scenario 2 – Overall Budget

Activity	US$
Improvement of road network option 2	360.668.850,00
Support for safety initiates and provision of weighbridges at strategic points	1.050.000,00
Support to airports for improving aviation regulations (e.g. safety regulations, etc.)	1.500.000,00
Environmental/Social study for river transport and cost/benefit analysis for river dredging	500.000,00
Institutional support to Ministry in charge with regard to construction & maintenance	4.500.000,00
TOTAL estimate	**368.218.850,00**

Scenario 1 is the preferred scenario of reference. Reconstruction/rehabilitation in Scenario 1 is focused first on reconstruction of sections of main corridors which are essential for humanitarian supply but also for rural development, and which are not passable during rainy seasons. Simultaneous (only for a short period of time, while reconstruction of impassable sections is not completed) spot repairs have to be done at sections, which are not passable during rainy season.

Feeder road reconstruction will continue in a limited scale, mainly focused on areas in Greater Equatoria and in areas where the yield / ha is expected to be higher.

Maintenance activities shall be carried out for those roads (feeder roads and trunk roads), which had been rehabilitated according to design standards.

Table 17: Road rehabilitation budget for Scenario 1

Activity 70	Distance (km)	Total cost estimate (US$)
Keeping road open (short term)	1.412	20.000.500
Complete reconstruction to	1.311	

keep main hubs open for humanitarian supply & developmment		206.690.000
Complete reconstruction, second priority, feeder roads in green belt / agricultural development	820	124.500.000
Rehabilitation / Maintenance for Juba - Nimule road (including bridge)	192	1.500.000
Maintenance	2.147	18.175.350
Total cost estimate		**370.865.850**

Scenario 2 continues to focus on feeder road construction in a larger scale but includes provisions for keeping trunk roads open in form of recurring costs. Additionally, this scenario also has the provision for maintenance of all roads (feeder roads and trunk roads) constructed according to technical specifications.

Table 18: Road rehabilitation budget for Scenario 2

Activity	**Distance (km)**		**Total cost estimate (US$)**
Keeping road open	1.412		164.370.500
Complete reconstruction, second priority, feeder roads in green belt / agricultural development	1.152		180.940.000
Rehabilitation/Maintenance for Juba - Nimule road (including bridge)	192		1.500.000
Maintenance	1.498		13.858.350
Total cost estimate			**360.668.850**

The details about the costs for each Scenario are given in **Annex 9** where are indicated by each year from 2015 to 2020 the main interventions with the distances, cost estimate/km, total estimates,dstinguished for main trunk roads, for feeder roads, for maintenance.

7. Chapter Seven: Conclusions and Recommendations

7.1 Conclusions from the Agriculture/Development viewpoint

After examining several market assessment reports, a few conclusions may be arrived at. First, the conflict has had a severe impact on markets in the Greater Upper Nile (Akobo, Bentiu, Bor and Malakal), where it has destroyed market infrastructures, damaged stocks and displaced traders. The situation in Malakal and Bentiu remained unstable with signs of limited recovery.

By contrast, Bor and Akobo have made a partial recovery. In the Greater Equatoria and Bahr el Ghazal, the conflict has had no direct impact on markets. However, a number of indirect impacts were discernible, including a proliferation of checkpoints/roadblocks which delay the movement of food and have pushed up the cost of business. A scarcity of foreign exchange also emerges as a major indirect effect or macroeconomic consequence of the war. This has become a major obstacle to commodity imports, particularly from Uganda, Sudan and Kenya.

Second, the assessments found great variability in food supply across the markets, directly or indirectly influenced by the conflict (with Bentiu and Malakal at the extreme end). But availability also reflects variations in the stability of the main supply sources as well as the supply routes. Most of the food traded across the markets was imported from Uganda or Sudan, with a smaller amount coming from Ethiopia and Kenya, and an insignificant amount from the DRC. The closer the markets are to supply sources (including local production), the greater the availability of food. Torit, Nimule and Aweil (and to some extent, Wau and Akobo) are relatively closer to their main import sources and generally had greater abundance of supply, compared to Rumbek and Yambio where availability was low.

Poor road conditions emerged as one of the greatest impediments to food availability, reflecting South Sudan's poor road conditions, particularly in the rainy season. This was by far the greatest challenge across the Greater Equatoria and Bahr el Ghazal, where practically all the trade routes running south to Uganda (except the Kampala-Juba trade corridor) and north to Sudan were/are rendered impassable during the rainy seasons.

Third, the number of traders on the markets was directly affected by the conflict. This was clearly established for Akobo (with numbers down to 15%), Malakal (down to 15%) and Bor (down to 33%). Bentiu and Renk had equally low numbers. Traders were also fewer in Rumbek, as a result of poor trade opportunities. Conversely, the number of traders increased significantly shortly after the conflict in Torit (the result of an influx of traders displaced from Jonglei). Elsewhere there were no significant changes reported (i.e. in Nimule, Yambio, Wau and Aweil).

Fourth, markets had low capacity in Akobo, Bentiu and Malakal as a result of the conflict and in Rumbek because of poor road conditions. Capacity was medium in Yambio and Bor, and high in Aweil, Wau, Nimule and Torit, reflecting their proximity and accessibility to the supply sources. The availability of marketable surplus from local production (especially for Torit, Nimule and Yambio, and to a lesser extent for Wau and Aweil) also contributed to the supply situation.

Fifth, overall, prices for most foods were higher than their pre-conflict levels. The prices were very high in Malakal and Bentiu; high in Akobo and Rumbek; medium high in Bor and Wau; and low in Juba, Nimule and Torit. These price levels reflected a combination of factors for each market, with conflict judged to be the greatest causal factor in Malakal, Bentiu and Akobo, and to some extent in Bor. The poor access route discussed above was the dominant factor in Rumbek and Wau, but it also applies to varying degrees for most other markets. These factors have affected prices through their initial impact on supply. Other factors affecting prices included high taxes at checkpoints, high transportation costs because of poor road conditions and a low supply of trucks, and scarcity of foreign exchange and its unavailability through official channels. In short, all of these factors have increased the cost of trading, with costs ultimately passed on to consumers.

Sixth, availability of financial institutions (banks and money transfer agents) was examined in

terms of their role as sources of credit and foreign exchange, and also their potential for market-based transfers. Most of the markets had commercial banks, mainly Kenya Commercial and Equity banks, close by (except in Akobo, Bentiu and Malakal). However, these banks played almost no part in facilitating trade through lending or sales of foreign currency. In the conflict-affected towns of Bor and Malakal, there are some small-scale money transfer agencies operating.

Finally, a mixed picture of markets emerges in terms of certainty of their supply and stability of the environment for market-based programming. Six of the markets (Juba, Aweil, Nimule, Torit, Yambio and Wau) have some potential for market-based food assistance. Bentiu and Malakal do not appear conducive, while the situation in Akobo, Renk and Rumbek seems uncertain. The above conclusions relate to the current situation, taking into account the prevailing insecurity and road inaccessibility (in the rainy season), and to some extent the production season. However, most roads are likely to become more accessible during the dry season, probably improving supply in many markets (especially Rumbek, Yambio and Wau). The expected bumper harvest in the non-conflict affected areas will also boost supply. However, the dry season could also lead to renewed conflict.

7.2 Conclusions from the Transport viewpoint

The road network needs to provide reliable connectivity between major population centers and the agricultural and mineral production areas.

An optimal investment in transport improvement will need to take into account the upgrading of the existing network to keep it operational throughout the year, new roads that need to be constructed urgently and cost-effective and competitive domestic, regional and international trade conducive to overall economic growth.

Even in the midst of the oil crisis, the country needs to successfully define the short, medium and long term investment programme in rural infrastructure taking into account future investment flows (commitments) from major donors.

Road maintenance has been neglected in South Sudan and there was negligible government revenue allocated from the general budget the last financial year (2014) to road maintenance. While there appears to be some confusion within the government and other stakeholders regarding the roles and responsibilities for road construction and maintenance, planning and implementation, the legal and institutional framework within which road maintenance funding can be planned for and undertaken is generally in place.

Key institutions including the Ministry of Finance and Economic Planning (MOFEP), the Ministry of Transport, Roads, and Bridges (MTRB), the South Sudan Roads Authority (SSRA), and the relevant state government structures and line ministries, are all legal entities. With support in specific areas, this legal structure and institutional arrangements are suitable to support a sustainable road maintenance environment in South Sudan, given the political will, investment to fund maintenance operations, and specific, targeted capacity development activities.

It is common practice and a feature of the institutional arrangements in many countries in the region to have in place a road fund that raises money, generally through user-fees, dedicated to road construction and maintenance. Such a ‘client’ entity does not exist in South Sudan but in the short run, while progress should be made toward the implementation of a road fund in South Sudan in the future, the existing institutional arrangements in place will be sufficient for funding road maintenance. That is, the creation of a road fund may be desirable in the longer-term but is in no way a key requirement for the creation of a sustainable road maintenance-funding regime.

Investment in the roads sector to date has primarily been for rehabilitation or construction of roads and investments for maintenance have been made through funding attached to project budgets by donors or multilateral lending agencies. The extent of any in-kind contributions to road maintenance that may have been made by individuals, groups, or firms at the county and payam levels is not easy to ascertain.

7.3 Recommendations from the Agriculture/Development viewpoint

In terms of developing agriculture markets, food security and livelihoods, the donor community may need to support initiatives in the following areas in the next 10-20 years:

(i) Capacity building for farmers in terms of Farmer Training Colleges and/or Institutes that will train agricultural extension agents and contact farmers. Efforts should also be channeled to agricultural research stations/centres that will disseminate new agricultural technologies to farmers.

(ii) Institutional strengthening of agriculture markets in South Sudan should also target cooperatives. Farmers will need to be sensitized on the benefits of corporate production and marketing and encouraged to form or join cooperative societies. A cooperative college is hereby recommended. By the end of 2013, 566 cooperatives had been registered by national and state ministries.

(iii) Alongside interventions in the cooperative sector, special attention will need to be paid to development of rural financial markets to enable farmers access micro-credit; extension, training and market information.

(iv) Capacity building in irrigation and production of high value/cash crops such as coffee, tea, oil palm, sunflower, sesame, and cotton needs to be undertaken.

(v) In particular, fruit production and processing need to be up-scaled targeting the huge market in the region, Middle East and elsewhere.

(vi) An aggressive and long-term sensitization of livestock farmers needs to be mounted on the values and benefits of selling their cows for cash, establishing export-oriented meat processing plants and footwear and animal by-products industries. The idea of a South Sudan Meat Commission is long overdue.

(vii) In addition, capacity building is urgently needed in the areas of livestock training, extension and research. Institutional support is clearly needed here with the intention of developing a dairy sub-sector through adoption of improved livestock varieties.

(viii) Attention should also be placed on commercial production of improved (as well as traditional) breeds of poultry to tap the emerging domestic and foreign markets. Commercial honey production should also be developed.

(ix) Donors should aim at establishing a critical mass of agricultural entrepreneurs through promotion of market-oriented farming within the first half of the CAMP initiatives as a way of roping in the private sector in agriculture and livestock in South Sudan.

(x) Similar efforts will need to be directed to the seemingly underdeveloped fishing sub-sector especially with regard to value adding. Refrigeration and other facilities need to be provided to the commercial fishers for export production.

Three Policy Scenarios and Corresponding Funding Availability:

- **Business as usual scenario:** Only 0.12% (estimated percentage allocated in fiscal years 2011/12 and 2012/13) of total national expenditure will be allocated to agriculture sector development each year of the CAMP implementation period. The government does not recognise the importance of the agriculture sector and expenditure allocation will not change during CAMP implementation.
- **Economic dividend scenario:** 20% of additional funds due to economic growth is moved to the agriculture sector during the period of positive expenditure growth (i.e. from FY2027/28 to FY2039/40 of the CAMP period). The government recognizes the importance of agriculture sector investment and significantly increases its allocation once economic growth, and hence government expenditures, becomes positive.

- **Peace dividend scenario:** In addition to the increments in the economic dividend scenario, security expenditures (excluding salaries and pensions) are moved incrementally to the agriculture sector over the CAMP implementation period. The government recognizes the importance of agriculture sector investment and its urgency, and sets policy that, as political stability and peace is restored, immediately moves resources from the security to agriculture sector (JICA/GOSS, 2015).

7.4 Recommendations from the Transport viewpoint

There has been and continues to be significant activity and investment in the broader roads sector and unanimous support for road maintenance.

(i) Given this momentum, the solid overall justification for investment in roads generally, and given the opportunity that the feeder roads project provides employment at the national, state, county and payam levels, our recommendation is that the feeder roads programme should proceed. Further, because of the trunk road works planned for the stretch between Juba and Wau, and due to the existence of the complementary EU feeder roads project, this is a unique opportunity to exploit the economies of scale that these combined investments create.

(ii) The World Bank's idea of a pool fund for road maintenance run by a donor-appointed agency needs support. The pool fund should be administered by an agency appointed jointly by all participating core donors and should have representatives from the relevant ministries of Transport, Roads and Bridges and Agriculture, Forestry, Cooperatives and Rural Development, Finance and Planning, SSRA and SMOPI.

(iii) In particular, SSRA and SMOPI need strengthening through capacity building.

(iv) The role of WFP and UNOPS in road construction and/or maintenance needs to be rethought and updated.

(v) The GOSS needs to be supported to generate additional revenue through user fees. This will include supporting/coordinating with the World Bank, who, in the first quarter of 2015, commissioned a study to look into the likely nature, scope and structure of a pool fund.

(vi) A pool fund is not the same as a road fund which is usually generated from charging user fees or a fuel levy.

(vii) The GOSS, in collaboration with donors should:

- Undertake an economic and political economy study to determine the viability and political viability of a fuel levy. Some work has been undertaken to date in this regard by others;
- Monitor opportunities to exploit local on-going success stories, and to upscale successful pilot projects, such as EU's and USAID's/Tetratech's capacity development pilot in Yambio. These should be monitored and rolled out across a wider number of projects adapted as appropriate to suit local conditions;
- Set out a plan to investigate ways to reduce road construction and maintenance costs with a view to increasing available capital maintenance;
- Assess opportunities to extend the service delivery framework exemplified in the FROMA2B project;
- Look to utilise existing or to creating a new pooled funding mechanism for the roads sector for the purposes of allocating additional capital to the sector and to do so in a manner that strengthens central and state level government processes. The Consultant does not feel that such a Fund needs to be managed by the World Bank but could be complementary to and supported by the Bank in addition to its ongoing operations; and

- Look for formal ways to identify linkages between projects, share lessons and progress, with a view to harmonizing the general approach to road maintenance across South Sudan.

(viii) In order to improve the working attitude and responsibility factor of state and government employees the following is also recommended:

- Creation of job descriptions for different positions within the state/national departments.
- Involvement of state and national government employees for each process in regard to road construction and maintenance activities
- Establishment of asset register in each state, including description of asset and value
- Creation of database for staff available within the different state/national departments, including type of education
- Summarizing the different departments in the states and at national level about road construction and maintenance, their responsibility and the linkage to other departments.

Annex 1: Key Information of the overall Report and Main Recommendations

This Chapter gives the Key Information of the overall Report and outlines the Main Recommendations, and it can well be read as an autonomous document.

1. Context and Overview

Specific Objective

The specific objective of the ToR is to prepare and present a strategic vision of rural infrastructure needs in South Sudan alongside an analysis of current interventions (coverage, duplications, quality) with gaps between the two and identification of blockages (bottlenecks) to delivery.

The assignment should deliver a set of practical options outlining key transport investments required from a joint humanitarian and development perspective, depending on the different relative weights put on (i) (ii) and (iii) above.

The focus should include an estimated costing of both the initial capital outlay and also future maintenance expenditures, recommendations should be made on harmonised standardisation of intervention quality (including capacity building interventions around maintenance)

Brief Situation Analysis

In South Sudan, the Ministry of Transport, Roads and Bridges (MTRB) is responsible for overall transport sector policy and administration of road, air, rail and river transport. The establishment of the South Sudan Roads Authority (SSRA) to focus on the maintenance and management of road development projects has been developed while the creation of a Road Fund has been, in principle, accepted.

There is need to indicate the priority interventions to be undertaken within a harmonized approach among the members of the Steering Committee (European Union, World Bank, USAID, DfID), and with other donors involved in the roads subsector (both trunk and selected feeder roads) in the next 5 years (2016-2020).

Transport Sector in South Sudan

South Sudan has three modes of transport which are functional to a certain extent: river, road and air. The railway transport from Aweil to Wau had been repaired during the existence of the Multi-Donor Trust Fund (MDTF) but the bridges were damaged and the railway network has not been working since 2009/2010. Most of the goods within South Sudan are transported by road.

River transport was mainly by barge from Sudan to Juba. However, due to unresolved conflicts with Sudan, river transport from Sudan basically stopped and the little left is done by smaller boats within South Sudan only. Bigger barges are presently only used to transport food supply for WFP and fuel for humanitarian organizations.

The main airports are Juba and Rumbek both of which are declared as ‘international’ airports. Additionally, there are a few smaller airports, mainly connections to the other state capitals and major towns and about 2,100 airstrips. For the airports in Juba and Rumbek, contracts for improvement works have been signed by the Government of South Sudan.

After independence in 2011, most of the donors (except USAID and the World Bank which were involved in construction of trunk and feeder roads, including China, whose agreements for road construction were in progress) shifted the focus to rehabilitation of feeder roads with the aim of building up agriculture as the second economic pillar of the country.

This approach had a severe set-back in 2012 when oil production stopped due to disagreements about pumping fees and oil revenue went down. At the end of 2013, fighting erupted in Juba and quickly spread to other parts of the country. Consequently, donors, UN agencies and NGOs had to evacuate non-key staff and scaled down activities to a minimum. It

took almost 6 months until activities fully resumed. The oil revenue did not recover any more due to reduced oil production coupled with the falling international oil prices. As a result, the government has since 2012 not been able to fulfil its commitments in regard to road maintenance.

Transport Institutional Policy

The ultimate goal of the institutional policy for the transport sector is to improve/re-engineer the administration of the sector in South Sudan on the basis of a new definition of respective roles of the government, specialized transport subs-sector authorities, and transport enterprises, improving the overall efficiency in the transport sector, with particular reference to roads (trunk and feeder roads), rivers, airports/airstrips and railways re-development.

The government should disengage itself from the operational activities, allowing private sector participation and market competition, opening room also for joint ventures in the construction industry. Therefore, for the medium-term interests of the sector, it is important to effectively separate, streamline and consolidate policy for the Ministry responsible for transport matters, regulation (for regulators) and operations (for operators).

Scope of Rural Transport Policy

The foremost need is for a thorough reappraisal of the role and scope of policy in the realm of rural transportation. This reappraisal should involve three key developments in strategic thinking:

- Recognition that the range of initiatives and policies which could be adopted is considerably greater than has generally been exploited to date in South Sudan. For instance, efforts to enhance off-road mobility could include the introduction and promotion of non-motorised modes of transport other than head-loading and, in many cases, the development of the footpath network.
- Broadening of the definition of the problem beyond ‘mobility’ to encompass the wider concept of ‘accessibility’. In other words, the core problem should be seen as the scale and nature of the transport task rather than the inadequacy of the transport system per se’. This apparently semantic point does, in fact, have important policy implications. It opens the door not just to policies to improve people’s mobility by making transport faster, less burdensome and cheaper, but also to those which reduce or obviate the need to travel, generally by the location of facilities and the delivery of services and goods closer to rural communities.
- Acknowledgement that policies appropriate to reducing the rural transport must be location-specific. That they must, in other words, respond more closely to the specific physical, cultural and socio-economic characteristics and needs of the target areas in South Sudan.

Calling for a move away from ‘project- based planning’ towards ‘area-based planning’ methods, for a more open-minded and imaginative response to rural transport takes local factors into account.

State Ministries of Physical Infrastructure (SMOPI)

The SMOPI are responsible for feeder roads within the States. They are not responsible for trunk roads as this responsibility lies with the MTRB/SSRA. State governments have a legal mandate set out in the Local Government Act (2009) to raise revenue from local taxation, land sales and any other means at their disposal. They also receive a proportion of general taxation from central government, although this has been negligible in this financial year. A majority of the revenue is allocated to security taking into account the current situation and currently (2014/15) no revenue is allocated to feeder road works other than for salaries of officials and

staff.

2. **Update on Roads Programs in South Sudan and Donor**s' Intervention in the Roads Sector (March 2015)

Road rehabilitation programs in South Sudan started in 2005 with the initial aim of opening road corridors for distribution of food supply and later to import materials for development projects.

Since 2012 three main donors for the road subsector (EU, World Bank, USAID) are making efforts to improve the quality of works by

- insisting on investigations of the road alignment before construction works start
- submission of a detailed design before start of construction works
- construction works to be done according to the Low Volume Construction Manual

Classification of Existing Road Network

The existing road network in South Sudan is classified according to road type as Interstate (including International roads), Primary, Secondary, and Feeder road networks. The distribution of these roads is estimated to be as presented in the following Table.

South Sudan Road Network

Road Type	Length (km)
Interstate network	6,400
Primary network	1,451
Secondary network	3,822
Feeder network	7,400
Total	**19,073**

3. **Transport Options and Priorities: Methodological Standpoint for an Infrastructure Program**me

From a methodological standpoint, South Sudan could develop a tentative infrastructure program 2016-2020. Such a program would have to be updated on yearly basis, taking into consideration the following two options:

1. Option 1: Concentration on reconstruction of existing road corridors to acceptable, higher quality standards, to maintain access to the main humanitarian distribution centers (e.g. Rumbek, Wunok, Bor), to maintain existing roads, which are built on higher standards (including those roads, which are fitting in the program of reconstruction of trunk main roads and new construction of feeder roads, which are funded by USAID). Less ocus is laid on construction of new feeder roads and should concentrate mainly in the Green Belt area.
2. Option 2: Concentrating on keeping existing road corridors open so as to have year-round access to humanitarian distribution centers, maintenance of existing feeder roads which had been built on higher standards, and developing new feeder roads.

For river transport, no infrastructure investments are recommended in the short-term (2016 – 2020), due to the stoppage of river traffic from Sudan to South Sudan and the presently low river traffic, mainly caused by insecurity. 79

As a short-term measure, environmental studies are recommended e.g. to update existing water laws in regard to protection of rivers from pollution and cost-benefit analyses in regard to dredging. For airports, infrastructure improvement works for Juba (construction of new terminal

and extension of runway) and for Rumbek (asphalting of runway, construction of terminal building) had been contracted by the Government of South Sudan. The aim for these two airports is to be fully recognized as international airports. The airport in Wau had been recently asphalted.

If the country recovers from the ongoing humanitarian crises, fewer aircraft, including operational set-ups are required outside Juba. If oil companies were to resume production, airports mainly would be used by these companies and therefore could contribute towards maintenance of airstrips / smaller airports.

For short-term interventions, assistance should be given to update agreements for facilitating movement of airplanes through South Sudan's airspace.

Comparing investment costs for roads and airports, with benefits in regard to humanitarian aid, there are more advantages in road investments due to the fact that costs for airlifting operations by humanitarian organizations could be reduced by far.

Institutional Strengthening

A short term (2016-2020) program of institutional strengthening and capacity building could be carried out, focused on the transport sub-modes and also within the MTRB (Ministry of Transport, Roads and Bridges).

The main lines of action in the short term could be represented by the following elements, with particular emphasis on roads and only limited support to river transport and airports:

- River transport: updating of the inland water law and environmental protection as short-term measure. Depending on the development institutional strengthening, training of key staff and training courses on key issues shall be carried out on medium-term;
- Airports and air transport: new rules for competition on the internal and international market; updating of new agreements for opening the air space and for facilitating movements of airplanes through South Sudan's skies in the short-term; and training of key staff and training courses on key issues in the medium-term when the already started modernization/expansion of Juba international airport and related fleets will be completed;
- Airports: High landing and parking fees are collected by the authorities, which should be reinvested in maintenance of airport infrastructures;
- SSRA needs progressive reinforcing, giving it more financial and technical responsibility, strengthening the road maintenance component of key staff through training courses on key issues.
- MTRB: reinforcement of the key staff including some experts specialized particularly in the following areas:
    a. transport economics, strategic planning and budgeting;
    b. traffic forecasting;
    c. transport and environmental issues;
    d. information systems and data banking, e.g. for assets, human resources, etc.
    e. training courses on selected key issues in multimodal transport, safety, PPPs, etc.

Top Priorities

As far as the roads are specifically concerned, a program of investments should be pursued on a selective basis, with particular attention to (i) have all-year access to the main humanitarian distribution centers and better intra and inter-urban connections (particularly between Juba and the most important cities like Wau, Rumbek, Bor, etc.) and neighboring countries (Uganda, Kenya, Ethiopia); and (ii) to axes of rural penetration to the production and population areas in

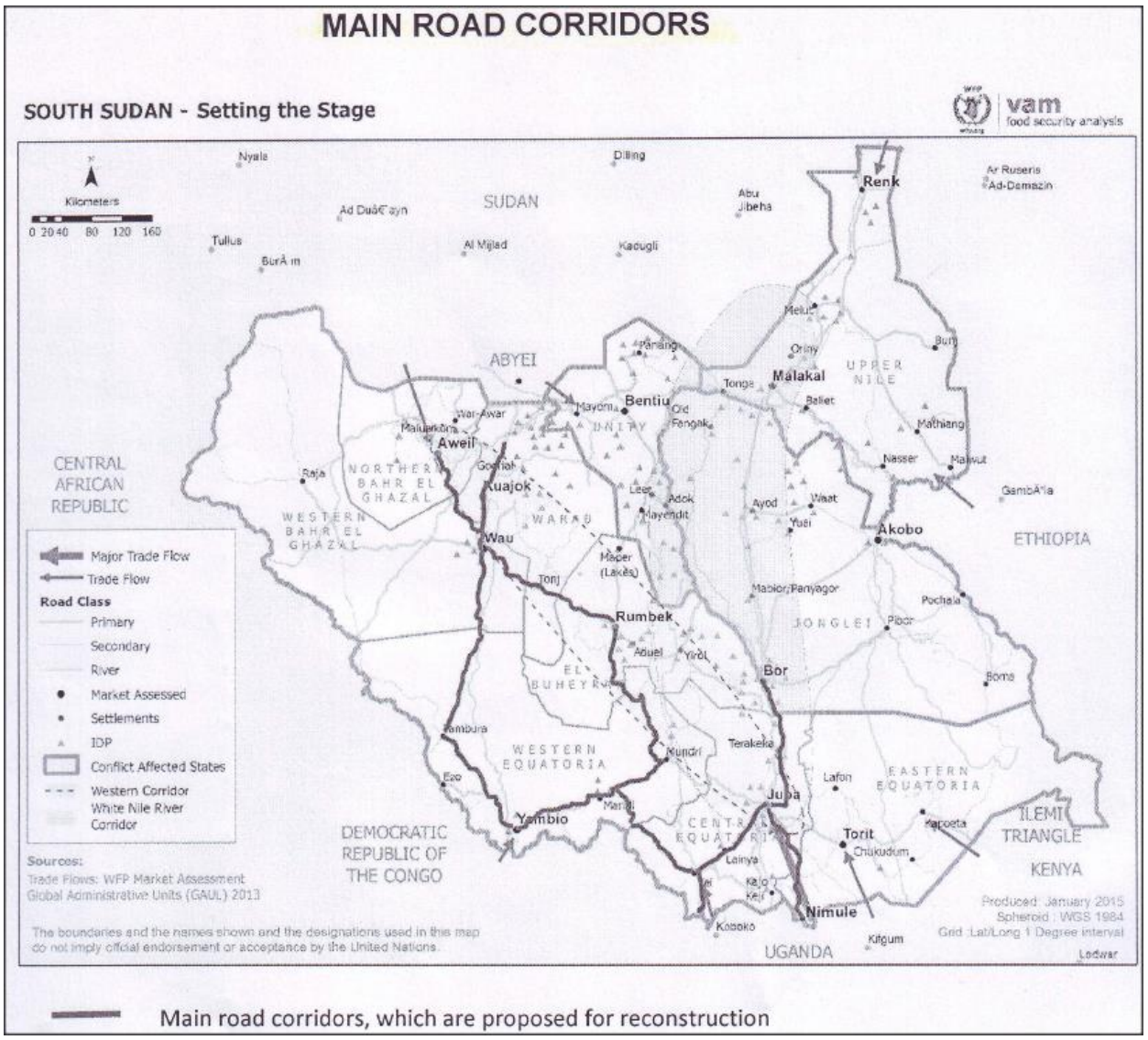
the Greater Equatoria, in order to facilitate social and economic development.

As it is possible to note from the above, top priority for the period 2016-2020 should be given to roads and river transport, and to airports on a selective basis.

As far as priorities are concerned, a parameter which should be taken into consideration is the overall development of the different regions of the country in such a way as to reduce social and economic imbalances.

Of course, population and production (mainly agriculture) in the different regions should be the key factors to take into consideration in establishing the criteria for overall development.

Map 1: Main Road Corridors



Concentration of Efforts in the Roads Sector

Due to the poor condition of most of the corridor sections, it is suggested that efforts be concentrated in keeping the existing main corridors open and start complete reconstruction of these roads in order to avoid recurrence of spot repairs which do not last long.

Reduction in Transport Costs

Keeping interstate and trunk roads passable all year round will reduce the transport costs for humanitarian supply as well as for development projects and the private sector.

Priority Roads Selection Criteria and Priority List

The main road corridors leading to humanitarian distribution centres are:

- Nimule – Juba
- Juba – Yei
- Kaya – Yei
- Yei – Faraksika
- Faraksika – Yambio – Tambura – Wau
- Faraksika – Mundri – Mvolo – Rumbek
- Rumbek – Wau
- Wau – Kuajok – Gogrial – Wunrok
- Wau – Aweil
- Juba - Bor

Therefore, it is essential for humanitarian relief suppliers to reconstruct these roads to ensure that they are passable throughout the year. These roads are also of utmost importance for development in rural areas, e.g. for feeder roads, constructed according to design standards and connected to these main roads.

4. Action Plan, Indicative Investment Plans: Goals and Objectives

Of course, for a comprehensive analysis and evaluation of the interventions to be developed and funded in the short term (2016-2020) and the medium to long term (10-20 years), the appropriate tool should be related to the definition and subsequent funding of a National Master Plan for Transport for the different transport modes (roads and bridges; river inland ports; airports and air transport; multimodal transport).

Given the limited time frame of this short assignment, an indicative and preliminary Action Plan with indicative Investment Plans is outlined.

Within the development of a Master Plan for the overall transport sector as a whole and for the specific sub-modes, a priority ranking procedure to set the most important projects/interventions should be developed. For some of them, (pre)feasibility studies should be carried out based on cost-benefit analysis and/or multi-criteria analysis. At this stage, it is not possible to be more detailed on the above.

Actions for the Short Term (2016-2020)

It is crucial to support infrastructure in the transport sector, including roads and bridges, inland river ports (particularly from Juba up to Malakal) and related access to them, and airports (particularly the state capitals and major towns) with complementary services and infrastructures.

It has to be taken into account that the transport system and infrastructure is necessary for mobility and accessibility across the country. Developing links to key areas of socio-economic development is a vital short and medium to long term objective.

The main objective of the government in the short term is to restore and develop the key road network through reconstruction of the corridors essential for humanitarian aid supply and furthering rural development, or at least through measures to keep the main road corridors open and maintenance of the roads done according to design standards while in parallel constructing new feeder roads. In the medium term, the main inland river ports and airports should be upgraded.

The broad goals and objectives for roads and bridges could include the following.

Goal 1: Ensure that all main road corridors are passable year round and open up new / feeder roads around the country.

***Scenario 1*- Objectives**

- Keeping the 1,412 km trunk roads open until these roads are completely reconstructed to facilitate movement of persons and delivery of goods and services to all States of South Sudan
- Reconstruct 1,311 km of all-weather trunk roads in the period 2016-2020 to facilitate year- round access to state capitals (preferred scenario)
- Reconstruct and rehabilitate 820 km of feeder roads nationwide to enable farmers deliver their produce to market efficiently. This will help boost the economy, provide empowerment and sustained growth.
- Carry out maintenance of 2,339 km of trunk and feeder roads which had been reconstructed according to design standards (mainly roads which had been constructed from 2013 onwards)

***Scenario 2* - Objectives**

- Keeping 1,412 km trunk roads open (long term exercise) to facilitate movement of persons and delivery of goods and services to all States of South Sudan by placing heavy machinery and equipment at strategic locations to be able to pull out stuck or broken down vehicles and carry out only recurrent spot repairs.
- Reconstruct and rehabilitate 1,152 km of feeder roads nationwide to assist farmers with efficient delivery of their produce to market to boost the economy, provide empowerment and sustained growth
- Carry out maintenance of 1,690 km of roads which had been reconstructed according to design standards

Goal 2: Develop safety pamphlets to promote safety.

Objectives:

- Conduct road safety initiatives in cooperation with the safety department at ministerial level
- Provision for procurement of weighbridges, which should be placed at strategic locations

Goal 3: Build capacity for sustained and adequate maintenance and develop a long-term strategy for capacity to enhance the maintenance of roads and bridges.

Objectives:

- Support the government in building human capacity by identifying tailor-made trainings (although feeder road programs might not start immediately in all States, the capacity should be gradually built)
- Support the government to create an asset register for machinery and equipment, already available, and evaluate the condition of this equipment to reactivate major equipment
- Identify other assets of the government, e.g. existing training centres or road camps and evaluate the condition for possible reactivation

Goal 4: Assist in initiating an environmental study for river protection and carry out a cost-benefit calculation for river dredging.

Objectives:

- Support the government in preparing ToR for an environmental study with the aim of updating water laws in regard to river protection, taking into account that more than 100 million people between South Sudan and Egypt depend on the waters of the Nile. Carry out a cost-benefit analysis and EISA (Environmental Impact Statement Assessment) for river dredging.

Goal 5: Updating existing rules in regard to air and airport safety.

Objectives:

- Support the authorities at Juba airport in developing new systems and rules in regard to airport safety to achieve international standards.

Budgets for each of the two Scenarios

The planned budget includes:

- Road reconstruction
- Support for safety initiatives in the road sector and provision for supply of weighbridges
- Support for airport authorities to develop new systems and rules in regard to airport safety
- Environmental/Social study for river transport and cost-benefit analysis
- Support the Ministry in charge to build capactiy with regard to road construction and maintenance

As shown in the overall budgets in 2 tables below, the main focus is laid on road reconstruction.

Table 1: Scenario 1 – Overall Budget

Activity	US$
Improvement of road network option 1	370.865.850,00
Support for safety initiatives and provision of weighbridges at strategic points	1.500.000,00
Support for airports to improve aviation regulations (e.g. safety regulations, etc.)	1.500.000,00
Environmental/Social study for river transport and cost/benefit analysis for river dredging	500.000,00
Institutional support to Ministry in charge with regard to construction and maintenance	4.500.000,00
TOTAL estimate	**378.865.850,00**

Table 2: Scenario 2 – Overall Budget

Activity	US$
Improvement of road network option 2	360.668.850,00
Support for safety initiates and provision of weighbridges at strategic points	1.050.000,00
Support to airports for improving aviation regulations (e.g. safety regulations, etc.)	1.500.000,00
Environmental/Social study for river transport and cost/benefit analysis for river dredging	500.000,00

Institutional support to Ministry in charge with regard to construction and maintenance	4.500.000,00
TOTAL estimate	**368.218.850,00**

Scenario 1 is the preferred scenario of reference. Reconstruction/rehabilitation in Scenario 1 is focused first on reconstruction of sections of main corridors which are essential for humanitarian supply but also for rural development, and which are not passable during rainy seasons. Simultaneous (only for a short period of time, when reconstruction of impassable sections is not completed) spot repairs have to be done at sections, which are not passable during rainy seasons.

Feeder road reconstruction will continue on a limited scale, mainly focused on areas in the Greater Equatoria and in areas where the yield / ha is expected to be higher.

Maintenance activities shall be carried out for those roads (feeder roads and trunk roads), which had been rehabilitated according to design standards.

Table 3: Road Rehabilitation Budget for Scenario 1

Activity	Distance (km)	Total Cost Estimate (US$)
Keeping roads open (short term)	1,412	20,000,500
Complete reconstruction to keep main hubs open for humanitarian supply and development	1,311	206,690,000
Complete reconstruction; second priority, feeder roads in Green Belt / agricultural development	820	124,500,000
Rehabilitation / Maintenance of Juba - Nimule road (including bridge)	192	1,500,000
Maintenance	2,147	18,175.350
Total Cost Estimate		**370,865,850**

Scenario 2: Continue to focus on feeder road construction on a larger scale but including provisions for keeping trunk roads open in form of recurrent costs. Additionally, this scenario also has the provision for maintenance of all roads (feeder and trunk roads) constructed according to technical specifications.

Table 4: Road rehabilitation budget for Scenario 2

Activity	Distance (km)	Total cost estimate (US$)
Keeping roads open	1,412	164,370,500
Complete reconstruction, second priority, feeder roads in Green Belt / agricultural development	1,152	180,940,000
Rehabilitation/Maintenance of Juba - Nimule road (including bridge)	192	1,500,000
Maintenance	1,498	13,858,350
Total cost estimate		**360,668,850**

5. Main Recommendations

There has been and continues to be significant activity and investment in the broader roads sector and unanimous support for road maintenance.

(ix) Given this momentum, the solid overall justification for investment in roads generally, and given the opportunity that the feeder roads project provides employment at the national, state, county and payam levels, our recommendation is that the feeder roads programme should proceed. Further, because of the trunk road works planned for the stretch between Juba and Wau, and due to the existence of the complementary EU feeder roads project, this is a unique opportunity to exploit the economies of scale that these combined investments create.

(x) The World Bank's idea of a pool fund for road maintenance run by a donor-appointed agency needs support. The pool fund should be administered by an agency appointed jointly by all participating core donors and should have representatives from the relevant ministries of Transport, Roads and Bridges and Agriculture, Forestry, Cooperatives and Rural Development, Finance and Planning, SSRA and SMOPI.

(xi) In particular, SSRA and SMOPI need strengthening through capacity building.

(xii) The role of WFP and UNOPS in road construction and/or maintenance needs to be rethought and updated.

(xiii) The Government of South Sudan (GOSS) needs to be supported to generate additional revenue through user fees. This will include supporting/coordinating with the World Bank, who, in the first quarter of 2015, commissioned a study to look into the likely nature, scope and structure of a pool fund.

(xiv) A pool fund is not the same as a road fund. The latter is usually generated from charging user fees or a fuel levy.

(xv) The GOSS, in collaboration with donors should:

- Undertake an economic and political economy study to determine the economic viability and political sense of a fuel levy. Some work has been undertaken to date in this regard by others;
- Monitor opportunities to exploit local on-going success stories and upscale successful pilot projects such as EU's and USAID's/Tetratech's capacity development pilot in Yambio. These should be monitored and rolled out across a wider number of projects adapted as appropriate to suit local conditions;
- Set out a plan to investigate ways to reduce road construction and maintenance costs with a view to increasing available capital maintenance;
- Assess opportunities to extend the service delivery framework exemplified in the FROMA2B project;
- Consider utilising existing mechanisms or creating a new pooled funding mechanism for the roads sector for purposes of allocating additional capital to the sector and to do so in a manner that strengthens Central and State Government processes. The Consultants do not feel that such a fund needs to be managed by the World Bank but could be complementary to and supported by the Bank in addition to its ongoing operations; and
- Look for formal ways to identify linkages between projects, share lessons and progress, with a view to harmonizing the general approach to road maintenance across South Sudan.

(xvi) In order to improve the working attitudes and sense of responsibility for state and government employees, the following is also recommended:

- Creation of job opportunities and descriptions for different positions within the state/national departments.
- Involvement of state and national government employees in each process with regard to road construction and maintenance activities
- Establishment of an asset register in each state, including description of the assets and their value
- Creation of a database for the staff available within the different state/national departments, and educational qualifications
- Summarizing the responsibilities of different national and state departments in road construction and maintenance and the linkages with other departments.

(xvii) It is of paramount importance to develop in the near future:

- Priorities and gap analysis
- Regulatory framework analysis
- Infrastructure conditions inventory
- Initiate M&E exercises

Annex 2: ToR of the Project

SPECIFIC TERMS OF REFERENCE
Rural Infrastructure Strategy in South Sudan
FWC BENEFICIARIES 2013 - Lot 2: Transport and Infrastructures EuropeAid/132633/C/SER/multi

1. BACKGROUND

Prolonged and almost continuous conflict between the northern and southern portions of Sudan, spanning half a century (1955 to 1972 and 1983 to 2005) finally resulted in the separation of South Sudan from Sudan in July 2011. The period since independence has been difficult for the new nation. Unresolved tensions with Sudan (over border demarcation, oil transit fees, bilateral relations and security arrangements) and the eruption of serious internal conflict situations within South Sudan (both political, ethnic and socio-economic) have resulted in, successively, the shutdown of oil production (the source of more than 90% of South Sudan government revenues); introduction of an austerity budget, which severely curtailed the ability of government to provide even the most basic of services to its population; the return of conflict across large areas of the country, resulting in a further distortion of government expenditure towards security and massive internal displacement, particularly from conflict areas in the Greater Upper Nile sub-region (Jonglei, Unity and Upper Nile States), compounding an already significant refugee caseload made up of refugees fleeing conflict in Sudan (in South Kordofan, Blue Nile and Abyei and from the decade-long conflict in Darfur), together with South Sudanese returnees from Sudan (e.g. southerners returning / expelled from the north in the aftermath of southern secession).

South Sudan is currently host to some 246,433 registered refugees (November 2014), of whom more than 210,000 are from Sudan. In return, South Sudan is the source of 605,325 refugees in neighbouring countries (including almost 200,000 in Ethiopia, almost 130,000 in Uganda and more than 100,000 in Sudan) and an estimated 1.4 million internally displaced persons (IDPs), escaping political and security upheavals and / or fleeing tribal clashes within South Sudan.

In consequence, at least 3.9 million people are estimated to be food insecure in South Sudan at the present time, with 10% of the population (about 1 million people) being severely food insecure.

In addition to the current conflict / crisis situation affecting large areas of the country, causes of food insecurity include low agricultural productivity and limited production; difficulty accessing markets and the malfunctioning of markets, at time unintentionally distorted by the activities of international actors; poor parenting and lack of education / knowledge about basic food and nutrition (in turn often caused by child marriage and gender inequalities); poor hygiene practices; exposure to climate variability, such as seasonal flooding, and poor government services, including agricultural and livestock extension.

The current amalgamation of long term structural challenges with the immediate consequences of internal conflict has given rise to a situation where the country is receiving large and overlapping humanitarian and development interventions that may not be optimally synergetic. For example, while the outstanding portfolio of feeder roads interventions is almost USD 1.5 billion, some trucks transporting food aid have been stuck on unpassable trunk roads between major towns, and even fuel for humanitarian operations has had to be transported by helicopter.

2. DESCRIPTION OF THE ASSIGNMENT

2.1. Global objective

The global objective of the assignment is to facilitate donors and partners to align behind a single strategic approach to rural transport infrastructure in South Sudan, including feeder roads, trunk roads, bridges, water ways, airports, airstrips, helipads and railways to (i) facilitate and reduce the cost of delivery of humanitarian aid, (ii) facilitate the functioning of markets, with options for a gradual transition to a more sustainable longer-term development if and when a more enabling environment exists and (iii) support a structural improvement in food security.

2.2. Specific objective

The specific objective is to prepare and present a strategic vision of rural infrastructure needs in South Sudan alongside an analysis of current interventions (coverage, duplications, quality) with gaps between the two and identification of blockages (bottlenecks) to delivery. The assignment should deliver a set of practical options outlining key transport investments required from a joint humanitarian and development perspective, depending on the different relative weights put on (i) (ii) and (iii) above. The focus should include an estimated costing of both the initial capital outlay and also future maintenance expenditures, recommendations should be made on harmonised standardisation of intervention quality (including capacity building interventions around maintenance).

2.3. Requested services

The main tasks of this assignment are the following:

a. Compile an overview and analysis of current and projected transport interventions financed by different actors in South Sudan (Government - either through own resources or backed by foreign loans, especially China - development actors, humanitarian actors, UNMISS, etc.);

b. Identify key transport infrastructure needs in South Sudan, including maintenance and repairs, based on likely scenarios for humanitarian aid needs in the coming years; this should also include an assessment of the seasonal impact on the pass-ability of the key transport infrastructure needs identified.

c. Identify key transport infrastructure needs in South Sudan, including maintenance and repairs, to support the functioning of markets and underpin a structural improvement in food security; this should also include an analysis and identification of the different degrees of accessibility of the population to food and markets, as well as an assessment of the seasonal impact on the pass-ability of the key transport infrastructure needs identified;

d. Combining (b) and (c), prepare a high level strategic vision of transport infrastructure needs in South Sudan, including maintenance and repairs, based on humanitarian and development perspectives; this vision would include a rough outline of trunk roads, key bridges, feeder roads, water ways, airports, airstrips, helipads and railways;

e. Identify gaps between (a) and (d), and develop rough costing projections and a proposal for donors' coverage of maintenance and repairs based on available options;

f. Identify other key blockages hampering effective functioning of the transport sector (lack of regular maintenance, road blocks, limited availability and/or capacity of private sector operators, etc) in the transport sector in South Sudan;

g. Identify key priorities and options for donor interventions in the current South Sudan context.

A list of existing papers than can inform the analysis is contained in Annex 1.

2.4. Required outputs

a) An inception report to be provided within 5 working days from the commencement of the assignment. In agreement with the Delegation this will define further implementation of the contract.
b) A draft report 1 month after commencement of the assignment. Findings will be presented to a Steering Committee made up of representatives from the World Bank, USAID, DfID, The EUD will organise the meeting.
c) A final report taking into account comments from the Steering Committee members (see b, above), consolidated by the EU Delegation, on the draft final report.

2.5. Language of the Specific Contract

The language of this Specific Contract is English.

2.6. Subcontracting Subcontracting is not foreseen.

3. EXPERTS PROFILE

3.1. Number of requested experts

This assignment requires 3 Category I experts for a total of 60 working days (20 working days each), over a period of 90 calendar days. The contract is based on the assumption that the experts will work five days per week.

3.2. Qualifications and skills of the experts:

All the experts shall be category I, shall have excellent analytical and drafting skills and excellent verbal and written English.

Key expert 1: Transport economist (20 working days)

- **Education**: at least a Master's Degree or, in its absence, equivalent professional experience of 5 years above the minimum general professional experience requirement, in transport economics, or a relevant field;

- **General professional experience**:
  - At least 12 years of professional experience in the sectors related to the lot
  - Proven capacity to conduct assessments and feasibility studies on the transport sector.
  - Previous working experience in South Sudan, or in the region, is an advantage
  - Relevant experience in post-conflict rehabilitation would be considered an advantage

- **Specific professional experience**:
  - A minimum of 8 years' international experience in transport economic analysis.

Key expert 2: Transport specialist (20 working days)

- **Education**: at least a Master's Degree or, in its absence, equivalent professional experience of 5 years above the minimum general professional experience requirement, in transport studies or a relevant field;

- **General professional experience**:
  - At least 12 years of professional experience in the sectors related to the lot
  - Proven capacity to conduct assessments and feasibility studies on the transport sector
  - Previous working experience in South Sudan, or in the region, is an advantage
  - Relevant experience in post-conflict rehabilitation would be considered an advantage

- **Specific professional experience**:
  - A minimum of 8 years' international experience in transport sector analysis transport strategic plan development

Key expert 3: Markets development specialist (20 working days)

- **Education**: at least a Master's Degree or, in its absence, equivalent professional experience of 5 years above the minimum general professional experience requirement, agro-economy or a relevant field;

- **General professional experience**:
  - At least 12 years of professional experience in the sectors related to the lot
  - Proven capacity to conduct assessments and feasibility studies on the transport sector
  - Previous working experience in South Sudan, or in the region, is an advantage
  - Relevant experience in post-conflict rehabilitation would be considered an advantage

- **Specific professional experience**:
  - A minimum of 8 years' international experience in market infrastructures development or other relevant fields.

4. LOCATION AND DURATION

The location of the assignment is Juba (South Sudan), with two field missions within South Sudan initially foreseen. The analysis will be conducted based on information provided (both in writing and through face to face meetings) by partners present in Juba.

The indicative starting date is 15 March 2015. The total duration of the assignment is 90 calendar days after the starting date.

5. REPORTING

Reporting details are provided under chapter 2.4 above. The expert will report directly to the EU Delegation. All reports will be submitted in English. 3 hard copies and electronic media will be provided for each report. All reports must be drafted in English.

All reports shall clearly indicate the number of the letter of contract and carry the following disclaimer: "*This report has been prepared with the financial assistance of the European Union. The views expressed herein are those of the consultants and therefore in no way reflect the official opinion of the European Union*".

6. INCIDENTAL EXPENDITURE

The budget for this assignment should include:
- an allocation for travel costs to include 3 international flights to/from abroad
- an allocation for 2 field visits inside the country. The provisional sum for the filed visits is calculated as EUR 4,380. This amount should be indicated as such in the financial offer.

Appendix 1: Useful reference documents

World Bank (2014) South Sudan Road and River Transport Strategy Note
UNOPS (2014) South Sudan feeder roads maintenance options paper (commissioned by DfID) DfID (2014) South Sudan Functioning of Markets assessment
WFP (2014) Various "Functioning of Markets" assessments
FAO / AFIS
Steering Committee transport infrastructure programme documents, for South Sudan
Logistics cluster weekly access mapping
Feeder road steering committee prioritised feeder road list
MDTF Feeder Road Design Document

Annex 3: Meetings and Interviews

The Consultants have met along the Project from April 27 to May 21, 2015 the following Institutions and persons for exchange of views and preliminary appraisal of the Technical Assistance:

- Mr. Vincent de Boer-Head of Section 'Rural Development &Economic Governance', European Union Delegation –EUD- South Sudan
- Mr.Paolo Girlando - Attaché of the Section 'Rural Development & Economic Governance', EUD, South Sudan
- Eng. Gunther Gutknecht, External Technical Consultant in Infrastructure of the EUD, South Sudan
- Eng. Emmanuel Taban, Highway Engineer- GTIDR-Transport &ICT, World Bank- South Sudan
- Eng. Mohammed Zulfiqar- Senior Transport Eng. At the World bank, Washington DC (in teleconference)
- Mr. Richard Myarsuk- Infrastructure Engineer at USAID
- Mr. Simon Peter Wani, Monitoring & Evaluation Specialist, Management System. International
- Mr. J. Tim Michael, PE- Chief of Party of TETRA TECH, USAID Contractor
- Mr. G. Kalikabyo, Transport Economist, TETRA TECH, USAID Contractor
- Mr. Charles Balina, Team Leader of Rapid Assessment for US AID, Balina Globl Group, LLC .
- Ms. Vicky Stanger- Deputy Head DFID Humanitarian and Livelihoods- DfID.
- Ms. Betty Achan Odwong- Officer, Japan International Cooperation Agency (JICA)
- Mr. Paul Cruickshank- Director and Representative of UNOPS
- Ms. Rebecca Karen Grills- Project Manager of UNOPS
- Ms. Chistine M. Berger- Report Officer, Special Operation- Feeder Roads- World Food Programme (WFP), South Sudan
- Mr. Peter Schaller- Head of Logistics – WFP , South Sudan
- Mr. Sayed M. Farouqui, Resp. of Feeder Roads - WFP , South Sudan
- Mr. Gabriel Maoku- Under Secretary at the Ministry of Transport , Roads and Bridges (MTRB)
- Mr. Waiwai Philip Marlow- Director of Roads Maintenance at the Ministry of Transport , Roads and Bridges (MTRB)
- Eng Kenyatta B. Warile, PE- Executive Director of South Sudan Roads Authority (SSRA)
- Eng. Emmanuel Longo-Director of Planning and Engineering of SSRA
- Eng.Edwin Ikudi Rokani, Road Maintenance Director of SSRA
- Prof. Mathew Gordon Udo- Under Secretary- Ministry of Agriculture, Forestry, Cooperatives & Rural Development

- Mr. John Pangech- Director General – Directorate , Planning and Agricultural Economies- Ministry of Agriculture, Forestry, Cooperatives & Rural Development
- Mr. Erminio Sacco- Chief Technical Advisor- Agriculture and Food Information System for Decision Support (AFIS)- Food and Agriculture Organization of the Unites Nations (FAO)
- Mr. Kamau Wanjohi. Technical Officer- Food Security Information Systems- Agriculture and Food Information System for Decision Support (AFIS)- Food and Agriculture Organization of the Unites Nations (FAO)
- Mr. James Bwirani, Technical Officer- - Food Security Information Systems- Agriculture and Food Information System for Decision Support (AFIS)- Food and Agriculture Organization of the Unites Nations (FAO)
- Mr. Eugene Torero - Country Director in South Sudan of TRADE MARK - East Africa
- Mr. Tayo Alabi - Extension Services Specialist - Cardno Emerging Markets (UK)
- Ms. Margareth Labane - Director of General Administration & Finance - National Bureau of Statistics (on the phone and after meeting for data collection an officer responsible for 'Economics Statistics')
- Steering Committee's members Representatives (EU, WB,USAID, DfID)
- Other Donors at 2 Workshops held at the EUDamong which:Canadian Cooperation, Dutch Cooperation, etc…
- Informal meetings with persons belonging to Non-Governmental Organisations;
- United Nations Mission in South Sudan

Annex 4: Bibliography

- Abt consultants: *The Food Agribusiness and Rural Markets (FARM) Project*
- AfDB (2013) *South Sudan: An Infrastructure Action Plan: A Program for Sustained Strong Economic Growth.*
- AfDB (2013). *South Sudan: A Study on Competitiveness and Cross Border Trade with Neighbouring Countries.* African Development Bank Group.
- AfDB (November 2013): *Technical Assistance for Development of the Transport Sector: Project Appraisal Report*
- AfDB, OECD, UNDP (MUVAWALA J. and MUGISHA F., 2014): *South Sudan. African Economic Outlook*
- Africon (2010): Feasibility Studies, Detail Design and Preparation of Bidding Documents for the Phased Rehabilitation of about 7000 km of Rural Roads in Southern Sudan
- Centre for Census, Statistics and Evaluation (2010): *Statistical Yearbook*
- Crown Agents (PALMER D. and GREENING T., November 2013): *Consultancy services for Technical Assistance to South Sudan Ministry of Transport , Roads and Bridges to develop Road Research Capacity in the Directorate of Materials and Research*
- Crown Agents (PALMER D., December 2013): South Sudan Road Research Centre - Preliminary report
- DFID (Crown Agents, November 2013): *TA to Develop Road Research Capacity*
- DFID (Crown Agents, December 2013): *Road Research Centre Preliminary Report*
- DFID (2015): *Business Case and Intervention Summary on "Feeder Roads Construction, Operation and Maintenance to connect Agriculture to Business (FROMAZB) Programme"*
- DFID (May 2012): *Support to South Sudan's Customs and Trade Facilitation*
- Ethiopian Roads Authority (August 2011): *Design Manual for Low Volume Roads*
- EU (November 2014): *Improved Food Security and Income for Rural Smallholders*
- EU (2015): Training Needs Assessment and Development of Human Resources in the Transport Sector: ToR
- EU (November 2014): *Funding Status for Road Sector*
- EU (November 2014): *Donor Sector Support to Road Sector*
- EU (2014): *Response Strategy 2011 – 2013*
- EU (November 2014): *Improved Road Security and Income for Rural Small holders in South Sudan (ZEAT-BEAD) rif 24600*
- EU (21 April 2015): Feeder Road Construction in Support of Trade and Market Development in South Sudan_ Draft Feasibility Study Report_ UNOPS
- EU / UNOPS (April 2015): *Feeder Road Construction in Support of Trade and Market Development: Draft Feasibility Study Report*
- FAO/WFP (2014): *"Crop and Food Security Assessment Mission to South Sudan." Special Report, Rome.*
- FAO/WFP (2013): *"Crop and Food Security Assessment Mission to South Sudan." Special Report.*
- GiZ (Altai Consulting, December 2013): *Market Assessment in South Sudan: Northern Bahr Al Ghazal, Western Bahr Al Ghazal and Warrap states*

- Government of Southern Sudan (2011): *South Sudan Development Plan 2011-2013.*
- Government of Southern Sudan (2011): *South Sudan Roads Authority Act*
- Government of Southern Sudan (2009): *Local Government Act (2009).*
- Government of Southern Sudan (2013): *Draft Final Five year budget Ministry of Transport from 2013/14 to 2017/2018*
- Government of Southern Sudan (June 2012): *The Policy of the Ministry of Roads and Bridges in the Republic of South Sudan*
- Government of Southern Sudan (October 2007): *Transport Sector Policy for the Ministry of Transport and Roads*
- Government of Southern Sudan / JICA (2015): *Comprehensive Agriculture Development Master Plan (CAMP).*
- IMF (2014): *Article IV of Consultation - Staff Report; Staff Statement; and Press Release.*
- IMF: *Country Report No. 14/345, Washington, D.C.: International Monetary Fund*.
- IPC (2014): *"Republic of South Sudan - September 2014 Analysis." Integrated Food Security Phase Classification.*
- IPIS (International Peace Information Service, 2014): *Supply Chains and Transport Corridors in East Africa*
- IRND (November 2010): *Diagnostic Review*
- JAM (2005): *Inland Water Transport Assessment*
- JICA (September 2013): *Manuals for Road Maintenance*
- JICA (ISHIWATARI M., 2011): *Redevelopment of Inland Water Transport for Post-Construction*
- JICA (JIN Corporation, February 2015): *The Republic of South Sudan. The Comprehensive Agricultural Development Master Plan_ Draft Final Report_ Ministry of Agriculture, Forestry, Cooperatives and Rural Development/Ministry of Livestock and Fisheries Industries/Ministry of Electricity, Dams, Irrigation and Water Resources*
- KIVUVA A. and MUENI M. (2012), *Report of Agricultural Market Survey in South Sudan.* Market Development Division of Agribusiness, Market Development Directorate.
- Louis Berger (2010): *Draft Final National Transport Masterplan*
- Ministry of Agriculture and Forestry: *Statistical Yearbook*
- Ministry of Finance and Economic Planning, Republic of South Sudan (2014): *Draft National Budget Plan Financial Year 2014/15.*
- Ministry of Petroleum and Mining: *Opportunities for Investors in the Petroleum and Mining Sectors*
- Ministry of Transport (April 2013): *Transport Sector Policy 2012 -2017*
- Ministry of Transport (April 2013): *Strategic Plan 2013-2018*
- Ministry of Transport and Roads (May 2007): *Training Needs Analysis Report*
- Ministry of Transport and Roads (July 2006): *Strategic Plan for Road Sector in South Sudan*

- Ministry of Transport, Road, Bridges (2012): *Strategic Briefing Notes for Transport Strategic Development 2012 – 2020*
- MRB (June 2013): *Low Volume Roads Design Manual*

- NGIGI Margaret (July 2008): Structure, Conduct and Performance of Commodity Markets in South Sudan: Linkages Food Security
- NGIGI Margaret (July 2008): *Structure, Conduct and Performance of Commodity Market*
- Nile Basin Initiative (2012): *Analysis of Cross Border Trade in Agricultural Products along Selected Corridors of the Nile Basin.*
- OCHA (16 June 2014): *South Sudan: logistic cluster 3w – ongoing Activities*
- Office of Inspector General (June 2012): *Follow-up Audit of USAID Road Sector Activities*
- SSCCSE (South Sudan Centre for Census, Statistics and Evaluation, 2010): *Statistical Yearbook for Southern Sudan.* Juba: SSDP. 2011. *South Sudan Development Plan 2011-2013 - Realizing freedom, equality, justice, peace and prosperity for all.*
- South Sudan National Bureau of Statistics (2009): *National Baseline Household Survey*
- South Sudan National Bureau of Statistics (2010): *South Sudan Statistical Yearbook*.
- South Sudan National Bureau of Statistics (2011): *South Sudan Statistical Yearbook*.
- South Sudan National Bureau of Statistics (2012): *South Sudan Statistical Yearbook*.
- South Sudan National Bureau of Statistics (2012). *National Households Baseline Survey 2009.* Report for South Sudan, National Bureau of Statistics.
- South Sudan National Bureau of Statistics (2011). *South Sudan Cost-to-Market Report.* An Analysis of Check-points on the Major Trader Routes in South Sudan
- South Sudan Roads Authority (TBC) (Francis Magambe Byaruhanga) S*SRF Concept Note.*
- SSRRP (South Sudan Rural Road Project, 18 February 2015): Feeder Roads Steering Committee (FRSC) - Ministry of Transport, Roads and Bridges – Meeting
- STARKEY Paul: *Complementing infrastructure: enhancing rural mobility through motorised and non-motorized transport*
- SULE, DENNIS and MUCHIRI (April 2015): *Hot Spot Locations: Snapshot Report*
- TIBRICHU Habib (2014): *Trading with Neighbors: Understanding Uganda-South Sudan business community trade relations.* International Alert.
- TIITMAMER N. (April 2014): *South Sudan's Mining Policy and Resource Curse: Policy Paper*
- UN (June 2014): *Logistics Cluster. Access Constraints*
- UN (Joint Logistics Centre, February 2009): *River Cargo Transportation Assessment: White Nile River*
- UNOPS: *Feeder Road Construction in Support of Trade and Market Development*
- UNOPS (2014): South Sudan Feeder Road Funding Assessment and Options (Draft)
- UNOPS: *Feeder Road Funding Assessment and Options*
- UNOPS (February 2015): *MoU for Construction of Aluakluak-Mapourdit Feeder Roads*
- UNOPS (July 2013): *Logistics Cluster. Roads Assessment Mission*
- UNOPS & MoPI (3 February 2015): *Memorandum of Understanding between the State Ministry of Physical Infrastructure, Lakes state and UNOPS - South Sudan Operation Center. For the construction of Aluakluak-Mapourdit Feeder Roads in Yirol West Country*
- USAID / UNOPS (May 2015): *Assessment of Donor Funded Road projects in South Sudan*

- USAID / UNOPS (May 2013): *Assessment of Donor Funded Road Projects in South Sudan - Impact and Sustainability Perspective*
- USAID (2015): *Food Agribusiness and Rural Markets Project, South Sudan.*
- USAID (September 2012): *Corridor Diagnostic Study and Action Plan*
- USAID (January 2015): *Fact Sheet 3*
- USAID (2006): *Strategic Plan for Road Sector*
- USAID (Tetratech, February 2015): *Feeder and Trunk Roads Presentation*
- USAID (18 February 2015): *Feeder and Trunk Roads Program*
- USAID (June 2011): *Transition Strategy 2011 – 2013*
- USAID (18 February 2015): *Feeder and Trunk Roads Program*
- USAID (Tetratech, 14 April 2015): *South Sudan Feeder and Trunk Road Project - Working List of Projects*
- WFP (2015): *South Sudan Situation Report No. 75, 1 May 2015*.
- WFP (2014): *Advanced GIS training: GIS Exercises for Humanitarian Response Accessibility. Rome: Analysis and Nutrition Service.*
- WFP (2012): *"Corporate Market Scoping Mission." Report for Republic of South Sudan, Rome.*
- WFP (February 2015): *Roads Status Update (map)*
- WFP (FFebruary 2015)*: Feeder Roads SO 200379*
- WFP (March 2014): *South Sudan – Special Operation 200379 – "Feeder Road Construction in support of WFP Operations in South Sudan"*
- WFP (February 2015): *Market Assessment*
- WFP (February 2015): *Feeder Roads Steering Committee meeting, SO200379-Progress update*
- World Bank (17 April 2012): *Emergency Project Paper on a Proposed Grant for US$38 Million to the Republic of South Sudan for a Rural Roads Project. Transport Sector Country Department AFCE4 Africa Region*
- World Bank (2013). *Donor Coordination Meeting on Rural/Feeder Roads in South Sudan. Summary of Discussion held November 7 2013.*
- World Bank (April 2015): *East Africa Regional Transport, Trade and Development Facilitation: Project Appraisal Document*
- World Bank (Nathan Associates) (October 2014): *Roads and River Transport Note.*
- World Bank (GUENTER GUTKNECHT A., October 2013): *Stock Taking of Rural and Feeder Roads Projects Effectiveness and Sustainability*
- World Bank (YOSHINO, YUTAKA, NGUNGI, ASEBE, 2011): *Enhancing the Recent Growth of Cross- Border Trade between South Sudan and Uganda. Africa Trade Policy Notes.*
- World Bank (October 2011): *South Sudan Rural Roads Project*
- World Bank (18 June 2013): *Implementation, Completion and Results Report on a Multi Donor Trust Fund – South Sudan (MDTF – SS) Grant in the amount of US$ 89.907 million to the Republic of South Sudan for a Southern Sudan Emergency Transport and Infrastructure Development Project.*

- World Bank (15 February 2013): *Implementation, Completion and Results Report on a Multi Donor Trust Fund – South Sudan (MDTF – SS) Grant in the amount of US$ 89.907 million to the Republic of South Sudan for a Southern Sudan Roads Maintenance Project.*
- World Bank (June 2011): *Rural Infrastructure in Africa: Policy Direction*

Annex 5: Traffic Analysis Zones for South Sudan National Transport Master Plan

Traffic Analysis	Main
Internal	
North Bahr el Ghazal	Livestock and meat producer
West Bahr El Ghazal	Oil Production
Western Equatoria	Livestock and groundnuts production
Central Equatoria	Contains Capital City of Juba. Main economic center links Abdelhak to Uganda
Eastern Equatoria	Livestock and groundnuts production
Jonglei	Meat and livestock production
Upper Nile	Oil Production
Lakes	Meat and livestock production
Warrap	Livestock production
Unity	Crude oil producer. Also meat and livestock.
External	
Ethiopia	Exports sorghum to Sudan. Imports foodstuffs and machinery
Kenya	Imports of pharmaceuticals, machinery, cereals, refined oil (small quantity)
Uganda	Imports from Uganda steel and machinery

Source: National Transport Master Plan 2010.

Annex 6: Summary of Estimated Project Costs (Emergency Project for Rural Roads, World Bank)

(derived from the *EMERGENCY PROJECT PAPER ON A PROPOSED GRANT IN THE AMOUNT OF US$38 MILLION TO THE REPUBLIC OF SOUTH SUDAN FOR A RURAL ROADS PROJE;- World Bank,April 17,2012*)

REPUBLIC OF SOUTH SUDAN: Rural roads Project

Table 1: Detailed Cost Estimates

It No	Component and Activity Description	Cost Estimate (US$ million)	% of total Project
1	**Component 1:** Upgrading and Rehabilitation of Selected Rural Roads	22.50	59.21
1.1	Sub component 1(a): Rehabilitation of selected roads, including 15 percent contingencies (10 percent physical & 5 percent price)	20.30	53.42
1.2	Sub component 1(b): Supervision services for roads rehabilitation	2.00	5.26
1.3	Sub component 1 (c) Environment and Social Management Plan (ESMP)	0.20	0.53
2	**Component 2:** Maintenance and spot improvement of selected rural roads	12.00	31.58
2.1	Sub component 2(a): Maintenance and spot improvement of selected roads, mechanized contractors	8.00	21.05
2.2	Sub component 2(b): Supervision services for maintenance and spot improvement for mechanized maintenance	1.40	3.68
2.3	Sub component 2(c): Maintenance and spot improvement of selected roads, labor- based contractors	2.40	6.32
2.4	Sub component 2 (d) Supervision services for Labor-based maintenance contracts	0.20	0.53
3	**Component 3**: Institutions development for rural infrastructure management	3.50	9.21
3.1	Sub component 3(a) **:** Support to pilot states: (i)TA for systems establishment and training; (ii) IT and office equipment and vehicles; and (iii) Preparation of business plan	0.88	2.32
3.2	Sub component 3(b) : Support to national level institutions : (i) TA to support the establishment of a planning department MRB; (ii) Preparation of Road Sector Development Program; (iii) Support to establishment of road fund; and (iv) road safety programs and strategic studies	1.10	2.89
3.3	Sub component 3(c) Support to the PMT: (i) Training to PMT and state staff; (ii) TA to the PMT; (iii) Provision for technical, social and financial audit firm (Audit Agent); (iv) Procurement of computers and accounting software; (v) Operational cost for the PMT	1.52	4.00
	TOTAL	**38.00**	**100.00**

Annex 7: GOSS - Ministry of Transport, Roads and Bridges: List of Feeder Roads

REPUBLIC OF SOUTH SUDAN LIST OF FEEDER ROADS.

CENTRAL EQUATORIA STATE	
Tindilo-Rokon	70km
Kergulu-Umbasi – Iwatoki – Lojulu Morobo	70km
Nyamini-Liggi-Gurulotogu	70km
Juba- Liria	70km
Terkeka- Lokwini- Tombek	70km
Kajokeji-Ajio-Koyiko	96km
Juba-Tendere-Tijor-Liggi	61km
Tali-Amadi	84km
Loikor-Limi	10km
Limuro junction -Loka west	48km
Gederu-Liwolo	15km
Tali-Awerial	60km
Gimunu-Pakulu-Jamaru	46km
Yei-Lasu	45km
Yaribe-Panyume junction	22km
Gulumbi junction-Koyiko	30km
Limbe-Kupera-Yarbe-Panyume-Nyorikendila-Morobo	80km
Gederu-Lori	40km
Limbe Mukaya	30km
Mango-Mugwo	29km
Kegiko-Senema	20km
Rubeke-Morsak	16km
EASTERN EQUATORIA STATE	
Kapoeta-Moggos-Jie-Wokubu	80km
Torit-Loronyo-Lafon	98km
Pageri-Magwi-Obbo-Poataka-Paluar-Upper Talanga	90km
Kimatong farksika-Chukudum-Nagishot	90km
Himotonge junction-Imotong-Ikotos	70km
Magwi-Aboro-Opari-Pageri	56km
Tserentenya-Lorum-Lofus-Lotome	33km
Paluar-Labone	30km
Ameh junction-Offrika	25km
Chukudum-Nagichot	14km
Torit –Mothi	14km
WEST EQUATORIA STATE	
Ezo-Source Yubu-Tambura	86km
Madebe-Bambu	80km
Madebe-Nabanga-Ibba	77km
Maridi-Edi-Rasolo	77km
Nzara-Basuhambi	30km
Mundri-Tindilo	60km
Maridi-Mvolo	120km
Amadi-Tali-Tindilo	60km
Nzara-Sakure	35km
Yeri-Dari	30km
Lanyi-Wandi	25km
Nagero-Sue	55km

LAKES STATE.	
Aluakluak-Mapourdit-Agany-Ngop	55km
Kuangbor-Jarwong-Abuyung-Gut-Thorm	65km
Aduel-Biling-Makundi	55km
Aluakluak-Majok-Mvolo	51km
Yirol-Pagarau-Nyang	160km.
JONGLEI STATE	
Waat-Yua-Gadiang	160km
Gadiang-Manyabol	111km
Gadiang-Duk Fadiet-Ayod	95km
Boma-Kassangor	90km
Canal –Atar	30km
UPPER NILE STATE	
Maban-Mathiang	105km
Akoka –Adar	66km
UNITY STATE	
Abiemnom-Mayom-Kilo30	75km
Tur-Manga-Kilo30	120km
Mayom-Mankien-Ruthnyiebol-Biekuac-Abeimnom-Awarphiny	60km
Leer-Nyal-Ganyiel-Shambe	80km
Ganyiel-Akot	70km
Mayom-Mankein-Wangkay	70km
Rubkona-Kaljak-Wathak	60km
Tomur-Wangkai	75km
From main road Fakur	10km
WARRAP STATE	
Mahol-Ameth-Akoc-Panyok-Mayen Abun	95km
Warrap-Majak Juer-Alebek	90km
Turalei-TongLiet-Kuac-Abyei	80km
Malou Pech-Theit-Luonyaker	80km
Pinydit-Mayom Chol-Ruot-Majak Lou	80km
Lietnhom-Gogrial	80km
Kuajok-Luonyaker	55km
Akon-Mayen Pajok	24km
WBEG STATE	
Wau-Ngolimbo-Ngoku-Ugele Akanda-Halima-Bussere	60km
Wau-Nyinak-Mabior-Abikem	70km
Wau-Kuarjena	50km
Kangi-Alel Thong-Kuajok	32km
Thorkung-Gettee	40km
NBEG STATE	
Malualkon-Wath Muok	90km
Ariath-Malual center	90km
Nyamlel-Aroyo	60km
Marial Bai-Nyinboli	40km
TOTAL	**5,359**

Annex 8: Key Features of the Main Corridors

Corridor	Distance Juba to seaport (km)	Time Juba to seaport	Transit regimes	Corridor transport modes
1. Nimule via Kampala	Mombasa - 1,820	6-9 days	Two	Road, rail and pipeline
2. Nimule via Soroti	Mombasa - 1,630	6-9 days	Two	Road, rail, and pipeline
3. Boma	Djibouti - 1,900	n/a	Two	Road and rail
4. Kaya	Mombasa - 1,950	7-11 days	Two	Road, rail and pipeline
5. Nadapal[6]	Mombasa - 1,745	5-8 days	One	Road, rail, and pipeline

Source: World Bank/IDA, 2014

Annex 9: Scenarios 1 and 2 and estimation of related costs

SCENARIO 1 **Rebuilding trunk roads to higher standards**

Activity	Distance (km)	Cost estimatio / km	Total cost estimate	2015	2016	2017	2018	2019	2020
Rehabilitation / Maintenance (including bridge)									
Juba - Nimule	192		1.500.000	1.000.000	500.000				
Keeping road open (short term)									
Juba - Yei	150	5.000	937.500	375.000	375.000	187.500			
Yei - Faraksika	183	5.000	972.500	800.000	115.000	57.500			
Faraksika - Yambio	168	5.000	1.017.500	500.000	345.000	172.500			
Faraksika - Mundri	80	5.000	500.000	200.000	200.000	100.000			
Mundri - Rumbek	244	12.000	3.660.000	1.464.000	1.464.000	732.000			
Rumbek - Wau	227	20.000	5.448.000	2.724.000	1.816.000	908.000			
Wau - Wunrok	170	18.000	3.570.000	2.040.000	1.020.000	510.000			
Juba - Bor	190	18.000	3.895.000	2.470.000	950.000	475.000			
Complete reconsruction to keep main corridors open for humanitarian supply & develoment									
Juba - Yei	150	150.000	22.500.000		2.500.000	12.000.000	8.000.000		
Faraksika - Yambio	168	120.000	20.160.000		2.160.000	15.000.000	3.000.000		
Faraksika - Mundri	80	150.000	12.000.000		1.000.000	11.000.000			
Mundri - Rumbek	244	150.000	36.600.000		2.600.000	20.000.000	14.000.000		
Rumbek - Wau	227	170.000	38.590.000		2.590.000	20.000.000	16.000.000		
Wau - Wunrok	170	180.000	30.600.000			1.600.000	20.000.000	9.000.000	

SCENARIO 1 **Rebuilding trunk roads to higher standards**

Activity	Distance (km)	Cost estimatio / km	Total cost estimate	2015	2016	2017	2018	2019	2020
Juba - Bor	190	170.000	32.300.000		2.300.000	20.000.000	10.000.000		
Kaya - Yei	82	170.000	13.940.000			1.940.000	10.000.000	2.000.000	
Complete reconstruction, second priority, feeder roads in green belt / agricultural development									
Juba - Kajo Keji	160	120.000	19.200.000				1.200.000	13.000.000	5.000.000
Kajo Keji - Uganda border	30	120.000	3.600.000				600.000	3.000.000	
Tali - Yirol	60	150.000	9.000.000					6.000.000	3.000.000
Tambura - Wau	250	170.000	42.500.000				2.500.000	20.000.000	20.000.000
Magwi - Torit	70	110.000	7.700.000					7.700.000	
Rehabilitation of 250 km feeder oads as agreed on with the FRSC	250	170.000	42.500.000			8.500.000	12.000.000	12.000.000	10.000.000
Maintenance									
Juba - Yei	150	5.000	750.000						750.000
Faraksika - Yambio	168	5.000	840.000						840.000
Mundri - Faraksika	80		600.000					200.000	400.000
Mundri - Rumbek	244	5.000	1.220.000						1.220.000
Rumbek - Wau	227	5.000	1.135.000						1.135.000
Juba - Bor	190	5.000	950.000						950.000
Mundri - Bangolo	75		1.125.000			187.500	375.000	187.500	375.000
Pageri - Magwi, Lot 1	33		495.000			82.500	165.000	82.500	165.000
Pageri - Magwi, Lot 2	30		450.000			75.000	150.000	75.000	

SCENARIO 1 **Rebuilding trunk roads to higher standards**

Activity	Distance (km)	Cost estimatio / km	Total cost estimate	2015	2016	2017	2018	2019	2020
									150.000
Kangi - Kuajok	41,25		618.750			103.125	206.250	103.125	206.250
Kuajok - Lunyaker	56,16		561.600				140.400	280.800	140.400
Farakska - Yei	183		1.830.000				457.500	915.000	457.500
Juba - Mundri	173		1.730.000				432.500	865.000	432.500
Magwi - Torit	70	5.000	350.000		350.000				
Magwi - Labone	89		1.335.000			222.500	445.000	222.500	445.000
Amadi . Tali	65		975.000			162.500	325.000	162.500	325.000
Morobo . Panyume	25		375.000			62.500	125.000	62.500	125.000
Panyume . Yaribe	25		375.000			62.500	125.000	62.500	125.000
Yaribe . Gimuru	30		450.000			75.000	150.000	75.000	150.000
Panyume . Limbe	30		450.000			75.000	150.000	75.000	150.000
Yei - New Lasu	45		675.000			112.500	225.000	112.500	225.000
Aluakluak - Mapourdit - Agurany	26,6		199.500					66.500	133.000
Gok Machar - Mayom Ngok -	34,7		260.250					86.750	173.500
Achol Pagong - Ayen Market	27,5		206.250					68.750	137.500
Kangi - Bar Urud	29,2		219.000					73.000	146.000
In case security improves:									
Bor - Malakal									
Renk - Sudan border									
Bor - Pibor - Pochalla (Ethopian border)									
Rumbek - Mayendit - Bentiu									-

SCENARIO 1 **Rebuilding trunk roads to higher standards**

Activity	Distance (km)	Cost estimatio / km	Total cost estimate	2015	2016	2017	2018	2019	2020
									-
			370.865.850	11.573.000	20.285.000	114.403.125	100.771.650	76.476.425	47.356.650

SCENARIO 2 **Trunk road spot repairs and continuation of feeder road programs & feeder road maintenance**

Activity	Distance (km)	Cost estimatio / km	Total cost estimate	2015	2016	2017	2018	2019	2020
Rehabilitation / Maintenance (including bridge)									
Juba - Nimule	192		1.500.000	1.000.000	500.000				
Keeping road open									
Juba - Yei	150		19.125.000	375.000	6.000.000	2.250.000	2.250.000	6.000.000	2.250.000
Yei - Faraksika	183		972.500	800.000	172.500				
Faraksika - Yambio	168		21.500.000	500.000	6.720.000	2.520.000	2.520.000	6.720.000	2.520.000
Faraksika - Mundri	80		10.200.000	200.000	3.200.000	1.200.000	1.200.000	3.200.000	1.200.000
Mundri - Rumbek	244		31.964.000	1.464.000	9.760.000	3.660.000	3.660.000	9.760.000	3.660.000
Rumbek - Wau	227		31.099.000	2.724.000	9.080.000	3.405.000	3.405.000	9.080.000	3.405.000
Wau - Wunrok	170		23.290.000	2.040.000	6.800.000	2.550.000	2.550.000	6.800.000	2.550.000
Juba - Bor	190		26.220.000	2.470.000	7.600.000	2.850.000	2.850.000	7.600.000	2.850.000
Complete reconstruction, second priority, feeder roads in green belt / agricultural development									
Juba - Kajo Keji	160	120.000	19.200.000			1.200.000	13.000.000	5.000.000	
Kajo Keji - Uganda border	30	120.000	3.600.000		600.000	3.000.000			
Tali - Yirol	60	150.000	9.000.000			6.000.000	3.000.000		
Tambura - Wau	250	170.000	42.500.000		2.500.000	20.000.000	20.000.000		
Magwi - Torit	70	110.000	7.700.000			7.700.000			
Kaya - Yei	82	170.000	13.940.000			1.940.000	10.000.000	2.000.000	
Rehabilitation of 500 km feeder roads as agreed on with the FRSC	500	170.000	85.000.000		7.000.000	19.500.000	19.500.000	19.500.000	19.500.000
Maintenance									
Mundri - Bangolo	75		1.125.000			187.500	375.000	187.500	375.000

SCENARIO 2 **Trunk road spot repairs and continuation of feeder road programs & feeder road maintenance**

Activity	Distance (km)	Cost estimatio / km	Total cost estimate	2015	2016	2017	2018	2019	2020
Pageri - Magwi, Lot 1	33		495.000			82.500	165.000	82.500	165.000
Pageri - Magwi, Lot 2	30		450.000			75.000	150.000	75.000	150.000
Kangi - Kuajok	41,25		618.750			103.125	206.250	103.125	206.250
Kuajok - Lunyaker	56,16		561.600				140.400	280.800	140.400
Farakska - Yei	183		1.830.000				457.500	915.000	457.500
Juba - Mundri	173		1.730.000				432.500	865.000	432.500
Magwi - Torit	70	5.000	350.000		350.000				
Magwi - Labone	89		1.335.000			222.500	445.000	222.500	445.000
Amadi . Tali	65		975.000			162.500	325.000	162.500	325.000
Morobo . Panyume	25		375.000			62.500	125.000	62.500	125.000
Panyume . Yaribe	25		375.000			62.500	125.000	62.500	125.000
Yaribe . Gimuru	30		450.000			75.000	150.000	75.000	150.000
Panyume . Limbe	30		450.000			75.000	150.000	75.000	150.000
Yei - New Lasu	45		675.000			112.500	225.000	112.500	225.000
Aluakluak - Mapourdit - Agurany	26,6		199.500					66.500	133.000
Gok Machar - Mayom Ngok -	34,7		260.250					86.750	173.500
Achol Pagong - Ayen Market	27,5		206.250					68.750	137.500
Kangi - Bar Urud	29,2		219.000					73.000	146.000
Kajo Keji - Uganda border	30		228.000					78.000	150.000
Tali - Yirol	60		150.000						150.000
Tambura - Wau	250		625.000						625.000
Magwi - Torit	70		175.000						175.000
						-			-
In case security improves:									
Bor - Malakal									
Renk - Sudan border									
Bor - Pibor - Pochalla (Ethopian border)									
Rumbek - Mayendit - Bentiu									-
									-
			360.668.850	11.573.000	60.282.500	78.995.625	87.406.650	79.314.425	43.096.650

Cost Estimation:

Activity	US$
Improvement of road network option 1	370.865.850,00
Support to safety department in ministry (e.g. for developing safety pamphlets)	500.000,00
Supply of weigh bridges at strategic points	1.000.000,00
Support to airports for applying aviation regulations (e.g. safety regulations, fee collection, etc.)	1.500.000,00
Environmental studies for river transport	500.000,00
Institutional upport to ministry in regard to construction & maintenance	4.500.000,00
TOTAL estimate	**378.865.850,00**

Activity	US$
Improvement of road network option 2	360.668.850,00
Support to safety department in ministry (e.g. for developing safety pamphlets)	50.000,00
Supply of weigh bridges at strategic points	1.000.000,00
Support to airports for applying aviation regulations (e.g. safety regulations, fee collection, etc.)	1.500.000,00
Environmental studies for river transport	500.000,00
Insitutional upport to ministry in regard to construction & maintenance	4.500.000,00
TOTAL estimate	**368.218.850,00**

Although feeder roads will be completed within the next years only, key staff should be integrated already now
+ 20-25% for management

SCENARIO 1 **Rebuilding trunk roads to higher standards**

Activity	Distance (km)	Total cost estimate	
Keeping road open (short term)	1.412	20.000.500	
Complete reconsruction to keep main hubs open for humanitarian supply & development	1.311	206.690.000	
Complete reconstruction, second priority, feeder roads in green belt / agricultural development	820	124.500.000	
Rehabilitation / Maintenance for Juba - Nimule road (including bridge)	192	1.500.000	
Maintenance	2.147	18.175.350	
Total cost estimate		**370.865.850**	
In case security improves:			
Bor - Malakal			
Renk - Sudan border			
Bor - Pibor - Pochalla (Ethopian border)			
Rumbek - Mayendit - Bentiu			
		741.731.700	

SCENARIO 2 **Trunk road spot repairs and continuation of feeder road programs & feeder road maintenance**

Activity	Distance (km)	Total cost estimate
Keeping road open	1.412	164.370.500
Complete reconstruction, second priority, feeder roads in green belt / agricultural development	1.152	180.940.000
Rehabilitation / Maintenance for Juba - Nimule road (including bridge)	192	1.500.000
Maintenance	1.498	13.858.350
Total cost estimate		**360.668.850**
In case security improves:		
Bor - Malakal		
Renk - Sudan border		
Bor - Pibor - Pochalla (Ethopian border)		
Rumbek - Mayendit - Bentiu		
		721.337.700