South Sudan: An Infrastructure Action Plan

A Program for Sustained Strong Economic Growth

Summary Report

AFRICAN DEVELOPMENT BANK GROUP

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This report is the summary report of the Infrastructure Action Plan (IAP) for South Sudan. The full report is also available. The IAP report was prepared with the assistance of the African Development Bank Group (AfDB) at the request of the Government of the Republic of South Sudan.

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South Sudan: An Infrastructure Action Plan - A Program for Sustained Strong Economic Growth

Foreword

We are privileged to present the Infrastructure Action Plan (IAP) for South Sudan. This flagship report is the outcome of an exemplary intensive and rich dialogue with the Government of the Republic of South Sudan (GRSS), Development Partners and other key Stakeholders, including the private sector.

South Sudan became officially independent on 9 July 2011. It is the newest African country faced with not only unique challenges, but also opportunities. The economic base is currently narrow, with a heavy dependence on the oil sector. The country has undergone decades of war, underdevelopment and other calamities that contributed to the fragility of its institutional, economic and social structures. The country has one of the lowest social development indicators in Africa.

At the same time, South Sudan is endowed with abundant natural resources, including a large amount of mineral resources, aquatic and forest resources as well as fertile rain-fed agricultural land that is potentially irrigable to allow all-year cropping. The most pressing challenge of South Sudan is the urgent need for State building in a context of persistent internal and external threats to peace and security.

We share the view that the country will need to diversify its economy and promote inclusive growth, by improving the management of oil resources, building the requisite institutional capacity and continuously working towards creating the conditions for internal cohesion and regional stability. In this regard, rehabilitating and developing the dilapidated infrastructure offer great opportunities.

In this context, the IAP should be seen as part of the broader Bank's contribution to peace and state building efforts in South Sudan and the region. This flagship report is also part of a series of analytical work designed to strengthen the Bank's knowledge base in order to effectively assist Regional Member Countries (RMCs), particularly those in fragile situations. The IAP represents a key instrument for planning and programming, resource mobilization, policy dialogue and aid coordination for infrastructure development.

It is our hope that the IAP will go a long way in serving these overarching objectives, as it has already been used as a key guiding tool in the preparation of the South Sudan Development Initiative (SSDI), the successor to the South Sudan National Development Plan (SSDP).

Zondo Sakala
Vice President, Country and Regional Programs and Policy
African Development Bank Group

Preface

At the request of the Government of the Republic of South Sudan (GRSS), the African Development Bank Group (AfDB) has provided assistance in preparing this flagship Infrastructure Action Plan (IAP) aimed at putting in place an effective instrument for all stakeholders in the collective effort to provide the necessary full-fledged support to address the country's development challenges.

As early as in late 2010, the AfDB initiated work to assist the Government in preparing detailed needs assessments in agriculture and infrastructure sub-sectors (energy, transport, water and sanitation, and ICT). The validation workshop of the draft reports took place in Juba in September 2011. The Bank was further requested to build on the work done to fast-track the preparation of an Infrastructure Action Plan (IAP) for South Sudan for the decade ahead. The first draft of the IAP was completed in February 2012, and validated in July 2012 in Juba at a national stakeholders' workshop attended by several participants from the GRSS, relevant sectors, civil society and other development partners.

The new Republic of South Sudan (RSS) is classified as a post-conflict country. South Sudan is characterized by a very high degree of socio-economic fragility, with weak institutional and human capacities and one of the lowest social development indicators in Africa. The political, security, economic and social situations have remained fragile. The country has also a narrow economic base, with a heavy dependence on the oil sector. In this context, the dilapidated infrastructure, mainly as a result of decades of war, has been identified as the most binding constraint for economic diversification and inclusive private sector-led growth and productive employment. Infrastructure development can also help address the most pressing challenge of South Sudan, namely the urgent need for peace and state building, including accommodating the high expectations of the population for peace dividend through job creation and improved livelihood.

Peace and stability remain key prerequisites to addressing vigorously the infrastructure bottlenecks. The IAP, however, does not dwell on the volatility of the political and security landscape in South Sudan. It takes the position that infrastructure development in South Sudan will primarily require sustained and concerted efforts in addressing medium to long term structural, human and institutional factors, including devising appropriate financing arrangements. As long as these factors are not adequately dealt with, they will remain valid and persist over time.

The IAP proposes a major program for the development of basic infrastructure in the decade ahead that, in conjunction with a range of other initiatives aimed at building human capacities and labor force skills and strengthening institutions, would provide the basis for a transition to economic growth in the range of 9% a year in real terms in the non-oil economy.

The IAP analyzes the underlying institutional and other structural issues and factors of the economy of South Sudan. It presents appropriate and pragmatic structural and sustainable responses, with medium to long term perspectives. The proposed program takes into account the need for the endogenous development of domestic institutions and supply factors and conditions. The IAP considers a 10-year period, using 2010 as the base year. The implicit assumption made at the time of drafting the IAP was that the GRSS would be in a position to roll out its program of infrastructure development in the context of implementing its first South Sudan National Development Plan (SSDP) 2011-2013, following the independence in July 2011.

The proposed funding arrangement in the IAP involves the Government for more than 50% of the total requirements, while donors and the private sector will fill the remaining gap. At the time that this Report was drafted, there was no agreement between South Sudan and Sudan on the arrangements for sharing income from oil fields currently in production. The IAP report has, therefore, set out scenarios of possible outcomes ranging from an arrangement in which the national government of South Sudan receives 80% of the net oil income (scenario A: High Growth Case) to two other alternative scenarios (B and C) whereby the net receipt represents 96% and 69%, respectively. On the basis of the agreement on oil reached in September 2012 between the two countries, scenario A seems most likely.

We believe the IAP will definitely contribute to consolidating the AfDB's leadership role in collaborating with key stakeholders and assisting the GRSS in the design and implementation of infrastructure development in South Sudan.

Solomane Kone
Lead Economist and Officer-in-Charge (O.I.C),
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Acknowledgments

The Infrastructure Action Plan (IAP) Flagship Report for South Sudan was prepared by a team of staff and consultants from the African Development Bank Group (AfDB) led by Solomane Kone, Lead Economist in the Regional Department East 2 (OREB). The AfDB staff in the dedicated core team was comprised of: Mr. Abdul Kamara, Resident Representative (SDFO), Mr. Suwareh Darbo, Principal Economist (OREB), Mr. Andoh Mensah, Principal Country Program Officer (SDFO), Mr. Girma B. Bezabeh, Principal Transport Engineer (OITC.2), Mr. Boniface Aleobua, Principal Sanitation Engineer (OWAS.2), Mr. Engedasew Negash, Division Manager (ONEC.2), Mr. Lawal Umar, Principal Livestock Expert (OSAN.1) and Mr. Enock Yonazi, Principal ICT Expert (ICT4D). Mr. Abdul Kamara and Mr. Andoh Mensah are particularly acknowledged for the coordination work accomplished on the ground before the official full establishment of the South Sudan Field Office (SSFO). Upon taking up their respective duties in the newly-established SSFO, Mr. Jeremiah Mutonga (Resident Representative), Mr. Dejene Demissie (Principal Country Program Officer), and Mr. Joseph Muvawala (Chief Country Economist) have been instrumental in critical steps towards finalising the IAP, including the stakeholder validation workshop. Other members of the wider South Sudan Task Force also provided valuable comments and assistance in the process, namely Ms. Senait Assefa, Principal Resource Mobilization Officer (ORMU), Mr. James Wahome, Lead Economist (OSFU), Ms. Faith Kamau, Legal Expert (GECL.1) and Ms. Nana-Efua Spio-Garbrah, Young Professional (ORVP), Mr. Nyende Magidu (Senior Economist). Mr. Daniel Ugwoke, Team Assistant (OREB) provided excellent administrative support, including during the validation workshop of the infrastructure subsector needs assessments.

The team was assisted by consultants, namely Mr. Russell Cheetham, Lead Consultant, main coordinator and author to several chapters of the IAP, Mr. Felix Ndukwe (Agriculture), Mr. Andrian Rakotobe (Transport), Mr. Bizuneh Fikru (Power), Mesfin Abebe (Water and Sanitation), and Ms. Dorothy Okello (ICT). Mr. Timothy Wasswa edited the final manuscript and coordinated the final production of the report. The consulting firm, MK Mazrui and Associates was assigned the task of preparing provisional income statements for public entities that currently have responsibilities for infrastructure assets and or provision of infrastructure services in South Sudan, referred to as quasi State Owned Enterprises (SOEs).

The IAP Report benefitted from the general direction provided by Mr. Steve Kayizzi-Mugerwa, former Director of OREB. The IAP Report and the South Sudan Task Force also benefitted from the leadership and guidance provided by Mr. Aloysius U. Ordu, former Vice-President Country and Regional Programs and Policy (ORVP) from the very beginning of the long journey towards completing this IAP. The team also wishes to express its appreciation to Mr. Zondo Sakala, currently Vice-President ORVP for his encouragement, and support in ensuring seamless continuity in the final stages of completing the IAP. He is also acknowledged for his guidance and support in initiating numerous related activities to ensure effective implementation going forward.

A special appreciation goes to the Government of the Republic of South Sudan (GRSS) for the trust in the AfDB by requesting, at a very early stage prior to the official independence of the country, its expertise and advice in building the new State and co-leading the Economic Development Pillar of the South Sudan National Development Plan (SSDP), with particular emphasis on infrastructure and aid coordination. By late2010, the AfDB had initiated work to assist the Government in preparing detailed needs assessments in agriculture and infrastructure sub-sectors (energy, transport, water and sanitation, and ICT). The validation workshop of the draft reports took place in Juba on 12-13 September 2011. The Bank was further requested by the Government to build on the work done to fast-track the preparation of an Infrastructure Action Plan (IAP) for South Sudan for the decade ahead. The draft report of the IAP was validated in July 2012 in Juba at a national stakeholder's workshop, attended by several participants from the GRSS, relevant sectors, civil society and other development partners, too numerous to mention here, but their individual and collective contributions are recognized and highly appreciated.

Without being exhaustive, the team is particularly grateful to the following top officials: Hon. Kosti Manibei Ngai, Minister of Finance and Economic Planning (MoFEP), his deputies Hon. Mary Jervase Yak and Marial Awou Yol, Deputy Ministers (MoFEP), and Mr. Aggrey Tisa Sabuni, Presidential Advisor on Economic Affairs, as well as Hon. Stephen Dhieu Dau, Minister for Petroleum and Mining, Hon. Garang Diing Akuong, Minister of Commerce, Industry and Investment, Hon. Lt. Gen Gier Chuang Aluong, Minister for Roads and Bridges, Hon. General Madut Biar Yel, Minister of Telecommunications

and Postal Services, Hon. Prof. Peter A. Nyarba, Minister of Higher Education, Hon. Dr. Martin Limoro, Minister of Animal Resources, Hon. Simon Majok, Deputy Minister for Roads and Bridges, Hon. Mayom Kuoc Malek, Deputy Minister of Transport, Hon. Mary Nyaulang, Deputy Minister of Housing and Physical Planning, Hon. Kwong Danhier Gatluak, Deputy Minister of Labour, Public Service and Human Resource Development, Hon. Ali Ketta Uche, Deputy Minister of Water Resources and Irrigation, Hon. Beatrice Khamisa Wani-Noah, Deputy Minister of Telecommunications & Postal Services, Hon. Dr. Priscilla Joseph Kuch, Deputy Minister of Gender, Child and Social Welfare. The team would also like to thank staff of the National Bureau of Statistics, in particular Mr. Isaiah Chol Aruai, Chairperson, Mr. John Maciek A. Acol, Deputy Chairperson, Mr. Philip Dan Thiong, Acting Director for Monitoring and Evaluation, Mr. Mark Otwari Acting Director for Social and Demographic Statistics; Mr. Simon Aban, Acting Director for Economic Statistics, Mr. David Chang, Director for Economic Statistics Directorate, and Mr. Gordon Lada Paulo, Monitoring and Evaluation Officer.

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Acronyms and Abbreviations

AC	Asphalt Concrete
ACC	Area Control Centre
ADT	Average Daily Traffic
AfDB	African Development Bank
AFRALTI	African Advanced Level Telecommunications Institute
AICD	Africa Infrastructure Country Diagnostic
AIMS	Aid Information Management System
ALS	Approach Landing System
ARPU	Average Revenue per User
bbld	Barrels per day (of oil)
BDC	Business Development Center
BDPB	Board of Directors for Public Broadcasting Corporation
BP	British Petroleum
CAA	Civil Aviation Authority
CABIHRD	Capacity Building, Institutional and Human Resource Development
CBR	Cruse Birth Rate
ccTLD	country code Top Level Domain
CDR	Crude Death Rate
CES	Central Equatorial State
CFA	Cooperative Framework Agreement (for Nile Basin)
CIA	Central Intelligence Agency (United States)
CLTS	Community Led Total Sanitation
CNPC	China National Petroleum Company
COMESA	Common Market for Eastern and Southern Africa
CPA	Comprehensive Peace Agreement
CPW	Consumers Willingness to Pay
CRAI	Commission of Rights of Access to Information
CTO	Commonwealth Telecommunications Organization
DBST	Double Bituminous Surface Treatment
DG	Director General
DME	Distance Measuring Equipment
DOE	Department of Energy (United States)
DRB	Directorate of Roads and Bridges
DRC	Democratic Republic of the Congo
DVOR	Doppler VHF Omni-directional Radio
EAC	East African Community
EASSy	Eastern Africa Submarine Cable System
ED	Executive Director
EES	Eastern Equatorial State
EIA	Energy Information Administration (United States)
EIRR	Economic Internal Rate of Return
EISA	Environmental and Social Impact Assessment
ERRP	Emergency Road Repair Program
ESI	Electricity Supply Industry
FAO	Food and Agriculture Organization
FDPR	Final Development Plan Report (Rural Roads Rehabilitation Program)
FICSS	Fostering Innovation and Competitiveness in Southern Sudan
FIR	Flight Information Region
FRSC	Feeder Roads Steering Committee

FRTC	Feeder Roads Technical Committee
GDP	Gross Domestic Product
GNI	Gross National Income
GoNU	Government of National Unity (Sudan)
GoRSS	Government of Republic of South Sudan
GOSS	Government of Southern Sudan
GPS	Global Positioning System
GSM	Global System for Mobile Communications
GWh	Gigawatt Hours
HVFV	High Value Fruits and Vegetables
IAP	Infrastructure Action Plan
IBA	Independent Broadcasting Authority
ICAO	International Civil Aviation Organization
ICB	International Competitive Bidding
ICT	Information and Communication Technologies
IDP	Internally Displaced Person
ILS	Instrument Landing System
IMF	International Monetary Fund
IOM	International Organization for Migration
IOR	Improved Oil Recovery
IRND	Inland River Navigation Department
ISO	International Organization for Standardization
IT	Information Technology
ITU	International Telecommunications Union
JAM	Joint Assessment Mission (for Sudan)
JS	Jonglei State
KGL	Kuwait Golf Link
km	Kilometers
KOAFEC	Korea-Africa Economic Cooperation
kWh	Kilowatt Hours
kV	Kilovolt
LCB	Local Competitive Bidding
LIFS	Low-income fragile State
LPG	Liquefied Petroleum Gas
LS	Lakes State
MAARI	Ministry of Agriculture, Animal Resources and Irrigation
MAF	Ministry of Agriculture and Forestry
MARF	Ministry of Animal Resources and Fisheries
MCA	Multi-criteria Assessment
MDTF	Multi-Donor Trust Fund
MEM	Ministry of Energy and Mining
MLTS	Medium to Long-term strategy
MoED	Ministry of Electricity and Dams
MoFEP	Ministry of Finance and Economic Planning
MoH	Ministry of Health
MoHPP	Ministry of Housing and Physical Planning
MoIB	Ministry of Information and Broadcasting
MoPI	Ministry of Physical Infrastructure
MoRB	Ministry of Roads and Bridges
MoT	Ministry of Transport
MoTPS	Ministry of Telecommunications and Postal Services
MTR	Ministry of Transport and Roads
MW	Megawatt
MWh	Megawatt Hours
MWRI	Ministry of Water Resources and Irrigation
NBHS	National Baseline Household Survey (for Southern Sudan, 2009)
NBI	Nile Basin Initiative
NBGS	Northern Bahr el Ghazal State

NBHS	National Baseline Household Survey, 2009
NBS	National Bureau of Statistics
NDB	Non-directional Beacon
NDB	Non-directional Beacon
NDP	National Development Plan
NEAP	National Environmental Action Plan
NGO	Non-governmental Organization
NPV	Net Present Value
NRA	National Regulatory Authority
NRTC	New River Transport Company
NRW	Non Revenue Water
NTC	National Telecommunications Authority
O&M	Operations and Maintenance
ODA	Official Development Assistance
OECD	Organization for Economic Cooperation and Development
ONGC	Oil and Natural Gas Corporation (of India)
OPRC	Output and Performance-based Roads Contracts
PAPI	Precision Approach Path Indicator
PIAC	Public Internet Access Centre
PIC	Public Information Centre
PIU	Project Implementation Unit
PO	Provisional Order
PPP	Public Private Partnership
PSP	Private Sector Participation
PSP	Private Service Providers
QoS	Quality of Service
RAI	Rural Accessibility Index
RAMS	Road Asset Management System
RIP	Road Investment Program
RISP	Regional Strategy Integration Paper
RMF	Road Maintenance Fund
RSMC	Road Safety Management Committee
RSP	Road Safety Program
RSS	Republic of South Sudan
RTA	Road Traffic Accident
RTC	River Transport Corporation
SALS	Simple Approach Lighting System
SARP	Standards and Recommended Practices
SAR	Search and Rescue
SDG	Second South Sudanese Pound
SETIDP	Sudan Emergency Transport Infrastructure Development Project
SHP	Small Hydropower Plant
SLA	Service Level Agreement
SMEC	Snowy Mountains Engineering Corporation (of Australia)
SPLA	Sudan People's Liberation Army
SPLM	Sudan People's Liberation Movement
SRC	Sudan Railways Corporation
SRTC	Sudan River Transport Company
SS	South Sudan
SSA	Sub-Saharan Africa
SSBC	South Sudan Broadcasting Corporation
SSCCSE	Southern Sudan Centre for Census, Statistics and Evaluation
SSDP	Southern Sudan Development Plan
SSEC	South Sudan Electricity Corporation
SSERA	South Sudan Electricity Regulatory Authority
SSHSS	Southern Sudan Health and Household Survey
SSIA	South Sudan Investment Authority
SSIRI	Southern Sudan Interactive Radio Instruction

SSLC	South Sudan Land Commission
SSNEP	South Sudan National Electricity Policy
SSNPP	South Sudan National Petroleum Policy
SSRA	South Sudan Roads Authority
SSRRC	South Sudan Relief and Rehabilitation Commission
SSTC	Southern Sudan Trans-Nile Company
SSUWC	South Sudan Urban Water Corporation
STP	Short term program
TA	Technical Assistance
ToR	Terms of Reference
UK	United Kingdom
UN	United Nations
UNDP	United Nations Development Programme
UNHCR	United Nations High Commission for Refugees
UNMAO	United Nations Mine Action Office
UNOPS	United Nations Office for Project Services
UNS	Upper Nile State
UPU	Universal Postal Union
U.S.	United States of America
US	Unity State
USAID	United States Agency for International Development
VMC	Visual Meteorological Conditions
VOC	Vehicle Operating Costs
WASHCOM	Water, Sanitation and Hygiene Community Management Services
WBGS	Western Bahr el Ghazal State
WCSS	Water Corporation of South Sudan
WES	Western Equatoria State
WFP	World Food Programme
WIMS	Water Information Management System
WS	Warrap State

MEASURES AND EQUIVALENTS

1 Km	= Kilometer	= 103Meters (m)
1 Kg	= Kilogram	= 103Grams (gm)
1 MW	= Megawatt	= 103 kW = 106 Watts (W)
1 kWh	= Kilowatt hour	= 103 Watt-hours (Wh)
1 MWh	= Megawatt hour	= 103 kWh = 106 Wh
1 GWh	= Gigawatt hour	= 103 MWh = 106 kWh
1 kV	= Kilovolt	= 103 Volts (V)
1kVA	= Kilo volt-Ampere	= 103 Volt-Ampere (VA)
1MVA	= Mega volt-Ampere	=103 Kilovolt volt-Ampere
1 sq. Km	= 100 Hectares	
1 Hectare	= 2.3835 feddans	

FISCAL YEAR
January 1-December 31

I Introduction and Background

1.1 Background

The Republic of South Sudan (RSS) is a land-locked country that is bordered by Ethiopia to the east, Kenya to the southeast, Uganda to the south, the Democratic Republic of Congo (DRC) to the southwest, the Central African Republic (CAR) to the west, and Sudan to the north. It has a land area of about 644,000 km2 and a population that is currently estimated to be about 10 million after taking account of large influx of returnees and refugees in recent years. The average number of people per km2 is only 13, making South Sudan one of the least densely populated countries in Sub-Saharan Africa. Although the average population density is low, there is substantial variation among the states, ranging from 4 persons per km2 in Western Bahr el Ghazal to a high of 26 in Central Equatoria where the capital, Juba, is located. The terrain gradually rises from plains in the north and center to southern highlands along the border with Uganda and Kenya. The White Nile, which flows out of Central Africa, is the major geographic feature of the country. It supports agriculture and extensive wild animal populations. South Sudan is divided into ten states which correspond to the three historical regions of Sudan: Bahr el Ghazal, Equatoria and Greater Upper Nile. These ten states are further divided into 86 counties (payams).

The independence of Sudan was first achieved in 1956. Civil war broke out shortly after independence. A prolonged period of conflict followed. Following the first civil war (1955-1972), the Southern Sudan Autonomous Region was formed in 1972. That arrangement lasted until 1983 when a second period of civil war erupted. This war ended with the Comprehensive Peace Agreement (CPA) that was signed in January 2005. Later that year, the Autonomous Government of Southern Sudan (GOSS) was formed. As part of that agreement, the south was granted a six-year period of autonomy to be followed by a referendum on its final status. The result of the referendum, held in January 2011, was a vote by 98.8% of the population in favor of secession. The Republic of South Sudan (RSS) became an independent state on July 9, 2011.

Decades of civil war largely destroyed the basic infrastructure of South Sudan and much of its production capacity. The current gap in basic infrastructure has been identified as one of the most serious impediments to private investment in the country and broad-based sustained economic growth. Given that 83% of the population lives in rural areas, this situation particularly constrains the development of the large agricultural potential of the country.

Given the dire lack of basic information and statistics in South Sudan, the Bank assisted in detailed needs assessments of infrastructure subsectors (transport, power, water and sanitation, ICT, agriculture infrastructure). The validation workshop of the needs assessment reports took place in Juba in September 2011. The Bank was requested by the Government to build on the work done to fast-track the preparation of an Infrastructure Action Plan (IAP) for South Sudan for the decade ahead. The IAP was validated in July 2012 in Juba at a national stakeholder's workshop, attended by several participants from the Government of the Republic of South Sudan, relevant sectors, civil society and other development partners. There is broad agreement that the IAP provides a valuable game plan for the development of infrastructure in South Sudan in the medium to longer term. It represents a key instrument for planning and programming, resource mobilization, policy dialogue and aid coordination for infrastructure development.

The remainder of this abridged version is organized as follows. Section II highlights the main features of the South Sudan economy, while section III makes a case for the importance of strong economic growth and diversification and the critical role of infrastructure development in this context in addition to other necessary conditions. An Infrastructure Action Plan for the decade ahead is discussed in section IV. Section V makes a case for the necessity of creating an enabling environment for public and private investment. Implementation issues of the proposed program and the necessary technical support are highlighted in section VI, while section VII discusses financing options. The economic impact of the proposed high growth scenario is outlined in section VIII. Section IX highlights key economic and social benefits of the proposed program, while section X discusses the major risks and the mitigating measures.

II Key Features of the South Sudan Economy

2.1 Economic Structure of the Country is dominated by Oil

There are no national income accounts for South Sudan for years prior to 2008. During 2008-2010, the Gross Domestic Product (GDP) of South Sudan fluctuated due to changes in oil prices; averaging at about $12.7 billion at current prices over this period. The Gross national income per capita has also fluctuated, but has averaged about $1,050 during this period. South Sudan is therefore at the low end of the Lower Middle Income country category as defined by the World Bank.

The GDP of the country is dominated by the oil sector, the value added of which accounts for about 60% of total GDP; with a predominantly subsistence agriculture sector and government services each accounting for about 15% of GDP (See Table 1). Industry and other services play a minor role, taking up the remaining 10% of GDP. Value added by the petroleum sector averaged about $7.9 billion a year during 2008-2010. Non-oil GDP increased from $4.55 billion in 2008 to about $5.38 billion in 2010 (both at current prices) – increasing at an average rate of about 16% a year. There are no firm estimates for non-oil GDP growth in real terms. Informal estimates by authors of this Report suggest that the non-oil economy may have grown at an average of about 5% a year in real terms in recent years. However, economic growth has varied widely as a result of the boost from sharp increases in development spending, large changes in the international price of oil and hence government spending, and the effects of drought on agricultural production.

Table 1: GDP by Industrial Origin in 2010 (SDG millions current prices)

Sector	Value	Share (%)
Petroleum value added	18 963	59.7
Non-oil GDP		
Agriculture. forestry & fisheries	4 604	14.5
Manufacturing & mining	723	2.3
Construction	444	1.4
Transport & communications	604	1.9
Trade. hotels. tourism	1 033	3.3
Other services	4 855	15.3
Government services	542	1.7
Other private services	5 398	17.0
Sub-total		
Total non-oil GDP	12 805	40.3
Total GDP	31 768	100.0

Source: Annex Table 2.4.

2.2 High Poverty Incidence in South Sudan

According to the most recent Bank-supported 2009 Southern Sudan Household Survey, 50.6% of the population lives below the national poverty line which is defined as a level of consumption of less than the equivalent of about $1 a day. In rural areas, the incidence of poverty is about 55%, compared with about 24% in urban areas. The much lower level of poverty in urban areas, to a considerable extent, reflects the presence of relatively well paid government employees and people employed under international aid programs. With a large share of household expenditures allocated to food, many households are vulnerable to food price inflation and food shortages. According to a recent Government report, 47% of the population is undernourished. These vulnerabilities point to the importance of expanding domestic food production to supply domestic markets and lowering the costs of imported food items.

However, **the problem of poverty in South Sudan extends well beyond concerns about income and expenditures.** Many of the social indicators for the country are among the lowest in the world. The indicators reported for South Sudan in Table 2, highlight the extent to which the country lags behind comparator countries in Sub-Saharan Africa and Low and Lower Middle Income countries in general. Only 16% of females and 40% of males are literate, compared with 53% and 70% for Sub-Saharan Africa. Less than half of the 6-13 year old children are enrolled in primary school. Inequality in access to education among boys and girls is high: the ratio of girls to boys in primary school is only 59%, compared with an average of 86% for Sub-Saharan countries as a whole and 87% for all low income developing countries. Child mortality and undernourishment rates among children are roughly comparable to the average for Sub-Saharan countries, but maternal mortality rates exceed 2,000 per 100,000 live births – more than twice the average for Sub-Saharan Africa, and more than three times the average for Low Income developing countries. Access to improved water and sanitation is also very low and less than half the average for Sub-Saharan countries.

Table 2: Selected Socio-economic Indicators

Indicator	South Sudan	Low income income countries	Lower middle income countries	Sub-Saharan Africa
Population (millions)	8.615	2 352	2 475	743
Gross national income per capita ($)	1 050	585	1 923	746
Population density (persons per km^2)	13	83	63	31
Incidence of poverty (% of population)				
National average	50.6			41.1
Urban average	24.4			
Rural average	55.4			
Demographic indicators				
Total fertility (births per woman)	6.2	3.6	2.1	5.3
Crude birth rate (per 1 000 people)	46	29	16	40
Crude death rate (per 1 000 people)	11	10	7	17
Life expectancy at birth (years)	59	59	71	47
Education				
Adult literacy rate (% of 15 years and above)				
Female	16	50	93	53
Male	40	71	85	70
Net primary enrollment ratio (%)	48	78	93	66
Ratio of girls to boys in primary school (%)	59	87	99	86
Students per teacher	52	42	22	48
Health status				
Under five mortality rate (per 1 000)	135	114	39	163
Infant mortality rate (per 1 000)	102	75	31	96
Underweight children under 5 years (%)	34		13	30
Maternal mortality rate (per 100 000 live births)	2 054	684	163	921
Access to improved water and sanitation				
% of population with access	27	75	82	56
% of population with access	16	38	57	37

Source: World Bank, World Development Indicators, various issues. SSCCSE, Key Indicators for Southern Sudan, February 2011.

2.3 Rapid Growth in Population and Labor Force

The 2008 census estimated South Sudan's population at 8.3 million. According to this census, there were 1.397 million households in South Sudan, which implies an average of six persons per household. It also indicates that about 51% of the population was under the age 18 years and 72% was under the age of 30 years. Most recently, the World Bank reported that the total fertility of women of child-bearing age in South Sudan is high; it is estimated at 6.2 compared with an average of about 5 for Sub-Saharan Africa as a whole. For the purposes of the IAP Report, crude birth and death rates are estimated at 46 and 11 per 1,000 people respectively. As a result, the natural rate of increase in population (i.e., excluding the continuing inflow of returnees) is estimated to be about 3.5% a year at the present time. The implication is that the population of South Sudan is young.

Subsequent to the 2008 Census there has been a substantial inflow of returnees to South Sudan, the precise number of which is not known with certainty. The 2011 mid-year population is estimated by authors of this Report to be about 10 million (Table 3).[1] The analysis of demographic trends suggests that the population of South Sudan will continue to increase rapidly to about 14 million by 2020, at which time the urban population may be about 3.6 million, equivalent to 26% of the total population. There is, of course, a degree of uncertainty about these projected trends, largely because of uncertainty about the extent to which there are more returnees from Sudan and neighboring countries, and an inflow from the South Sudanese Diaspora, estimated at more than two million.

The urban population of the country was estimated at 2 million in mid-2011. Although the urbanization rate is relatively low at 20% of the total population, a critical feature of demographic trends in South Sudan is that the urban population has been growing very rapidly and will very likely continue to do so for several more years. According to the analysis of the IAP Report, the urban population increased at an average of 15% a year during 2007-2011. This rapid growth in the urban population stems primarily from three sources: (i) the very large number of returnees to the country that take up residence in urban areas; (ii) a substantial number of internally displaced people (IDPs) who are also located in urban camps; and (iii) voluntary movement of rural residents to urban centers to escape violence in their rural communities, and seek employment and access to basic services. According to the analysis, the ten state capitals have accounted for almost 50% of the increase in the urban population.

The rapid urbanization of the country poses major challenges for provision of basic services to these population centers. In many cases, urban expansion is already resulting in informal, unplanned settlements that lack basic infrastructure such as roads, water and sanitation services, and drainage systems. The projected doubling of the urban population in the decade ahead will continue to present major challenges related to health, education and infrastructure service provision for this population.

The combination of a high population growth rate and continued in-migration, and a very young growing population means that there will be rapid growth in the labor force for at least another decade. As Table 3 indicates, the labor force is estimated to have grown annually by almost 8% during 2007-2010 and is projected to grow at an annual average of about 5% for the decade ahead. There are no official statistics regarding the status of the labor force, but anecdotal evidence points to the fact that open unemployment and underemployment, especially among young people, are high.

Table 3: Projection of Population and Labor force

Indicator	2007	2008	2009	2010	2011	2015	2020	Growth rate (% p.a.)	
								2007-2010	2010-2020
Total population. mid-year ('000)									
Urban	1 125	1 289	1 497	1 737	1 980	2 776	3 656	15.6	7.7
Rural	6 578	6 972	7 362	7 757	8 069	9 235	10 422	5.7	3.0
Total	7 702	8 260	8 859	9 494	10 048	12 012	14 079	7.2	4.0
Population 15-64 years	4 021	4 332	4 664	5 019	5 338	6 569	8 073	7.7	4.9
Labor force ('000)	3 390	3 652	3 931	4 231	4 499	5 537	6 805	7.7	4.9
Memo items:									
Urban population as % of total	14.6	15.6	16.9	18.3	19.7	23.1	26.0		
Labor force participation rate (%)	84.3	84.3	84.3	84.3	84.3	84.3	84.3		
Population 15-64 years (% of total)	52.2	52.4	52.6	52.9	53.1	54.7	57.3		

Source : Annex 1.

1 Annex 1 of the full IAP report provides a detailed discussion about the available data on the number of returnees to South Sudan and hence the population of the country.

III Sustained Strong Economic Growth and Diversification

3.1 Importance of Strong Economic Growth and Diversification

One of the biggest challenges facing the country is the creation of substantial amounts of productive employment for a labor force that includes a significant number of people with limited education and skills. **South Sudan will require a decade or more of sustained strong economic growth, well in excess of the projected annual growth in the labor force of 5%, to provide productive employment opportunities, reduce the high incidence of poverty and enhance livelihoods in both urban and rural areas.** The issue is not whether such a growth strategy should be pursued, but rather how can it be done?

The land, water and mineral resource base of South Sudan are substantial in relation to the relatively small population of the country. Effective management and development of these resources offers the best prospect for sustained strong economic growth for an extended period of time. The position taken in this Report is an extension of that set forth in the South Sudan Development Plan (SSDP) for 2011-2013. **The best prospects for an extended period of sustained strong economic growth will come from the development of the vast agricultural potential of the country, first to meet the most pressing domestic needs of the country, and then to exploit opportunities in regional and global markets for export of a wide range of food and other agricultural products.** This requires a fundamental transformation from the current system were the rural population is predominantly engaged in subsistence farming to meet family needs, with little or no production of marketable surpluses of food and other agricultural products.

3.2 Creating the Conditions for Sustained Strong Growth

Full realization of this very considerable potential will require concerted action to address a somewhat daunting array of challenges that currently confront this newly independent country. International experience with development of low income economies such as South Sudan indicate that the essential ingredients for a successful transition to middle income with reduced poverty and improved livelihoods depends on the following: (i) adequate internal security (ii) a stable macroeconomic framework; (iii) a healthy and literate labor force; (iv) well-functioning public and private institutions; and (v) a well developed basic infrastructure. The recently completed South Sudan Development Plan (SSDP) provides more detailed information on the ways in which the Government intends to address these concerns.[2]

3.2.1 Importance of Internal Security

Adequate internal security in the country is an essential requirement for sustained strong economic growth that is required for stable economic development and improved well-being of citizens throughout the country. It is also a prerequisite for a business environment that can attract the large amounts of private investment capital required for broad-based and sustained strong economic growth. As the SSDP indicates, improved security and deepening peace will be critical for the direct wellbeing of citizens throughout the country and for achieving sustained poverty reduction. The Government has taken discernable measures to improve national security. These include the continued development of the capacities of the South Sudan Armed Forces which consists primarily of Sudan People's Liberation Army (SPLA) that was previously the armed wing of the Sudan People's Liberation Movement (SPLM) and that is now in the process of becoming a regular army. The Government is committed to transforming and professionalizing the army and currently allocates about 28% of the entire National Budget to the SPLA making it the largest single expenditure of the budget.

A comprehensive approach to internal security is required, including dealing with the causes of conflict, ensuring improved security within communities and improving access to conflict resolution systems and justice. Programs for improved internal security will need to be designed to address a number of specific issues including:

- Crafting interventions related to the large number **of internally displaced persons (IDPs)** within the country. The prolonged period of conflict led to serious neglect in the south, lack of infrastructure development, and major destruction and displacement. Informal estimates put the number killed by conflict and starvation at more than two million, with more than four million people that became IDPs or refugees as a result of civil war and war-related impacts.

- **Expeditiously deal with the continued internal conflict among ethnic and tribal groups.** Historically, clashes among tribes revolved largely around cattle, but in more recent years conflict has been associated with the activities of armed groups, including the Lord's Resistance Army (LRA) that is reported to be a persistent threat to civilians in Western Equatoria and some other states of South Sudan.

- **Secure arrangements for access to land by smallholder and commercial farmers to develop the very substantial agricultural potential of the country as well as ensure adequate internal security.** The SSDP makes reference to the existence of unclear land tenure policies, rules and practices and the territorial and symbolic role of land in disputes among communities within South Sudan. There is anecdotal evidence that claims over land in some locations have intensified in recent years because of speculation about its future value and the possible presence of mineral deposits.

3.2.2 Need for a Stable Macroeconomic Environment

Sustained strong economic growth also requires a stable macroeconomic environment that will create an attractive operating environment for domestic and international business and ensure economic stability for the people of South Sudan.

In 2010, oil export income financed about 70% of the total public development and humanitarian programs of the country, with the international donor community funding most of the balance of the program (see Table 4). Government revenues from non-oil sources financed less than 2% of the program. This heavy dependence on oil revenues and donor assistance raises a number of basic issues for macroeconomic management and for key development programs in the country.[3] Some of these concerns also have important implications for the design and implementation of the proposed Infrastructure Action Plan (IAP) in the decade ahead.

Table 4: Projection of Population and Labor force

Funding source	Amount	Share
Oil revenues	2 365.7	69.7
Non-oil revenues	53.2	1.6
Donor assistance	973.9	28.7
Total funding	3 392.7	100.0
Less budget surplus	75.9	2.2

Source: Annex Table 2.5 and Annex Table 2.8.

Firstly, the effect of changes in oil prices on government revenues and the ability of the government to design sustainable programs for development and humanitarian support. In recent years, large movements in international oil prices have had a significant impact on these revenues and hence public programs. The surge in oil prices in 2008 was largely responsible for the doubling of oil revenues that year. As a result, government spending rose from $1.45 billion in 2007 to $2.73 billion in 2008. Programs in almost all sectors were expanded. The sudden drop in oil prices in early 2009 led to a fiscal crisis in South Sudan as revenues fell below planned levels meaning that expenditure commitments could not be realized. The decline in oil prices led to a $1.4 billion decline in oil revenues. The major expansion in development and humanitarian programs of the government in 2008 was then followed by a major contraction in spending. As a result, budget expenditures declined by almost $1 billion to $1.8 billion in 2009. In the case of the infrastructure sector, for example, total disbursements in the national budget rose from about $85 million in 2007 to $390 million in 2008 and were then cut back to $230 million in 2009.

This volatility in oil prices has brought considerable uncertainty in managing of the public finances and the macroeconomic policy environment in the country and as a

2 See Government of South Sudan (2011), South Sudan Development Plan 2011-2013: Realizing Freedom, Equality, Justice, Peace and Prosperity for All. Council of Ministers' Draft, Juba, July 5, 2011.

3 For a recent assessment of measures needed to develop the non-oil revenue tax base see Zeru Gebre Selassie (2009), Non-Oil Revenue Study: Southern Sudan. Report to Ministry of Finance and Economic Planning, Juba, in two volumes: Volume 1: Summary Final Report, and Volume II: Final Report. October 2009.

consequence the government has focused on shorter-term interventions. In these circumstances, the risk is that there may be less emphasis on longer-term projects that have potentially high returns, especially in the infrastructure sector where large projects typically have long lead times to completion. The experience of recent years underscores the importance of building up domestic non-oil sources of revenue from the current negligible base – a task that will span the next decade or more. Moreover, revenues from oil production are expected to decline rapidly in the decade ahead. In the absence of a strong program to develop alternative sources of budget revenues, the challenge is that the Government will have difficulty in maintaining the current levels of spending. It is therefore imperative that the non-oil economy is developed as quickly as possible in the decade ahead to ensure that economic growth, job creation for a rapidly growing labor force, and broad-based improved access to services can be sustained in the face of declining oil revenues.

Secondly, the current financing arrangements for the development and humanitarian programs of the country risk the so-called "Dutch disease." As Table 4 indicates, 98% of the funding for public sector development and humanitarian programs comes from offshore. The inflow of $3.34 billion in 2010 (oil revenues plus donor assistance) was equivalent to 62% of the non-oil GDP of the country. The large size of these inflows relative to the size of the non-oil economy means that there is a real risk that they could put upward pressure on the exchange rate of the country. Real exchange rate appreciation may then weaken the competitiveness of the country's exports. The risk of "Dutch disease" is a matter for concern in South Sudan because the heavy dependence on financial inflows from abroad is not temporary, and will likely persist for some years. Continued upward pressure on the exchange rate will weaken the prospects for the large-scale development of South Sudan's land resources that are suitable for production of food and raw material exports to regional and global markets. Development of a well coordinated macroeconomic policy, in combination with the use of some form of sovereign wealth fund to save a portion of boom revenues for later use, can provide mechanisms for dealing with the potential effects of "Dutch disease." [4]

3.2.3 Improve the Quality of the Labor Force

Adult literacy rates in South Sudan are low. In fact, with a national average of 28%, South Sudan – along with Burkina Faso and Chad – currently has the lowest adult literacy rate in all of Africa. This is particularly the case in rural areas where the average literacy rate is only 24%. In urban areas, it is currently about 52%. With the current low enrollment rates for children of school age, the problem of illiteracy will very likely continue for an extended period. At the present time, for example, the literacy rate for 15-24 year old people is only 35% in rural areas and 65% in urban areas. The implication is that a large portion of the existing work force of the country lacks basic skills in reading and writing.

Sustained strong economic growth is expected to generate large numbers of jobs within South Sudan, especially for skilled and unskilled workers in construction activities, transport and communications and commercial agriculture. **The fundamental issue that confronts the Government is the need for programs that will accelerate the pace at which the skills of the labor force are expanded.** As Table 4 indicates, the projected number of entrants into the labor force in the decade ahead will be about 2.56 million. Given the current net enrollment ratio for primary school-age children of less than 50%, it is very likely that roughly half of the new entrants into the labor force will have had little or no formal education and training in basic reading and writing skills.

Lack of progress in developing a cadre of skilled and semi-skilled South Sudanese workers may result in some combination of large inflows of foreign workers, and domestic pressures on wage rates for skilled and semi-skilled workers that, in turn, undermines the international competitiveness of the domestic business community.

3.2.4 Strengthen the Environment for Public and Private Institutions

Another key concern relates to the significant institutional and human capacity constraints in public and private institutions in South Sudan. There are **four aspects of public and private institutional capacities that are of particular concern** at this stage. **First, there is a need to strengthen the project and program planning and implementation capacities of line agencies.** A recent report by Kamier (2011) notes that institutional conditions in South Sudan are fragile, delivery capacities remain extremely weak, and there is an acute need for a professional and accountable public service to create increased confidence in the Government.[5] According to a recent UNDP report, half of all positions in ministries were unfilled in 2010, 50% of public servants have not completed primary education and only 5% had an undergraduate degree or higher. [6]

Secondly, the legal status, role and responsibility of state enterprises lack clarity and therefore may inhibit the formation of partnerships with potential private investors in infrastructure and other activities. A range of actions are required to strengthen the status and capacities of these entities, including: (i) legislation that is needed to provide government "corporations" with the legal basis for operating as public companies; (ii) measures that strengthen monitoring of the financial and operational aspects of state enterprises; and (iii) drawing on the successful experience with State Owned Enterprises (SOEs) in countries like Botswana and Uganda that have introduced independent boards of directors as an alternative to appointments being made by line ministries and adopted independent audits of operational and financial performance on an annual basis.

Thirdly, the legal, regulatory and administrative environment applicable to the provision of private services, such as those related to infrastructure, needs to be strengthened. A number of key insights emerged from the recent International Finance Corporation (IFC) Doing Business in Juba 2011. The survey found that key institutional arrangements for regulating Juba's private sector are either absent or overlapping. South Sudan's legal and regulatory framework remains incomplete; several important laws such as the Labor Bill and a new Companies Bill have been drafted but not yet enacted. The IFC reports that since 2005, 19 laws guiding business registration, operation and exit have been drafted, nine of which have been enacted by the Legislative Assembly and with several more submitted to the Assembly and are awaiting approval.[7] In addition, the existing legal system can be confusing. South Sudan operates under three distinct and overlapping legal frameworks: (i) laws passed by the National Assembly in Khartoum; (ii) the Laws of the "New Sudan" – enacted before 2005 by the Sudan People Liberation Movement; and (iii) the Laws of Southern Sudan – enacted after 2005 by the Legislative Assembly of Southern Sudan. Alongside this, customary law – traditional justice applied by community chiefs and built upon custom and tradition, have been used to resolve many disputes.

Fourthly, the operating environment for private enterprises needs to be improved. According to the 2010 Business Survey Listing Southern Sudan Centre for Census, Statistics and Evaluation (SSCCSE), 2011), the number of registered businesses in the state capitals grew from 1,294 at end 2005 to 7,332 at end 2010. About 90% of these businesses had less than five employees and more than 80% are in wholesale and retail trade, accommodation and food services. Private non-oil investment in South Sudan has also risen sharply in recent years from 0.8% of non-oil GDP in 2008 to 5.4% in 2009 and 7.4% in 2010. This impressive increase notwithstanding, the current level of private investment in the non-oil economy is substantially lower than what is typically required for sustained strong private sector-led economic growth. In the decade ahead, private non-oil investment will need to rise to levels of at least 15% of non-oil GDP along with an increase in the number of medium- and large-scale enterprises that will be able to take advantage of the opportunities for increasingly large sales volumes and contracts. Sustained levels of private investment in this range will require concerted action by the government to improve the operating environment for the private sector.

The above-mentioned IFC report ranked Juba at 159th out of 183 economies on the ease of doing business (See Table 5). Juba ranked poorly on such matters as getting credit, trading across borders and closing a business. The survey noted that without a public credit registry or private credit bureau in Juba, creditors cannot obtain reliable information on debtors and without a collateral registry, entrepreneurs have a hard time using their assets as guarantees for loans. There is confusion among federal, state and county jurisdictions over business licensing, taxes, customs, and land administration. Lack of coordination has meant that entrepreneurs have had to deal with each level of government separately. The IFC report notes that public authorities lack the qualified staff needed to implement regulations – namely, civil engineers to inspect construction sites, auditors to ensure tax compliance, and specialized legal professionals to handle commercial cases.

4 There is an extensive literature on the "Dutch disease" problem. See, for example, Buiter, Willem H., and Douglas D. Purvis "Oil, Disinflation and Export Competitiveness: A Model of the "Dutch disease"" in Bhandari, Jagdeep and Bluford H. Putnam (1983), Economic Interdependence and Flexible Exchange Rates. Cambridge. MIT Press. Also, Calvalcanti, Tiago, Kamiar Mohaddes, and Medhi Raissi (2011), "Commodity Price Volatility and the Sources of Growth." Cambridge Working Papers in Economics. http://econ.cam.ac.uk/postgrad/km418/RMC.pdf.

5 See Kameir, E. (2011), The Political Economy of South Sudan: A Scoping Analytical Study.

6 See UNDP (2010), and also The Economist (2011), "Now for the Hard Part," The Economist, Print edition, February 3, 2011.

7 See International Finance Corporation (2011), Doing Business in Juba 2011: Comparing Business Regulation in Juba and 183 Economies. World Bank Group, Washington DC, 2011.

Table 5: Doing Business Indicators (Rank among 183 economies)

Indicator	Juba	Sudan (Khartoum)	Sub-Saharan Africa
Dealing with construction permits	49	139	117
Registering property	124	40	121
Getting credit	176	138	120
Protecting investors	173	154	113
Paying taxes	84	94	116
Trading across borders	181	143	136
Enforcing contracts	74	146	118
Closing a business	183	183	128
Overall ease of doing business	159	154	137

Source: IFC (2011).

Finally, remove cross border trade impediments: Presently, only 14 customs facilities are operational in South Sudan, including facilities at four airports and seven border crossings. In a number of customs stations, the staff have limited capacities, processing of clearances is done manually and administrative procedures are cumbersome. In some cases, trade is recorded only by value and not volume. There is no one-stop station at border crossings to speed up clearance on either side of the borders. The country has 53 non operational facilities, however proposals have been made to reopen two more airport facilities and construct or install additional facilities at border crossings.

One of the major concerns of traders is the delays involved in getting clearance for goods coming into and out of the country and the high costs of moving freight from and to Mombasa. The IFC survey (2011) confirmed these concerns. As Table 6 indicates, the cost of moving a standard 20 foot container of imports from Mombasa to Juba is about $9,400 and it takes an average of 60 days to complete the movement of these goods to Juba. This compares with an average for Burundi, Rwanda and Uganda of 10 days at a cost of about $3,580 per container. The average time of moving exports from Mombasa for these three countries is about 7 days at an average cost of about $2,350. Juba ranks 181st out of 183 economies included in the IFC survey. Early action will be needed to ensure that customs capacities and procedures do not become a major bottleneck and a source of increased transport costs as a result of long waiting times at border crossings.

Table 6: Juba Trading Through Port of Mombasa, Kenya

Activity	Time (days)	Cost $ per container
Exporting		
Documents preparation	28	275
Customs clearance and technical control	4	375
Ports and terminal handling	6	375
Inland transportation and handling	14	4 000
Export total	52	5 025
Importing	34	525
Documents preparation	3	430
Customs clearance and technical control	6	390
Ports and terminal handling	17	8 075
Inland transportation and handling	60	9 420
Import total		

Source: IFC (2011).

3.2.5 Infrastructure is a Major Constraint to Growth

As the analysis in the full report indicates, **the current lack of basic infrastructure in the country is one of the most serious obstacles that stand in the way of efforts to accelerate economic growth.** There has been only minimal investment in basic infrastructure in South Sudan over the past quarter century. Large areas of South Sudan with very low population densities and decades of internal conflict have made it difficult to provide adequate infrastructure services throughout the country. Moreover, there has been a major decline in the quality of what little infrastructure does exist: some of the facilities that were put in place several decades ago were damaged by the civil wars and routine maintenance has been negligible amounts. As a result, most of the existing infrastructure is in dire need of rehabilitation. Today, access to basic infrastructure services is limited, and the costs of transport, electricity and communications services are high in comparison with other Sub-Saharan countries. Given that about 80% of the population lives in rural areas, **the lack of basic infrastructure for many years now has been a serious impediment to the development of the large agricultural potential of the country**.

Transport Network: The transport network is hampered by the poor condition of the existing infrastructure and inadequate connectivity between the various modes. The transport system in South Sudan consists of four modes – road, rail, river and air transport – the largest being road transport. South Sudan's main access to the sea is through Mombasa port in Kenya, which accounts for most of the traffic, and Port Sudan and Djibouti ports. The Juba-Mombasa link is mainly accessed by road through Uganda or directly to Kenya. The distance from Juba to Mombasa by road is around 1,900 km via Nimule and Gulu in Uganda and 1,800 km through Torit, Nadapal and Lokichogio in Kenya. South Sudan is connected to Port Sudan by road, rail and multimodal link. A railway line links Wau and Aweil to Port Sudan. Between Juba and Port Sudan, the existing infrastructure allows bi-modal transport by river from Juba to Kosti and then by rail or by road from Kosti to Port Sudan. Moreover, South Sudan transport densities are not only lower than the average for Sub-Saharan countries, but they are also low in comparison with the average for low income fragile states.

Access to transport infrastructure in South Sudan is poor. The main characteristics of the current transport network are as follows:

- The country has a trunk road network of a little more than 7,000 km, and about 6,000 km of secondary roads. The amount of tertiary roads is not clear, but is thought to be in the range of 2,000 km. Only 2% of the existing road network in the country is paved, and most roads are impassable during the wet season making it difficult if not impossible for rural people to access urban centers and markets, hindering the transport of goods into the country and raising their cost. Paved road densities are very low when measured either by area or population. A similar situation exists with respect to rail densities.

- There is a lack of connectivity among regions and between urban and rural areas. Also connections with neighboring countries are limited. Connectivity with Sudan in the north is primarily by air or river and with regards to the road network, most traffic is between Juba and Uganda.

- The road density, as measured by the km of road per thousand persons, is low in South Sudan. The average for Sub-Saharan Africa as a whole was 2.5 for the period 2000-06, compared with the current low average of 1.6 for South Sudan.

- There is no national rail network in South Sudan. The only branch line in the country is from Babanusa in the Sudan to Wau in South Sudan (446 km). This line was heavily damaged during the conflict with the North and ceased commercial operations in 1991. It is currently being rehabilitated.

- Recovery in the Nile river transport system faces a number of constraints: Juba Port suffers from siltation at its entrance; navigational aids on the river require rehabilitation or re-installation; and in many locations, dredging is required to open up the waterways after more than two decades of neglect. There is also a general shortage of equipment for operating river transport services, including a lack of handling equipment for containers, and vessels that are not in operating condition.

Power Supply: Inadequate supply of electric power and its high cost is a major constraint on the economy and is widely regarded as one of the most serious constraints to doing business in South Sudan. Only 1% of the population has access to electricity. As a result, per capita consumption of electricity is estimated at about 80 kWh for 2010. For the low income countries of the world, the average consumption of power was 375 kWh in 2004. There is no national grid in South Sudan, only a series of

isolated networks that serve three of the state capitals (Juba, Malakal and Wau) and Renk. The South Sudan Electricity Corporation (SSEC) has only 18.8 MW of installed capacity that is operational and it supplies these state capitals. Electric cooperatives provide 2.8 MW of capacity for the rural towns of Yei, Maridi and Kapoeta. Further to this, recent surveys indicate that 70% of businesses in South Sudan have their own diesel generators for power supply. The average tariff for SECC supplied power is 22 US cents per kWh while the cost of power supplied by the cooperatives is 53 US cents per kWh which are higher than the regional average tariff of 17 US cents per kWh. The high tariffs have become constraints to connecting significant number of household customers.

Water supply and sanitation: After decades of war, access to water supply and sanitation services is severely constrained. Only 27% of the population has access to improved water services, whereas the average for Sub-Saharan countries is about 60%. In the case of sanitation services, only 16% of the population has access to improved sanitation, compared with an average of more than 30% for Sub-Saharan countries. Many of the water points in the country are not operational. One-third of the population mainly relies on surface water as its main source. Access to piped water is practically non-existent, and more than 60% of the population depends on wells and boreholes for access to water. Three-quarters of the population does not have access to sanitation facilities.

Communications: The teledensity is very low. South Sudan has not experienced the explosive development of mobile phone and internet use seen in many of the African countries. Prices of ICT services are high, with most of the focus in the market on voice services. Data services are very limited and expensive.

IV An Infrastructure Action Plan (Iap) for the Decade Ahead

There is a compelling case for the upgrade and expansion of all aspects of the basic infrastructure of the country in the decade ahead. Numerous empirical studies point to the important role played by infrastructure in promoting economic growth. The AICD (2011) suggests that a major improvement in infrastructure in South Sudan could boost per capita growth in non-oil GDP by 3.5 percentage points. This Report lays out a major program for development of the basic infrastructure of the country in the decade ahead. This will be complemented by a range of other initiatives that build human capacities and labor force skills and strengthen institutions, will provide the basis for a transition to economic growth in the range of 9% a year in real terms in the non-oil economy by the latter part of the decade. This proposed outcome is referred to as the High Growth Scenario in this Report.

4.1 Key Principles for the Design of the Program

The proposed IAP is comprehensive and ambitious. The key objective of the program is to rehabilitate, upgrade and expand the basic infrastructure network of the country in the decade ahead. The **design of the proposed program is built around the following five basic objectives** for the country:

- Development of the water resources of the country in a manner that is consistent with the objectives of the Nile Basin Initiative for cooperative and sustainable use of the water resources of the ten riparian countries of the Nile Basin.

- Sustainable development of the substantial land, forestry and fisheries resources of the country suitable for commercial agriculture, livestock, fisheries and forestry by both small-scale farmers and larger commercial operations.

- Increased access to basic services, including improved water and sanitation, electric power, transport services and communications for the rapidly growing urban population of the country and for the large numbers of people who will continue to reside in rural areas.

- In rehabilitating, upgrading and expanding the country's basic infrastructure ensure that the network provides land-locked South Sudan with reliable and cost-effective access to other countries in the region and to international markets.

- In close collaboration with the international donor community and private investors, use a portion of petroleum revenues to fund a substantial part of the proposed infrastructure program, thereby transforming the petroleum wealth of the country into a network of basic infrastructure that will provide direct benefits to the existing population and future generations.

4.2 Main Components of the Program

The proposed plan provides detailed programs of action for the management of land and water resources transport, electric power and rural energy, water supply and sanitation and communications. Because of the close links between the proposed program for agricultural development and the need to support infrastructure development, the Report also examines a range of issues related to the effective management of the substantial land and water resources of the country.

4.2.1 Land and water resource management

Given the significant agricultural potential of the country, **the Action Plan for land and water resource management has seven main components:** (i) build capacities at the national, state and local levels for effective administration and management of land resources and the terms and conditions for access to these resources for agricultural, urban and industrial use; (ii) strengthen capacities for protection and management of the extensive bio-diversity of the country; (iii) improve basic information about the water resources of South Sudan; (iv) build institutional capacities for management of these water resources; (v) strengthen capacities for interaction and dialogue with other Nile Basin riparian countries regarding management of use of the Basin resources; (vi) undertake substantial investment in facilities for surface storage and transport of water to meet current and future demand; and, (vii) build institutional capacities to ensure full recovery of the costs or supplying raw and treated water for agricultural, household and industrial use.

It is estimated that the cultivated area will increase by about 50% to 4 million hectares (ha) by 2020 – equivalent to about 6.2% of the total area of the country. The harvested area will increase from about 37% of the cultivated area at present to about 63% by 2020 and the irrigated area will increase from 1% of the cultivated area to about 10% by 2020. The Report puts particular emphasis on strengthening capacities for water resources management and the further development of these water resources to meet existing and future demand and to reduce hydrological and climatic vulnerability. **The proposed program for management and development of the water resources of the country amounts to about $880 million during 2011-2020**, including about $850 million for expansion of water supply, improved flood control and protection and access to water ways (at 2010 constant prices and exchange rate).

4.2.2. Irrigation for agriculture

Presently, only 1% of the cultivated area in South Sudan is irrigated. The proposed Action Plan calls for an increase in the irrigated area from 32,000 ha at present to 400,000 ha by 2020. Increase irrigation for smallholder farms will account for half of this increase. Funding and implementation of these smallholder programs will be supported by the government and international donor community. The other half of the proposed program for irrigation will be undertaken by medium- and large-scale commercial farming operations. **The total cost of the proposed program for irrigation is estimated to be $1 billion, at an average cost of $2,500 per hectare** (at 2010 constant prices and exchange rate). As a first step in development of this potential, **the Action Plan proposes the preparation of a national master plan for development of irrigation in the decade ahead.** This plan will provide the basis for the design and implementation of irrigation programs for smallholder farms and for the promotion of medium- and large-scale commercial farming opportunities that have access to water for irrigation of high value crops for sale in domestic and international markets.

4.2.3 Transportation

There is an urgent need to improve connectivity to improve access to basic services throughout the country and support the integration of domestic markets. A high priority will therefore be given by the Government to develop basic infrastructure, especially road networks, to improve connectivity and provide enhanced support for agricultural development throughout the country. Consistent with the SSDP, the Action Plan proposes that the transport sector attaches a high priority to the rehabilitation and upgrade of the road network of the country. Upgrade and improvement of basic infrastructure for other modes of transport, particularly the water transport and associated port facilities on the Nile River and navigable tributaries, and civil aviation services for domestic and international traffic focusing on upgrading the status of air traffic communications and safety in South Sudan to a standard consistent with the requirements of the International Civil Aviation Organization (ICAO). These initiatives will be complemented by further investigation of the costs and benefits associated with the expansion of the existing railway network to link South Sudan to Uganda and Kenya, and the possible construction of a pipeline to transport oil to an international port in Kenya or Djibouti.

Development of the road network. The proposed program includes **rehabilitation of the existing road network and upgrade of the national network to provide all-weather access and transport services to major regional and international markets and among the ten state capitals of the country.** Development of an all-weather national truck network will be accompanied by substantial improvement and expansion of the feeder road network of the country to facilitate access of farming communities to domestic and regional markets. **The proposed roads program is based on implementation of a eight-point program in the decade ahead:** (i) rehabilitation and upgrade of the entire 7,370 km of interstate trunk roads; (ii) upgrade of the existing 1,450 km of state primary roads to all-weather standard; (iii) upgrade of the existing 3,820 km of secondary roads to all-weather standard; (iv) upgrade of 2,180 km of tertiary roads to all-weather standard; (v) pave an additional 440 km of urban roads and upgrade 300 km to all-weather standard; (vi) strengthen financial and institutional capacities for regular maintenance of the road network and support the provision of oversight of the road transport industry; (vii) development of urban transport services; and (viii) implementation of a comprehensive program for road safety.

Implementation of this program will result in a substantial improvement in South Sudan's links with other countries in the region, improved connectivity among all ten states, and improved access to markets for a large portion of the rural population. A key objective for the program is to substantially lower the current exorbitant costs of transport across the country's borders and within the country. A reduction in freight rates from current levels of 20 US cents per ton km to less than 10 US cents per ton km will significantly reduce the production costs within the country and in so doing enable rural communities and small business to compete with imports of food products and a range of other consumer goods. Because of its impact on the cost of imported construction materials, lower freight rates will also lower the current excessively high capital cost of construction activities in the country which will in the long run benefit the economy. **The total cost of the roads program is estimated to be $6.3 billion, including some $80 million of support for capacity building and technical studies,** with the balance of the funding coming from increased allocations in the national budget for the roads program.

River transport and ports. Portions of the White Nile River and its tributaries offer cost effective transport options for communities along these waterways, especially in the wet seasons when road transport can be severely restricted. The navigable portion of the river network crosses six of the ten states of the country. The proposed Action Plan for these waterways and ports will address **three particular sets of concerns associated with the development of this transport mode in the decade ahead:** (i) complete bathymetric surveys of all potentially navigable portions of the waterways to identify navigation constraints, map all navigable routes and lay foundations for subsequent detailed river engineering studies that will provide a basis for dredging operations and location of navigation aids; (ii) upgrade the capacities of existing river ports and associated cargo handling and storage facilities; and (iii) support capacity building programs that include staff development and improved institutional capacities to promote and regulate the development of private water transport services. **The proposed program for river transport and ports amounts to about $70 million for the decade ahead, including $14 million for capacity building at the proposed program of detailed studies. An amount of $53 million is proposed for dredging, navigational aids and improvement of port facilities.** These are, of course, provisional estimates at this stage. Final estimates for the capital cost of the proposed program must await the outcome of the surveys and detailed engineering studies. Funding for the program will come from the government, the donor community and the private sector.

Railways. The primary focus of the proposed Action Plan for the railways sub-sector is the development of an appropriate institutional and regulatory framework for the further development of the railways network. **Key elements of the program include:** (i) development of the legal, institutional and regulatory framework for the sector, including issues related to infrastructure assets ownership; (ii) arrangements for management and operation of rail services; (iii) a detailed inventory of the existing track and signaling system; (iv) an assessment of potential demand for traffic on the existing 446 km rail line from the border with Sudan to Wau and prospective traffic for the proposed extension of the line from Wau to Nimule on the border with Uganda; (v) rehabilitation of the existing line to Wau; and (vi) a detailed feasibility study for the proposed extension from Wau to Nimule. **The cost of the proposed program for the railways sub-sector is about $90 million, including $11 million for studies and personnel and institutional capacity building. An amount of $77 million is proposed for rehabilitation of the existing line.** The bulk of the funding will come from the government. No provision is included for a possible extension of the line to Nimule.

Civil aviation. **The proposed program for civil aviation includes the following components for action in the near-term:** (i) restructure and strengthen institutional arrangements for the civil aviation industry; (ii) in close collaboration with ICAO, formulate and implement an air transport policy that ensures that South Sudan is in compliance with requirements for airspace surveillance and traffic management in the medium-term; (iii) complete the ongoing upgrade of the Juba domestic and international airport; (iv) upgrade selected airports at state capitals and other locations; (v) implement a major program of staff development and capacity building consistent with the requirements for compliance with ICAO standards and recommended practices; and (vi) develop an appropriate PPP-type framework for possible concession agreements with private investors for operation of selected airports in South Sudan. **The proposed program for the civil aviation sub-sector involves expenditures of about $220 million in the decade ahead, including $13 million for capacity building, technical support and studies, and about $210 million for rehabilitation and upgrade of major airports and airspace surveillance and air transport management.** The bulk of the funding will come from the government and private concessionaires.

4.2.4 Electric power and rural energy

South Sudan needs to substantially expand its power generation capacity within all ten states is required, initially by significantly investing in diesel generation and a national transmission and distribution grid. Development of key components of a national transmission grid would then lay the foundations for subsequent development of South Sudan's substantial hydropower generation capacity and gas-fired thermal plants that will make use of the petroleum resources of the country to meet domestic demand and perhaps provide opportunities for export of electric power to neighboring countries.

The proposed Action Plan for the electric power sector has six key components for the decade ahead: (i) increase the electric power generation capacity from the current 50 MW to580 MW by 2025 to meet existing and projected demand for electric power; (ii) expand the national transmission and distribution grid to link all ten state capitals as well as the country's grid connection to those of Ethiopia, Kenya and Uganda; (iii) increase access to electricity by urban households from the current 5% to 75% by 2025; (iv) complete a major restructuring of the South Sudan Electricity Corporation (SSEC) into a fully-fledged, and financially sound, state enterprise that has the capacity to enter into take-or-pay contracts with private suppliers of electric power; (v) strengthen the enabling environment for private investment in power generation and attract private investors to operate as independent power producers (IPPs) within South Sudan; and (vi) strengthen the existing regulatory arrangements for the electric power sector. Even with this expansion program average consumption of electricity in South Sudan increases from a current low of 25 kWh to about140 kWh per person per year by 2020.

The Action Plan calls for a substantial expansion of off-grid arrangements for the supply of energy to rural households. **The total cost of the proposed program for electric power and rural energy during 2011-2020 is $2.3 billion, with an additional $180 million to be spent on extension of the national network and the rural energy program during 2021-2025**. The proposal is to mobilize about $870 million of private capital for the expansion of generation capacity, with the government and international donor community providing the balance of the required funding.

4.2.5 Water supply and sanitation

South Sudan needs to rehabilitate and expand the water and sanitation infrastructure in urban and rural areas to ensure that a majority of the population has access to improved water and sanitation services by 2020. **The Report proposes a set of Millennium Development Goals (MDGs) for the country that would be met no later than 2020.**

The proposed Action Plan for supply of improved water to urban and rural communities is built around the following three sets of activities: (i) rehabilitation of the very large number of non-functioning rural water points , and construction of about 11,000 new water points to provide 65% of rural residents with access to improved water by 2020; (ii) rehabilitation and construction of new urban water supply facilities to ensure that 70% of the urban population has access to improved water by 2020, compared with only 15% at the present time; and (iii) early implementation of a major program of technical support and training that will strengthen capacities at the national, state and county levels for provision of water services. The capital cost of the proposed program for improved water supply is estimated to be about $1.1 billion for the period 2011-2020. In addition, a substantial portion of the proposed $150 million of support for capacity building and training in the WSS sector as a whole will have a direct impact on the quality of water supply services.

The proposed Action Plan for sanitation services includes the following interventions: (i) rehabilitation of a majority of the existing urban and rural sanitation facilities; (ii) construction of new facilities in urban and rural areas sufficient to provide 60% of urban households and 40% of rural households with access to improved sanitation by 2020, thereby raining the national average from a current low of 14% to 45% by 2020; (iii) implementation of a series of reforms that will strengthen coordination and implementation of sanitation programs and expand funding for these programs; (iv) provide improved sanitation facilities for all health care centers and schools; and (v) develop hygiene education programs for urban and rural communities and introduce similar programs into school curricula. **The capital cost of the sanitation services provide is estimated to be about $700 million for the decade ahead. In addition, a substantial portion of the above-mentioned technical support program of $150 million will be allocated to capacity building, training and hygiene education programs.**

4.2.6 Communications

The IAP proposes the development of a national communications grid for ICT based on a fiber optic network linked to the operating submarine cable along the eastern seaboard of Africa. The grid will lay the foundations for a major expansion in access to communications at reasonable cost for a majority of the people of South Sudan, the business community, government and civil society. Low density rural communities will benefit from the network through the design and implementation of a policy of universal access for the country.

The proposed Action Plan for the communications sector has six key objectives: (i) establish access to the global communication network of submarine cables; (ii) build a national fiber optic broadband network that is linked to the global network; (iii) improve and expand access to communications throughout South Sudan, including rural communities by implementing a policy of universal access; (iv) promote competition among service providers to ensure that costs of service delivery are not inflated; (v) consolidate arrangements for regulation and oversight of the industry; and (vi) expand the range of e-applications that are available to the population at large and to educational and other institutions throughout the country. Almost half the population would have access to voice communications by 2020, compared with only 12% of the population at the present time. Between 60-70% of educational, health and government institutions would have access to ICT services by 2020. The impact of much improved access to low cost communications will be profound. It would lay the foundations for widespread access to information in urban and rural areas, including education and health services in schools and community centers in rural communities, and provide improved access to information about market opportunities for farm products and other rural-based production activities.

The total cost of the proposed ICT program for 2011-2020 is estimated at about $850 million, including capital expenditures on the ICT network of about $813 million and about $38 million for capacity building, technical support, development of various e-applications and various studies. The development of the national communications network will be funded primarily by the private sector, along with modest outlays of public funds for public information centers, postal services, and the public radio and TV networks.

V An Infrastructure Action Plan (IAP) for the Decade Ahead

5.1 Overview of the Program

The proposed program for development of basic infrastructure assets and services will be complemented by a substantial program of institutional reform and strengthening that will include measures to upgrade capacities for independent regulation of basic infrastructure services, promote private investment in infrastructure assets and services, along with training and other capacity building measures to expand the skills required within the public sector for effective oversight and management of the basic infrastructure of the country. **Strengthening institutional capacities is at the heart of the proposed agenda for the infrastructure sector in South Sudan.** Experience from many other Sub-Saharan countries is that overcoming the large infrastructure deficit throughout the region is as much about improving the performance of the relevant infrastructure-related institutions as it is about raising additional finance. In the past decade, there have been concerted efforts throughout Sub-Saharan Africa to undertake institutional reforms. These experiences are well documented.[8] According to Foster and Briceño-Garmendia (2010), the greatest progress has been made in the telecommunications sector, while the transport sub-sectors lag further behind. In the design of its own program, South Sudan can therefore benefit a great deal from these various experiences.

Successful implementation of the proposed IAP will require that a high priority is accorded to building institutional and human capacities for the design and implementation of the proposed program. Clearly, there is a need to move beyond the emergency interventions of recent years by the donor community, in partnership with the government, to address the most glaring deficiencies in the basic infrastructure of the country. There has been only limited coordination of these interventions, with many donor-supported programs designed and implemented with only minimal attention to coordination with other interventions within and across sectors. These capacity building initiatives will focus on the four closely related sets of concerns: (i) Government capacities for infrastructure planning and execution; (ii) strengthening the role of state enterprises; (iii) private investment and public-private partnerships; and (iv) strengthening the regulatory environment.

5.2 Government Capacities for Infrastructure Planning and Execution

A key component of the capacity building program is to take a series of initiatives that will strengthen the planning capacities of line agencies and government mechanisms for prioritizing project and program interventions in the infrastructure sectors and for overseeing their implementation. The reality is that a substantial part of the required funding for the IAP will continue to come from National Government sources in the decade ahead, with significant parts of the program being implemented through the central government budget rather than by public enterprises. The Government is aware of existing shortcomings in the planning, selection, and execution of these investment projects and is taking action to address the concerns. However, much remains to be done.

The institutional reform agenda set forth in this Report includes provision for strengthening sector planning capacities in the infrastructure line ministries to ensure that there is a rigorous project screening process in place to ensure that infrastructure investments are selected according to their expected costs and benefits and that these investments are sequenced and synchronized with each other and with broader development plans. For many large infrastructure projects the lead times from project identification to completion are lengthy and extend well beyond the current three-year cycle for national development planning. For this reason, multi-year budgeting frameworks and greater capacity to plan and implement complex procurement processes will help ensure that budget execution ratios increase and projects are completed. In recent years, budget completion rates for donor funded programs have been about 75% of the annual amounts budgeted by donors. In the case of the 2010 National Budget, the execution rate for the infrastructure capital works program was 92%, although there was wide variation among the sectoral agencies

8 See for example, Vagliasindi, Maria and John Nellis (2009), "Evaluating Africa's Experience with Institutional Reform for the Infrastructure Sectors." Working Paper 23, Africa Infrastructure Diagnostic, World Bank, Washington DC., 2009; and Foster, Vivien and Cecilia Briceño-Garmendia (2010), Africa's Infrastructure: A Time for Transformation. World Bank, Washington DC, 2010.

concerned. Execution rates ranged from less than 40% for the telecommunications and postal services and the urban water programs, to more than 100% for the information and broadcasting and the transport sector programs.

The Government is taking action to address the current shortcomings in the planning and execution of infrastructure projects and programs. **A major concern has been the highly fragmented nature of donor support for the rehabilitation and upgrade of the country's infrastructure.** The Government has therefore proposed a shift towards a more programmatic approach to planning and financing of infrastructure programs in the country. Under this proposed approach, new infrastructure proposals – large and small – will be consolidated into infrastructure priorities programs. These programs will aim to ensure that project design includes linkages with other projects (feeder roads with trunk roads, electricity transmission with distribution, and so on). These sectoral priority programs will be designed with a consistent set of strategies and policy actions for each of the main infrastructure sectors and sub-sectors. The proposed programs will be approved by Sector Working Groups, which will include donors. These programs will then be translated into implementation plans within the framework of the Government's annual planning and budgeting process. During the annual planning process, these programs will be translated into three-year sector investment plans, which will underpin the budget sector plans. The proposed IAP outlined in this Report is designed to fit within the Government's evolving framework for the planning, design and implementation of the infrastructure program for the country.

5.3 Strengthening the Role of State Enterprises

There is little doubt that state corporations will play an important role in the decade ahead and beyond in the development of the country's infrastructure network and in a number of sectors, provision of infrastructure services. There is an urgent need to strengthen the roles and capacities of state enterprises that will be responsible for or associated with the provision of infrastructure services in the country. These responsibilities may range from being owner of the infrastructure assets and provider of related services to a partnership with private sector investors in service provision under some form of PPP arrangement.

Today, the responsibility of the nation's infrastructure is shared among a range of government agencies. **There are three entities designated as state corporations that have formal responsibilities for the development, operation and maintenance of particular parts of the infrastructure network of the country.** These are the South Sudan Electricity Corporation (SSEC), the South Sudan Urban Water Corporation (SSUWC), and the Nile Petroleum Corporation (NilePet). In addition, there is the recently created South Sudan Roads Authority. The transformation of these entities into legally recognized state-owned corporations has not yet been completed, although it is underway for the SSEC.

Elsewhere in Sub-Saharan Africa, the internal and external governance of state corporations has lagged behind other aspects of institutional development (World Bank, 2010). Most countries have done better on internal governance than on external governance.[9] Building on the experience of other SSA countries, **this Report proposes a series of actions aimed at strengthening the role of these infrastructure-related state enterprises, the key elements of which are as follows:**

- Legislative action required to provide government "corporations" with the required legal basis for operating as public companies. African experience with this type of restructuring suggests that the owner of these corporations should be the Ministry of Finance and Economic Planning rather than an independent body.

- Strengthen the financial and operational monitoring of these SOEs, focusing on their financial performance. Experience in many SSA countries is that the hidden costs of operations can be high. According to the World Bank (2010), the hidden cost of inefficiency coming from mispricing, unaccounted losses and collection inefficiency for all the SSA countries is on average, equivalent to 0.6% of GDP in the water sector and 1.6% of GDP in the power sector. Inefficiency can also be measured in terms of excessive levels of employment.

- The SOEs in SSA that have registered sustained good performance (for example, in Botswana and Uganda) have taken a number of additional initiatives that include the following: (i) introduction of boards or directors, selection of board members on a competitive basis rather than direct appointment by line ministries, and introduction of independent directors; and (ii) introduction of independent audits of operational and financial performance on an annual basis.

During the preparation of this IAP, a major exercise was undertaken to draft provisional income statements for public entities responsible for infrastructure assets and or provision of infrastructure services. This exercise was deemed indispensable to establish the current profitability and operational status of these entities or services, which is critical for making rigorous analysis and recommendations for private sector involvement in infrastructure service provision in South Sudan. This analysis will facilitate discussion within the government on options for the further development of the infrastructure and services, either by SOEs operating on a commercial basis, or through PPP-type arrangements that involve some of these entities.

On a pilot basis, three entities in three sectors were covered: (i) power sector: South Sudan Electricity Corporation; (ii) water supply and sanitation: South Sudan Urban Water Corporation; and, (iii) South Sudan Radio and Television. South Sudan Electricity Corporation is owned by the Government of South Sudan. It represents the only source of electricity supply for the entire country. It collects revenue by supplying electricity in the country; 80% of this revenue is transferred to the Government and the remaining 20% caters for petty expenses of the entity. The Government normally covers the additional costs and also supplies capital items to the entity; e.g. land, building constructions, motor vehicles, generators, equipment. The Corporation has stations in Juba, Wau and Malakal.

South Sudan Urban water Corporation is owned by the Government of South Sudan. It represents the only source of urban water supply for the whole country. It collects revenue by supplying water to the people of South Sudan; 80% of revenue collected is transferred to the Government and the 20% caters for petty expenses of the entity. The Government finances all the other cost of the entity and also supplies capital items to the entity, e.g. land, building constructions, motor vehicles, generators, equipment, pumps etc. The Corporation has stations in Juba, Wau, Malakal, Renk and is currently constructing additional stations in Borr and Yei.

South Sudan Radio and Television station is also fully owned by the Government. It constitutes the only station that broadcasts in the country. It collects revenue by provision of announcement and advertisements to the people and entities of South Sudan; 80% of revenue collected is transferred to the government and the 20% caters for petty expenses of the entity. The Government normally finances all the other cost of the entity. The Government also supplies capital items to the entity. The entity has stations in Juba, Wau and Malakal.

Through this exercise provisional financial statements, including income statements, balance sheets and cash-flow statements, for each entity were prepared. These statements are expected to facilitate analysis and provide the information required to build these entities into financially viable enterprises in the coming years, with prospects of full privatization in the future. Additionally, recommendations for the most efficient accounting and internal system as well as the billing and cost structure were made for each of these entities.

5.4 Private Investment and Public-Private Partnerships

There is a need to strengthen the policy framework for private investment in infrastructure services under partnership arrangements with a state enterprise or other government entity. The South Sudan Development Plan (SSDP) put a considerable emphasis on the role of private sector participation in the provision of infrastructure services. It will be important to ensure that expectations about the possible benefits are kept realistic.

Experience in SSA in the past decade has led to a more nuanced view of the role of the private sector. According to assessments made by the World Bank (2010), the key lesson from past experience in SSA is that the approach should be applied selectively to those areas of infrastructure where it has a proven potential to contribute.[10] The experience of countries in SSA during the past two decades has been mixed. In mobile telephony, power generation, civil aviation and ports, the private sector has made substantial financial contributions. However, the contributions have been more limited in sectors such as roads, power distribution, and water and sanitation services. In the case of roads, for example, traffic volumes have not been large enough to generate acceptable returns for private investment in the upgrade of trunk roads with toll-type arrangements for cost recovery. Experience has shown that an average volume of 15,000 vehicles a day is required for financial viability of such tolling arrangements – a traffic volume that is not likely to be met on any trunk roads in South Sudan for some years to come.

Currently, private sector provision of infrastructure services in South Sudan is limited to mobile telephony, river transport services, and road transport. The analysis highlights the fact that in the decade ahead the best prospects for private sector participation in the provision of infrastructure services are in telecommunications, power generation, port operations and civil aviation. **The Report proposes mobilization during 2011-2020 of about $2.9 billion of private investment for basic infrastructure and $600 million for irrigation programs that support commercial farming.** The largest amounts are for electric power, communications, irrigation

9 Internal governance relates to structures within the service provision utility, such as the extent to which its structure approximates standard corporate forms; the qualifications and autonomy of its senior management and board of directors; the nature, quality, and timeliness of the information it submits to its overseers; and the adoption of accounting and disclosure standards. External governance refers to external market disciplines: being subject to private rather than public sector accounting and auditing systems, contracting out non-core activities to private providers, and being obliged to raise debt or equity funds on domestic or international private capital markets.

10 Foster, Vivien (2008), "Overhauling the Engine of Growth: Infrastructure in Africa." Africa Infrastructure Country Diagnostic, World Bank, Washington DC, Draft report, September 2008.

and water supply and sanitation. Modest amounts are proposed for river transport and ports, and civil aviation. **Among these activities, PPP-type arrangements will be most applicable for the power sector (using take-or-pay type contracts), and water transport, civil aviation and perhaps water supply and sanitation using some form of concession agreements.** In the case of communications, private investors would own the assets and provide services direct to the public at large under an appropriate regulatory framework established by the government. In the case of irrigation, the investors would own and operate these facilities for private production of agricultural products, with government oversight on the manner in which the water resources of the country are used by these investors.

International experience indicates that successful PPP programs require good public sector management systems, and especially transparent tender processes and enforceable contracts, the use of transactions advisors, minimal political interference, and a relationship of trust between the public and private sectors. South Sudan can benefit from the experience of other countries in developing successful PPP-type programs. Given the limited experience within South Sudan in negotiating PPP-type contracts, the Government will need to make use of teams of transactions advisors. Depending on the complexity of the proposed projects, these teams may include lawyers, financial specialists and technicians who will advise and assist the Government in the design and negotiation of PPP-related contracts, including take-or-pay contracts for the storage and transport (by pipeline or canal) of water, and power generation, and concession agreements for provision of railway and aviation services. **An amount of $64 million (at 2010 constant prices) is proposed to cover the cost of these teams.**[11]

5.5 Strengthening the Regulatory Environment

With the exception of the newly established South Sudan Roads Authority, responsibility for regulatory oversight of infrastructure services rests with the relevant line ministries. In the case of water supply and sanitation these responsibilities are also shared with state and county authorities. **The basic findings of this Report are:** (i) for the most part there is no clear separation of responsibilities for service provision and regulation; (ii) weak or unclear legal framework that establishes the basis for regulation of infrastructure services; and, (iii) limited or lack of capacity by the water and sanitation entities to fulfill their regulatory responsibilities . Development of these regulatory capacities poses a major challenge for the country.

The increased emphasis on the role of the private sector in the ownership of infrastructure assets and or provision of related services demands that the country strengthens its legal, regulatory and administrative environment to efficiently and effectively provide infrastructure-related services. Strengthening regulatory capacities is a long-term process. Priority should be given to those sectors where private participation and competitive pressures can play a significant role in improving service provision.

To strengthen the regulatory capacities of public institutions, South Sudan will draw on a rich background of information and analysis of international experience from advanced industrial, middle and low income countries. International experience suggests that an **essential element of an effective regulatory framework for backbone infrastructure in a liberalized competitive environment is to place the responsibility for regulation in an agency with the required independence, autonomy, expertise, and accountability.**

Proposed new arrangements. The Government of South Sudan has already embarked on a number of initiatives to strengthen the regulatory framework for infrastructure-related services. The proposed Action Plan set out in this Report builds on these various activities and proposes an overall game plan for the further development of these regulatory responsibilities in the decade ahead.

Water resources management: Currently, there is no clear regulatory framework in place to govern the use of the water resources in the country. A substantial amount of work is needed to establish a sound basis for government oversight of the use of these resources. As discussed in Chapter 5 of the full report, authority over water resources at the national and local levels needs to be clarified, and coordination of governance arrangements among public and private entities and local communities needs to be strengthened.

Being one of the ten riparian countries of the Nile Basin, South Sudan is both an upstream country vis-à-vis Egypt and Sudan, and a downstream country with respect to the other seven riparian states (Burundi, DRC, Ethiopia, Kenya, Rwanda, Tanzania and Uganda). The country is at the heart of the complexities associated with the Nile Basin Initiative (NBI) and the related transboundary water management of the River represents an extraordinary challenge. The recent independence of South Sudan and its ambitious plans for the use of the water resources for irrigated agriculture and for large-scale hydropower projects on the White Nile put it at the center of the ongoing dialogue among the ten riparian countries.

Presently, there is a serious lack of detailed information about the amount of internal renewable water resources of the country and their annual variability; and the inflow, disappearance and outflow of external water resources associated with the Nile River. The IAP proposes that the country undertakes assessments of its water resources as a matter of priority. The findings of these assessments will provide a foundation for proposals for the development and utilization of these resources in an acceptable manner to the other riparian states. Possible regulatory measures that could emerge from this work may include; the creation of a national water resources regulatory authority that will issue water permits or water rights to various types of users within the country.

Power sector: A draft Electricity Bill is currently before Parliament. This Bill provides for the creation of the South Sudan Electricity Regulatory Authority (SSERA) that will be responsible for licensing and regulation of the generation, transmission, distribution and supply of electricity within South Sudan. The activities of SSERA will be governed by a Board of Directors, but SSERA will report to the Minister of Electricity and Dams. Board members will be appointed by the Council of Ministers on the recommendation of the Minister of Electricity and Dams. It will be critical for the Board to exercise independence with reasonable degree of discretionary powers to avoid potential conflicts of interest between the Ministry of Electricity and Dams as a service provider and SSERA as the regulator; which also reports to the Minister. **International experience suggests that enhanced independence of the regulator will also enhance the confidence of potential investors and facilitate the mobilization of private investment in power generation.**

Transport sector; Today's approach in South Sudan appears to be aimed at creating separate regulatory entities for each sub-sector. This Report calls for a reconsideration of the approach in favor of creating a single regulatory authority that will be responsible for the entire transport sector, including roads, rail, river ports and civil aviation. Creation of a single regulatory authority for the transport sector is not uncommon: for example, countries as diverse as Brazil, Argentina, Tanzania, and Singapore are served by authorities with broad sectoral responsibilities for regulation within the transport sector. New legislation will be required to create the proposed authority. In the event that the Government decides to set up a single regulatory authority for the transport sector, a detailed business plan will need to be prepared prior to the drafting of new legislation and supporting regulations. The business plan will set forth proposals for the structure of the authority, the specifics of the authority's responsibilities, staffing requirements for various units within the authority, and funding arrangements.

Water supply and sanitation: Concerted efforts are needed to develop the overall framework for water supply and sanitation services in the country. As Chapter 9 of the full report indicates, in 2011 the Government adopted the Water, Sanitation and Hygiene Strategic Framework, which serves as a roadmap for the further development of institutional arrangements for the sector. The paper recognizes the challenges pertaining to institutional fragmentation within the sector and calls for streamlining the responsibilities of all relevant institutions. It proposes two institutional initiatives: (i) creation of a Water Council to provide advisory services to national, state and country governments; and (ii) creation of a Water Supply and Sanitation Board at the national level to develop and enforce regulations for water supply and sanitation services. **A first critical step in developing an appropriate institutional framework for the sector will be the preparation and promulgation of a Water Act for the country.**

Communications sector, the substance of ICT regulation around the world has evolved rapidly in recent decades in response to advances in communications technologies.. In South Sudan, the thrust at the national level is to retain the current separation of regulatory responsibilities for telecommunications and postal services from that for information and broadcasting. Regulatory responsibilities at the state level are managed **separately by state government entities. As noted earlier, the Report suggests that almost $800 million of new investment by the private sector will be required in the decade ahead to bring ICT services to levels comparable to other countries in the region. Mobilizing this level of funding will require that the regulatory framework for the sector to be transparent and uniform with no duplication and overlap of responsibilities. Further to this, it will need to promote competition among telecommunications and broadcast service providers.**

11 Experience from the United Kingdom, which has had a large program of PPP-type private investments, suggests that the cost of these transactions teams are likely to be in the range of 2% of the capital cost of the projects.

VI Implementation of the Program and Technical Support

6.1 Technical Support for the Program

Given the current limited capacities in many parts of government, an important part of the proposed program is the support for capacity building, technical services, and various technical studies. These activities are designed to improve capacities within the country to plan and implement major infrastructure programs and projects, and strengthen the operating environment for infrastructure-related investment and service provision by the business community. The various components of the proposed program of capacity building for the decade ahead are discussed in detail in the various chapters in Part 2 of the full report.

6.1.1 Capacity building programs

Table 7 provides a summary of **the proposed expenditures for capacity building and technical support, the total cost of which is estimated at about $380 million for the next decade as a whole.** The bulk of the outlays are for capacity building in the individual sectors, but the Action Plan also calls for a number of initiatives that cut across all of the individual sectors, referred to in Table 7 as the national government programs. These include support for: (i) capacity building in the review and prioritization of infrastructure related projects and programs that are proposed for funding by the government or by the donor community; (ii) a major push to restructure and upgrade the performance of existing and proposed new state enterprises; and, (iii) building the capacities of existing and proposed new regulatory authorities. In addition, the program makes provision for some $60 million of support for transaction advisory services.

The bulk of the spending on capacity building takes place during 2012-2015. A high priority is attached to early action required to build capacities at the national and state levels to design and oversee implementation of this ambitious development program for infrastructure. Delays in launching these capacity building programs will inevitably slow the design and implementation of the proposed investment of $13.3 billion in rehabilitation and expansion of the basic infrastructure network of the country that is proposed in this Report.

Table 7: Expenditures for Proposed Program of Capacity Building ($ millions at 2010 constant prices)

Program	Estimate 2010	Projected						Total 2011-20
		2011	2012	2013	2014	2015	2020	
National government programs								
Review of project pipelines & priorities			1.0	1.0	1.0	1.0		5.0
Build regulatory capacities			1.5	1.5	1.0	1.0	-	7.0
Restructure and strengthen state enterprises			1.0	1.5	1.5	1.0	0.5	7.5
Transaction advisory services			0.5	5.0	8.0	10.0	5.0	63.5
Sub-total			4.0	9.0	11.5	13.0	5.5	83.0
Water resource management	2.7	2.0	2.3	2.0	1.7	1.2	1.2	16.4
Irrigation & agriculture infrastructure				2.0	2.0	2.0		10.0
Transport sector								
Roads	5.7	5.3	7.0	5.7	4.0	2.8	2.5	37.6
River transport and ports			0.6	0.5	0.5	0.5	0.1	3.2
Railways			0.3	1.2	0.5			2.0
Aviation			1.3	2.1	1.1	1.5	0.5	10.2
Sub-total	5.7	5.3	9.2	9.5	6.1	4.8	3.1	53.0
Electric power programs			3.8	4.7	4.2	3.1	3.0	30.7
Water supply and sanitation	0.7	3.2	19.6	34.5	34.7	30.3	2.0	151.9
Communications	3.9	2.9	7.1	4.8	3.6	2.3	2.3	32.2
Total	13.1	13.3	46.0	66.6	63.8	56.6	17.1	377.2

Source: Estimates by authors for the «National Government programs» and Annex Table 3.5.

6.1.2 Technical studies

In addition capacity building and technical assistance initiatives, the Action Plan proposes a series of technical studies in the various sectors that will collect basic information about the sectors (for example, available water resources, road and air traffic flows), evaluate options for proposed infrastructure investments and related economic and financial costs and benefits, and fund the early stages of project identification and preparation. The various chapters in Part 2 of the full report provide detailed listings of the studies that will be required. Table 8 provides a summary view of the funding that will be required for this part of the program. **A total of $128 million (at 2010 constant prices) will be required for the various technical studies identified in this Report.** About $70 million will set aside for the transport sector program, largely for engineering studies and technical design work for the proposed roads program, as well as basic information or data collection such as regular traffic counts on the trunk roads of the country and in urban areas.

As with the capacity building initiatives, the IAP calls for an early launch of these technical studies as the information collected will be essential to policy decisions for individual sectors. It will also be central to the conduct of environmental and related assessments, the design of individual infrastructure programs and projects and the subsequent evaluation of the economic and financial costs and benefits of these proposed programs.

Successful implementation of the proposed infrastructure program will require close attention to the sequencing and coordination of actions across multiple fronts and in a phased manner.

Table 8: Expenditures for Proposed Program of Technical Studies ($ millions at 2010 constant prices)

Program	Estimate 2010	Projected						Total 2011-20
		2011	2012	2013	2014	2015	2020	
Water resource management		1.6	1.6	2.2	3.4	3.2		14.9
Irrigation for agriculture			0.5	3.5	1.5			5.5
Transport sector								
Roads	0.3	0.7	9.3	19.0	8.0	6.0		45.2
River transport and ports	1.1	0.8	4.0	1.0	2.0	3.0		10.8
Railways		0.6	1.0	1.0	3.0	3.0		8.6
Aviation			1.5	1.5				3.0
Sub-total	1.5	2.1	15.8	22.5	13.0	12.0		67.6
Electric power programs		0.8	5.6	4.6	4.6	-	3.0	30.6
Water supply and sanitation			0.2	1.0	1.5	0.4		3.5
Communications			2.2	1.9	0.6	0.3	0.2	5.9
Total	1.5	4.5	25.9	35.8	24.5	15.8	3.2	128.0

Source: Annex Table 3.5.

6.2 Overall Management of Program Implementation

Successful implementation of the proposed IAP requires a carefully phased approach. There are three sets of priorities for the program:

- The first requirement is to urgently strengthen the operating environment within which infrastructure assets will be created with public and private investment and to promote the provision of infrastructure-related services by the private sector and by government entities.

- Expeditiously undertake a wide range of capacity building initiatives related to the policy, regulatory and institutional environment within the public sector at both the national and sub-national level. Of particular importance in this regard is the pressing need to build the capacities of government entities to design and implement the proposed infrastructure programs.

- The IAP includes a large number of specific programs and projects to be designed and implemented in the decade ahead. Successful implementation of the program requires that there is an early start on the prioritization of these individual projects and programs and that detailed technical studies, where required, will be undertaken as soon as possible, followed by feasibility studies and detailed project design and funding arrangements.

Without early progress on all three of these fronts, the risk is that there will be significant delays in mobilizing the required funding from the international donor community and potential private investors. Delays in improving the operating environment, for example, will result in continued uncertainty among potential private investors that will heighten investor perceptions about the risks involved in making major commitments in South Sudan. Comparable opportunities elsewhere in Sub-Saharan Africa and other regions of the world will be viewed by potential investors as more attractive. Delays in mobilization of these resources will then create problems in the national and sub-national budget processes regarding priorities for public funding of the infrastructure program. Successful implementation of the Action Plan will require a close partnership involving the national government, state enterprises, state and local governments, the international donor community and the private sector.

Table 9: Expenditures for Proposed Program of Technical Studies ($ millions at 2010 constant prices)

Activity	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Operating environment											
Strengthen regulatory environment	■	■	■	■	■	■					
Restructure state enterprises			■	■	■						
Improve operating environment for private investment	■	■	■	■	■	■					
Design & launch programs to promote domestic supply responses			■	■	■	■					
Award & implement PPP-related private investment contracts			■	■	■	■	■				
Capacity building at national & sub-national level											
Strenthen procurement procedures and capacities		■	■	■	■	■					
Strengthen line ministry project design & execution capacities	■	■	■	■	■	■					
Infrastructure development programs											
Technical studies	■	■	■	■	■	■	■	■	■	■	■
Rehabilitation of existing facilities	■	■	■	■	■	■					

Activity	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Investment in new capacity											
Water resources management				■	■	■	■	■	■	■	■
Irrigation			■	■	■	■	■	■	■	■	■
Transport											
Roads	■	■	■	■	■	■	■	■	■	■	■
Ports			■	■	■						
Railways									■	■	■
Civil aviation	■	■	■	■	■	■	■	■	■	■	■
Electric power			■	■	■	■	■	■	■	■	■
Water supply and sanitation	■	■	■	■	■	■	■	■	■	■	■
Communications	■	■	■	■	■	■	■	■	■	■	■

Source: Estimates by authors.

6.3 Overview of the Program Implementation Schedule

Table 9 provides an indicative set of timelines for implementation of the proposed Action Plan. It details the schedules required for the actions on the operating environment, capacity building, and design and implementation of the proposed investment program. The Report proposes that the improvements in the operating environment to be completed by 2015, thereby laying solid foundations for a subsequent build-up in private investment in infrastructure assets and related services. It proposes that there is an equally large push on capacity building at the national and sub national levels during 2011-2015. As Tables 7 and 8 indicate, about $350 million of the proposed $500 million of capacity building and technical support – equivalent to 70% of the proposed program – is scheduled for disbursement during 2011-2015.

Spending on the technical studies needed for project identification and design, environmental assessments and so on will continue through the entire decade. However, the rehabilitation of existing infrastructure assets will be completed by 2015. Investment in new capacity will be an ongoing process for the entire decade, although in some sectors construction activities will only begin after detailed feasibility studies are completed in the next year or two.

A major concern of the Government is that to date the bulk of the infrastructure rehabilitation and upgrading has been funded and implemented outside the institutions of the state. The Government has indicated that future infrastructure investments will be prioritized and coordinated through national and state planning and budget frameworks. Funds for infrastructure programs will increasingly flow through the public financial management systems. As an interim measure, the Government has proposed the formation of the Rapid Infrastructure Development Fund (RIDF) for South Sudan.[12] The proposed Fund will be designed to channel funds from donors, multilateral banks, foundations and the government's own resources to priority investment programs in energy, water and sanitation, transport and telecommunications infrastructure. The Government proposes that donor funds will be pooled in a common fund that will be managed jointly with representatives of the contributors to the Fund. Additionally, consideration is being given to the creation of a Road Fund to finance road maintenance and other investments. The position taken in this Report is that the Road Fund should be managed separately from the RIDF.

10 Foster, Vivien (2008), "Overhauling the Engine of Growth: Infrastructure in Africa." Africa Infrastructure Country Diagnostic, World Bank, Washington DC, Draft report, September 2008.

VII Program Expenditures and Financing

7.1 Overview of the Program

Table 10 provides a summary of the costs of the proposed infrastructure program for 2011-2020 for capacity building technical support and studies and capital outlays for rehabilitation of existing infrastructure assets, upgrades in capacities and new facilities. The total cost is put at about $13.8 billion at 2010 constant prices and exchange rate.

A high priority is assigned to the development of a national road network in the decade ahead, along with reliable connections to neighboring countries and international ports, and a much expanded rural road network that will give a majority of rural dwellers improved access to services and markets. The total cost of the proposed roads program is $6.3 billion – 45% of the entire infrastructure program for the decade ahead. The Report proposes also an investment of $2.3 billion in developing a national electric power network that can provide urban areas and the business community with affordable access to a reliable supply of electricity. The other major infrastructure investment program is water supply and sanitation, the total cost of which is estimated at $1.9 billion. Successful implementation of the proposed program will bring a range of benefits to South Sudan, including improved transport and electricity services with lower costs for service provision. Other key parts of the program will ensure improved access to low cost communications networks, and improved access to safe water and sanitation in both urban and rural areas. These and other benefits are discussed at greater length in Chapter 4 of the full report.

Table 10: Development Expenditures for the Proposed Infrastructure Program
($ millions at 2010 constant prices)

Category	Estimate	Projected						Total
	2010	2011	2012	2013	2014	2015	2020	2011-20
Public sector								
Infrastructure general	75.1	35.1	4.0	9.0	11.5	13.0	5.5	118.1
Water resource management	3.4	13.3	24.6	79.2	173.0	222.3	122.2	877.6
Irrigation for agriculture			3.0	13.0	17.0	30.0	80.0	431.0
Transport sector								
Roads	262.8	193.8	258.3	486.2	487.7	511.9	1 057.1	6 264.2
River transport and ports	14.2	9.9	9.5	4.7	3.5	9.2	2.8	51.4
Railways	-	1.2	1.8	2.7	3.5	3.0		87.2
Aviation	6.4	10.9	31.8	18.6	23.1	26.5	5.5	149.1
Sub-total	283.4	215.9	301.4	512.2	517.8	550.6	1 065.4	6 551.8
Electric power programs	9.4	9.3	33.9	140.6	205.9	138.6	181.7	1 468.2
Water supply and sanitation	30.4	69.4	110.9	109.9	106.6	114.9	209.6	1 386.2
Communications	13.1	9.8	10.8	10.1	9.2	7.6	3.6	66.9
Total	416.7	356.8	488.5	874.0	1 040.9	1 077.0	1 668.0	10 903.9
Government	231.2	176.5	281.4	523.1	633.4	653.7	1 139.3	7 112.3
Donors	185.5	180.3	207.2	350.9	407.5	423.2	528.7	3 791.5
Private sector								
Irrigation for agriculture			3.0	15.0	30.0	72.0	60.0	600.0
Transport sector								
River transport and ports							2.7	15.5
Aviation							18.8	73.0
Electric power programs			9.3	199.9	258.7	198.6	59.8	870.4
Water supply and sanitation			44.8	48.2	49.3	52.0	83.2	554.9
Communications	51.2	52.1	65.1	70.0	74.2	89.2	165.2	1 000.5
Total	51.2	52.1	122.2	333.1	412.1	411.7	389.7	3 114.3
Grand total	467.9	408.9	610.7	1 207.1	1 453.1	1 488.7	2 057.7	14 018.2

Source: Table 3.1.

7.2 Funding Arrangements for Development Expenditures

As Table 11 indicates, the proposal is for the Government to provide $7.13 billion – a little more than half of the total funding required for full implementation of the program, with the donor community providing $3.75 billion and private investors the balance of $2.9 billion. About 96% of these expenditures are capital outlays for the rehabilitation of existing infrastructure and creation of new facilities. In 2010, investment expenditures on basic infrastructure were about $450 million – equivalent to about 8.4% of non-oil GDP and a level of investment in infrastructure that is already relatively high in comparison to many developing countries. The substantial ongoing program of investment is due in part to strong donor support for rehabilitation of existing assets and private investment in the communications network of the country. But, of course, South Sudan is starting from a very low base with a negligible amount of infrastructure that is in service.

Full implementation of the program will require investment levels in infrastructure in the range of 20% of non-oil GDP for much of the decade ahead. Investment outlays by the government will rise steadily from current levels of 4% of non-oil GDP to about 11% by 2020, while donor-funded investment will build up to about 5% of non-oil GDP in the latter part of the decade, after which it will decline to much lower levels relative to non-oil GDP. Private investment, mainly in power and communications, will increase from less than 1% of non-oil GDP at present to about 6% by 2015 and then decline to 3%-4% by the end of the decade.

There are uncertainties about the future level of donor support for South Sudan. At the present time, about $900 million a year of development assistance is allocated to South Sudan – equivalent to about $95 per capita. For the purposes of this Report, it is assumed that the allocation of development assistance will rise steadily to about $140 per capita by 2020, which translates into a total allocation of about $2 billion a year. At the levels of total development assistance projected to be available to South Sudan during 2011-2020, the Government will need to have donors allocate 25% of their assistance to the proposed infrastructure program. This is a modest increase over allocations during 2008-2010 when infrastructure programs accounted for about 22% of the total development assistance provided by donors.

Table 11: Funding of Development Expenditures for Infrastructure Development

Program	Estimate	Projected						Total
	2010	2011	2012	2013	2014	2015	2020	2011-20
Development expenditures ($ million at 2010 constant prices and exchange rate)								
Capacity building & studies								
Government	-	-	-	-	-	-	-	-
Donors	14.5	17.8	71.9	102.4	88.3	72.3	20.3	-
Sub-total	14.5	17.8	71.9	102.4	88.3	72.3	20.3	505.3
Capital expenditures								
Public investment								
Government	237.5	221.8	280.9	517.6	629.9	651.7	1 139.3	7 142.2
Donors	164.7	117.1	135.8	254.0	322.7	352.9	508.4	3 256.4
Sub-total	402.2	339.0	416.7	771.6	952.7	1 004.6	1 647.7	10 398.6
Private investment	51.2	52.1	122.2	333.1	412.1	411.7	389.7	3 114.3
Total investment	453.4	391.1	538.9	1 104.7	1 364.8	1 416.4	2 037.4	13 512.9
Total development expenditures	467.9	408.9	610.7	1 207.1	1 453.1	1 488.7	2 057.7	14 018.2
Investment expenditures as percent of non-oil GDP								
Public investment								
Government	4.4	4.4	4.9	8.5	9.7	9.4	10.9	
Donors	3.1	2.3	2.4	4.2	5.0	5.1	4.9	
Sub-total	7.5	6.7	7.2	12.7	14.7	14.5	15.7	
Private investment	1.0	1.0	2.1	5.5	6.3	5.9	3.7	
Total investment	8.4	7.7	9.4	18.1	21.0	20.4	19.5	
Memo item:								
Non-oil GDP ($ mill)	5 380.2	5 083.1	5 754.2	6 094.8	6 493.1	6 932.0	10 462.6	

Source: Table 3.2.

The outlook for an increase in private sector financing of infrastructure assets to levels of $400 million a year by 2014-2015 is closely linked to efforts by the government to improve the operating environment for such investment, in addition to putting forward financially and economically attractive investment opportunities for the private sector. As Table 10 indicates, currently private investment is confined largely to the communications sector where a number of operators are active in expanding their voice and data networks. The proposal is to step up private investment in commercial irrigation programs, in power sector generation, and in the development of a fiber optic grid for the entire country. Only small amounts of private investment are anticipated in the transport sector, largely because it will take time to build traffic volumes to the point where there are attractive opportunities for investment in the transport infrastructure of the country.

The key issue is whether the Government will be able to increase its budget allocations for capital outlays on basic infrastructure from the current levels of about $200 million a year to $650 million a year by 2015 and $1 billion or more a year by 2020. The analysis of the budget outlook and options in Chapter 2 of the full report suggests that in the event that the Government receives at least 80% of the oil revenues generated from fields within South Sudan, these proposed levels of funding for the infrastructure program will be manageable. Substantially lower amounts of oil revenue as a result of lower international prices, smaller than anticipated volumes of production or less favorable revenue sharing arrangements would raise serious doubts about the ability of the Government to fund an infrastructure program of this magnitude. The implication will be lower levels of growth in the non-oil economy and greater difficulties in creating productive employment opportunities for the labor force.

A total of about $500 million is proposed for capacity building, technical support and studies. The Action Plan proposes that the donor community funds these programs. In so doing, donors will be expected to bring appropriate international experience to these programs. However, the Government will want to avoid fragmentation of these capacity building and technical support programs among large numbers of donors. **Consolidation of technical support and capacity building for each sector should be an important feature of these programs.** The Government will need to take the lead in the dialogue with donors about the design of these programs and arrangements for their funding. With the imminent closure of the Multi-Donor Trust Fund (MDTF), there may be merit in creating a special facility for capacity building and technical support that pools donor resources, but gives participating donors a clear role in the design and allocation of funds for these types of programs.

7.3 Maintenance of Infrastructure Assets

Central to the success of the proposed Infrastructure Action Plan is a strong commitment to the maintenance of these assets by national and sub-national governments. Failure to increase substantially budgets for routine maintenance of these assets will result in deterioration of the quality of infrastructure services that are dependent on these assets, and ultimately a substantially higher cost that is required for the rehabilitation of these assets.

Table 12: Expenditures on Routine Maintenance ($ millions at 2010 constant prices and exchange rate)

Category	Estimate		Projected					Total
	2010	2011	2012	2013	2014	2015	2020	2011-2020
Routine maintenance								
Public	22.2	28.5	55.0	80.4	113.1	129.0	300.9	1 479.9
Private	7.3	9.4	14.3	27.6	44.1	60.6	131.9	659.8
Total	29.6	37.9	69.3	108.0	157.2	189.6	432.8	2 139.7
Memo items:								
Capital stock ($ mill)								
Public	1 453	1 792	2 208	2 980	3 933	4 937	11 851	11 851
Private	183	235	358	691	1 103	1 515	3 298	3 298
Total	1 636	2 027	2 566	3 671	5 035	6 452	15 149	15 149
Maintenance as % of stock								
Public	1.5	1.6	2.5	2.7	2.9	2.6	2.5	2.5
Private	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Average	1.8	1.9	2.7	2.9	3.1	2.9	2.9	2.8

Source: Table 3.3.

Information on the current level of public spending on routine maintenance is incomplete. What is clear is that allocations for routine maintenance in the National budget are modest. Routine maintenance expenditures by state and local governments are not available; nor are maintenance expenditures funded by the international donor community. Anecdotal evidence suggests that total public spending on routine maintenance of the basic infrastructure of the country was very likely in the range of $20-25 million in 2010 (Table 12). Information on private sector spending on routine maintenance of infrastructure assets (mainly on the communications network of the country) is also not available. For the purposes of this Report it is assumed that this was about $7 million in 2010.

The capital value of the stock of infrastructure at end 2010 is estimated to be $1.63 billion, including about $1.15 billion of public assets and about $180 million of private assets. The implication is that public spending on routine maintenance in 2010 was equivalent to about 1.5% of the value of the capital stock. Private spending was assumed to be equivalent to 4% of the capital stock. The replacement value of the stock of infrastructure in the country is projected to increase to about $15 billion by 2020 (at 2010 constant prices and exchange rate). This is a major investment for the country. Since a large portion is basic infrastructure that would be created by the public sector, in effect it represents a transformation of petroleum assets into financial assets and then into basic infrastructure

for the country. Proper maintenance of this important asset will ensure that the current serious infrastructure bottlenecks of the country will be removed and poor quality infrastructure will no longer be an impediment to service provision and economic growth.

The proposed IAP calls for an increase in spending on routine maintenance to about $420 million a year by 2020, including $300 million a year of public sector spending on routine maintenance. In addition to this routine maintenance, the proposed program also calls for increased levels of spending on periodic maintenance of about $50 million a year for the road network. This build-up in maintenance spending to almost $500 million a year by 2020 represents an important opportunity for further development of private sector capacities within South Sudan. The position taken in this Report is consistent with the Government's policy of promoting opportunities for private sector development. This means a concerted effort should be made in the near- and medium-term to ensure that responsibility for maintenance work is contracted to the private sector under competitively bid maintenance contracts. Successful implementation of such a policy will require substantial technical support in those ministries that have responsibilities for oversight and funding of maintenance programs, including in particular, translation of maintenance programs into procurement packages for public tender.

VIII Economic Impact of the Proposed High Growth Scenario

8.1 Growth in Production and Incomes

The basic strategy of the High Growth Scenario is to broaden substantially the economic base of the country. This proposed transformation of the economic base is led by a major build-up in public and private investment in infrastructure, thereby addressing one of the most serious constraints to strong economic growth in South Sudan. The build-up in investment in basic infrastructure assets and services is a key driver for the proposed transformation of the economy away from its excessive dependence of the oil sector as the primary source of economic growth. This transformation will result in a broader-based pattern of development that will provide large numbers of people with opportunities for productive employment and improved livelihood.

Table 13 provides a summary of the projected increase in GDP, non-oil GDP and national income under the High Growth Scenario for the period 2011-2020. The key features are as follows:

- The growth rate for non-oil GDP rises steadily from a projected 6% in real terms in 2013 to a little more than 9% a year by the end of the decade, driven in part by growth in the agriculture sector of 6% a year in real terms in the latter part of the decade.
- Because of the projected decline in oil production in the decade ahead, value added by the petroleum sector declines by about 50% in real terms by 2020.
- As a result, the total GDP of South Sudan declines from a peak of US$15.7 billion in 2012 to US$13.4 billion by 2015, after which the strong growth in the non-oil economy offsets the decline in the petroleum sector and total GDP increases by about 3% a year by 2020.
- By 2020, non-oil GDP accounts for almost three-quarters of total GDP, compared with about one-third at the present time – a major structural transformation of the economy towards a broad-based pattern of growth and development. As the discussion in Chapter 2 of the main report indicates, by 2020 industry and services sectors other than government account for almost 30% of GDP.
- With sustained strong growth in the non-oil economy, non-oil GDP per capita increases by almost 40% in real terms in the decade ahead, from an average of $535 in 2010-2011 to $740 by 2020. This will imply a sustained improvement in average productivity of the labor force and with broad-based growth built of rural development, a steady reduction in the incidence of poverty in the country and an improvement in food security.

Table 13: Selected Macroeconomic Indicators for High Growth Scenario
(Based on $ at 2010 constant prices and exchange rate)

Indicator	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Production											
GDP growth rate (% p.a.)	-	16.4	0.7	(3.1)	(7.9)	(4.4)	1.7	(0.5)	0.9	2.1	3.1
Non-oil GDP growth rate (% p.a.)	-	(5.5)	12.9	5.4	6.2	6.8	6.9	7.8	8.7	9.2	9.1
Non-oil GDP as % GDP	40.3	32.7	36.7	39.9	46.0	51.5	54.1	58.6	63.2	67.5	71.5

Indicator	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Income											
National income per capita ($)	956	960	744	725	705	702	711	724	745	774	805
Non-oil GDP per capita ($)	567	506	542	544	555	572	591	617	650	688	728
Memo items:											
Petroleum value added ($ mill)	5 380	10 452	9 903	9 109	7 532	6 473	6 224	5 582	5 016	4 518	4 088
Non-oil GDP ($ mill)	5 380	5 083	5 739	6 051	6 428	6 868	7 342	7 914	8 600	9 388	10 246
Gross domestic product ($ mill)	13 349	15 536	15 642	15 159	13 960	13 341	13 566	13 496	13 616	13 906	14 334
National income ($ mill)	9 077	9 646	7 886	8 058	8 174	8 431	8 823	9 276	9 863	10 561	11 339

Source: Table 4.1.

However, the combination of the decline in value added in the oil sector, continued outflows of investment income to the international companies involved in oil production in South Sudan and oil revenue sharing payments to the Republic of Sudan, will result in a stagnation of the national income of South Sudan at about $11.5 billion a year for much of the decade ahead.[13] It will only be in the latter part of the decade that the strong growth in non-oil GDP will offset these other pressures. As a result, the growth in national income will recover to an average of 3% a year in real terms during 2016-2020. The implication will be that national income per capita will decline from a peak of $1,130 in 2012 to about $900 by 2018. This decline may result in a reclassification of South Sudan by the World Bank from a Lower Middle Income Country at present to a Low Income country in the coming years.

8.2 Role of Infrastructure Investment in Accelerating Economic Growth

As Chapter 2 of the full report indicates, the acceleration in the growth of the non-oil economy will be achieved by raising the current non-oil investment rate from about 20% of non-oil GDP to an average of 35% during 2014-2020. In terms of total GDP, the overall investment rate will need to increase from 15.5% of total GDP at the present time, to about 25% of GDP by 2015 and about 33% of GDP by the end of the decade (See Table 14). The cumulative amount of non-oil investment required during 2011-2020 to raise the economic rate to about 9% a year by the latter part of the decade will be about $25 billion at 2010 constant prices and exchange rate. The key driver of this increase in aggregate investment is the proposed infrastructure investment program of some $13.3 billion. It accounts for 53% of the total investment required in the decade ahead.

13 In the High Growth Scenario, it is assumed that South Sudan receives 80% of net oil income during 2011-2020. In one of the alternative scenarios reviewed later in this report, South Sudan receives 96% of net oil income.

Table 14: Investment Indicators for High Growth Scenario (As % of total GDP)

Indicator	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Public non-oil investment											
Infrastructure	3.0	2.2	2.6	5.0	6.7	7.3	6.9	8.3	10.1	11.2	10.9
Other	1.6	1.5	1.7	1.9	2.5	2.8	3.4	3.8	3.9	4.1	4.3
Sub-total	4.6	3.7	4.3	7.0	9.2	10.2	10.2	12.0	14.0	15.4	15.2
Private non-oil investment											
Infrastructure	0.4	0.3	0.8	2.1	2.7	2.5	1.3	1.5	2.0	2.3	2.3
Other	2.6	2.4	2.7	3.3	4.3	5.4	5.9	7.6	8.0	9.2	9.1
Sub-total	3.0	2.7	3.4	5.4	7.0	8.0	7.2	9.2	10.0	11.5	11.4
Total non-oil investment											
Infrastructure	4.6	3.7	4.3	7.0	9.2	10.2	10.2	12.0	14.0	15.4	15.2
Other	4.2	3.9	4.3	5.2	6.7	8.3	9.3	11.4	11.9	13.4	13.4
Total	8.8	7.5	8.7	12.2	15.9	18.4	19.5	23.4	25.9	28.7	28.6
Petroleum sector investment											
Private investment	8.0	7.6	5.7	5.6	5.7	5.5	5.1	4.8	4.6	4.3	4.0
Total investment											
Infrastructure	**4.6**	**3.7**	**4.3**	**7.0**	**9.2**	**10.2**	**10.2**	**12.0**	**14.0**	**15.4**	**15.2**
Other public	1.6	1.5	1.7	1.9	2.5	2.8	3.4	3.8	3.9	4.1	4.3
Private	10.6	9.9	8.3	8.9	9.9	11.0	11.0	12.5	12.6	13.5	13.1
Total	16.7	15.1	14.3	17.8	21.6	24.0	24.6	28.3	30.5	33.0	32.6
Memo items:											
GDP (SDG millions)	31 769	36 975	37 227	36 079	33 225	31 751	32 287	32 121	32 406	33 095	34 116
Non-oil investment as % non-oil GDP	18.8	19.4	21.1	30.9	35.2	35.2	32.3	36.1	37.9	39.8	37.3
Total fixed investment (US$ mill)	2 075	2 159	2 101	2 721	3 050	3 159	3 061	3 512	3 885	4 340	4 393

Source: Table 4.2.

The increased investment in infrastructure will be led by the public sector (National and state governments and the international donor community). The sustained public sector commitment to a much improved national infrastructure network will lower business operating costs and improve service delivery, thereby addressing one of the major concerns of potential private investors. Reinforced by the range of other measures to improve the operating environment for private investment that are outlined in Chapters 2 and 3 of the full report, non-oil private investment will begin to rise sharply from 2014-2015. By 2020, non-oil private investment is projected to be at a level equivalent to 16% of GDP, compared with an average of about 3% at the present time.

8.3 Financing the Build-up in Infrastructure Investment

As the discussion in Chapter 3 of the full report indicates, **the rapid build-up in investment in infrastructure in the near- and medium-term will have to come from a substantial increase in public investment that is driven by a close partnership between the National Government and the international donor community.** The proposed IAP calls for public investment to increase from about 2.5% of GDP at the present time to almost 6% of GDP by 2015 and 7% of GDP by the end of the decade (See Table 15). Currently the National Government is funding about 70% of the public investment in infrastructure investment that is taking place. For the decade ahead, the Government will continue to fund 70% of the proposed new public investment. This financing scenario is based on the assumption that the National Government receives at least 80% of the oil revenues generated within South Sudan. At a share of oil revenues of 80%, the National budget will run an overall deficit equivalent to 3.5% of GDP by 2020, after having generated large surpluses during 2012-2018. For the purposes of this Report, it is assumed that these surpluses are placed in the proposed wealth fund for the benefit of future generations. The budget deficit in 2019-2020 could be funded by withdrawals from the wealth fund or by the issue of long-term bonds by the National Government.

Table 15: National Budget and Donor Funding for Infrastructure in High Growth Scenario
(As % of total GDP)

Indicator	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
National budget											
Oil revenue	17.7	15.3	32.2	30.6	27.4	24.7	23.3	21.0	18.7	16.5	14.5
Non-oil revenue	0.4	0.3	0.4	0.8	1.8	3.1	4.3	5.9	7.6	8.8	10.0
Total revenue	18.1	15.6	32.6	31.4	29.3	27.8	27.7	26.9	26.3	25.3	24.5
Recurrent spending	14.1	12.2	12.8	13.8	15.7	17.2	17.6	18.5	19.3	19.9	20.4
Capital spending											
Infrastructure	1.8	1.4	1.8	3.4	4.5	4.9	5.0	6.1	7.6	8.4	7.9
Other	1.7	2.0	2.1	2.3	2.9	3.2	3.3	3.5	3.7	4.1	4.5
Total	3.4	3.4	3.9	5.7	7.4	8.1	8.4	9.6	11.2	12.5	12.5
Total expenditures	17.6	15.6	16.8	19.5	23.0	25.3	26.0	28.1	30.5	32.4	32.9
Overall budget balance	0.6	0.0	15.8	11.9	6.3	2.5	1.7	(1.2)	(4.2)	(7.1)	(8.3)
Public funding for infrastructure											
Donor funding	1.2	0.7	0.9	1.6	2.2	2.4	1.8	2.2	2.5	2.9	3.0
Total public funding	3.0	2.2	2.6	5.0	6.7	7.3	6.9	8.3	10.1	11.2	10.9
Memo items:											
GDP (SDG millions)	31 769	36 975	37 227	36 079	33 225	31 751	32 287	32 121	32 406	33 095	34 116
Government share of infrastructure (%)	59.3	66.2	67.8	67.7	67.1	66.7	73.5	73.8	75.0	74.5	72.7

Source: Table 4.3.

The level of donor funding for the infrastructure program will peak at the equivalent of 2.5% of GDP in 2015 and then will decline to 1.5% of GDP for the remainder of the decade. As the discussion in Chapter 3 of the full report indicates, the proposed funding arrangements for the donor community will require that 25% of the total amount of development assistance projected to be available during 2011-2020 will have to be allocated to the infrastructure program. This is a small increase over the average of 22% that has prevailed in recent years.

IX Key Economic and Social Benefits of the Proposed Program

9.1 Overview of the Benefits

There are four broad sets of benefits that will flow from successful implementation of the proposed Infrastructure Action Plan. These are as follows:

- **Improved access to basic services for large numbers of residents in urban and rural areas** which will, in turn, facilitate the access to health and education services, improve access to information including market opportunities, and improve opportunities for sale of produce in domestic and regional markets.

- **Lower costs for infrastructure services** such and road transport and electric power and thereby improve the competitiveness of domestic business vis-à-vis imports and in export markets in the region and internationally.

- **Provision of a substantial range of new business opportunities for the private sector** within South Sudan.

- **Contributions to job creation** in two ways: (i) creating direct employment opportunities in the implementation of these infrastructure development programs and in so doing will produce multiplier effects at the local and national level; and (ii) the availability of more reliable basic infrastructure such as roads, river ports and transport, power and telecommunications at lower cost will provide the type of operating environment that is needed for increased production in agriculture, industry and trade.

9.2 Improved Access to Basic Services and Markets

The proposed program will have a significant impact on the number of people in South Sudan with access to basic services. Presently, about 18% of the rural population and 7% of the cultivated land area are within 2 km of a road, although as Chapter 7 of the full report indicates, many of these roads are impassable for six months a year due to rains and flooding. Implementation of the proposed program to upgrade close to 11,000 km of trunk and rural roads to paved or all-weather standard in the decade ahead will improve substantially the access of rural communities to markets and services. **As a result of this program about 70% of the rural population and 50% of the cultivated land area will be within 5 km of an all-weather road by 2020.** This transformation in rural connectivity, in turn, will improve farm access to basic inputs such as fertilizers and pesticides. The improved roads will also contribute to lower transport costs for inputs and for produce destined for local and international markets. **The improvement in rural connectivity will play an important role in creating the conditions required for growth in agricultural production of 6% a year by the later part of the decade ahead.**

The proposed program will improve access to basic services for a large part of the population. Full implementation of the program will result in an additional 6.4 million people having access to improved water supplies and an additional 5 million having access to improved sanitation. In urban areas, a little more than 50% of the population will have continuous access to electricity supplied from the partial national grid in place by 2020. And as a result of the proposed rural energy program, about 1.75 million rural residents will have access to some form of solar energy (including solar panels, pumps and cookers). In the case of communications, 100% of the population will be covered by cell phone networks, with 40% of the population having the use of cell phones, compared to only 12% at the present time. This represents an increase of 4.5 million people with access to cell phones. An additional 1.3 million people will have internet accounts.

9.3 Lower Costs for Infrastructure Services

As detailed in Chapter 1 and the Chapters in Part 2 of the full report, the costs of basic infrastructure services in South Sudan are high. It takes 60 days and costs $9,420 to import a standard container from Mombasa to Juba – six times the amount of time and almost three times the cost of the same import into Burundi, Rwanda and Uganda (See Table 6). Road freight rates in South Sudan are currently in the range of 20 US cents per ton km, more than twice the prevailing rates in neighboring countries such as Kenya and Uganda. With heavy dependence on small diesel plants in most state capitals the cost of electric power is also high, ranging from 20 to 50 US cents per kWh.

Successful implementation of the IAP will have a significant impact on these high infrastructure service

costs. In the case of road freight, for example, a reasonable expectation is that the cost of road freight would decline to less than 10 US cents per ton km – perhaps in the range of 8 US cents per ton km. The potential economic benefits of this reduction are large. However, there are no reliable data for the amount of international freight that comes into and leaves South Sudan. In the case of Burundi, a much smaller landlocked country, the total tonnage of imported freight per $1 million of GDP was equivalent to about 240 tons in 2008 and about 255 tons in 2010. Applying these indicators to South Sudan for the High Growth Case for non-oil GDP in 2020, gives an estimate of 2.5 million tons of imported freight for that year. Of course, given that the Burundi economy is one fifth the size of the South Sudan non-oil economy, these illustrative freight volumes may differ quite a bit for the $10 billion economy of South Sudan projected for 2020. Nonetheless, a reduction from 20 to 8 US cents per ton km would represent a saving in freight costs of about $525 million a year at this conservative estimate of the level of freight imports for 2020.[14] **It is the prospect of achieving these types of savings in freight costs that makes the large proposed investment in the trunk network of the country attractive.** It offers a substantial improvement in the costs of doing business in South Sudan that will also benefit small farmers through reduced costs for fertilizers and other key inputs, as well as cheaper access to local and regional markets.

9.4 Business Opportunities that Flow from the Program

As noted earlier, full implementation of the proposed IAP will involve expenditures in the range of $13.8 billion (at 2010 constant prices and exchange rate) during 2011-2020. **Given the size and importance of the program, a significant number of business opportunities will emerge.** The fundamental issue then is the extent to which the domestic business community and labor market will benefit from these opportunities and the extent to which the benefits will accrue primarily to offshore suppliers of these goods and services. The position taken in this Report is that **Government, with the support of the donor community, will need to take early action on the design and implementation of complementary programs of support for local business.** The types of programs that will need to be considered are discussed below.

A very rough estimate of the composition of the proposed $13.78 billion of development expenditures is as follows: (i) about $4.75 billion will be spent on labor services and $5.81 billion on construction and other materials; (ii) about $3.22 billion of equipment will also be required for the program; and, (iii) the required level of spending on routine and periodic maintenance to keep the infrastructure assets in good working order is estimated at about $2.57 billion (also at 2010 constant prices and exchange rate) in the decade ahead.[15] Thus, the proposed IAP will generate about $16.35 billion of spending on development and maintenance during 2011-2020, about $5.60 billion of which will be for labor services, $7.53 billion will be for materials and spare parts, and $3.22 billion will be for capital equipment.

The civil works component of the infrastructure program is estimated to be about $10.14 billion (at 2010 constant prices and exchange rate), largely because of the substantial program of road works for the decade ahead. The construction materials component of this total is estimated at about $5.74 billion. The latter represents an important opportunity for development of domestic business opportunities for the supply of quarried materials for roads and other types of construction, cement, asphalt, rebars, lumber, a wide range of fixtures for buildings, and other materials. More work is needed to assess these opportunities and to promote the development of domestic suppliers at costs that are competitive with imports. Discussion in the next section addresses some of these basic issues.

The simple assumption used in this Report is that there is little or no domestic capacity for supply of capital equipment required for the IAP. In this case, total imports of capital equipment for the infrastructure program will be in the range of $3 billion during 2011-2020.[16] Labor services for the proposed program are estimated at $4.75 billion for the decade as a whole. These include technical services for capacity building and related activities (estimated at about $350 million), and labor for construction activities (estimated at $4.4 billion). In the case of capacity building and technical services (for studies, transaction advisory teams for PPPs, etc), the estimated outlay of some $354 million translates into an average of about 120 person years of advisory services per year during 2011-2020. Given the nature of the work, almost all of these services will come from consultants and advisers with extensive international experience. Nonetheless, there will be need to promote opportunities for joint ventures between international providers of these types of services and local business interests.

In the case of labor services for construction activities, a wide range of skills will be required, including large amounts of unskilled labor in road works, as well as substantial semi-skilled and skilled labor in all sectors. More work is needed on issues related to the extent to which labor intensive methods will be used for road construction, given the earlier discussed skills profile for the labor force in the decade ahead. In the case of semi-skilled and skilled labor, there will be a substantial requirement for trade skills such as surveyors, electricians, heavy equipment operators, plumbers, welders and so on. More work is also needed on the likely numbers of skilled and semi-skilled workers that may be needed for such a program.

Key policy issues for development of skills in the labor force include actions to be taken to train electricians, equipment operators, and other trade skills within South Sudan. Lack of action on these issues will mean that a large portion of these skill requirements will be imported, with South Sudan supplying only the unskilled labor.

14 The basis for this indicative estimate is as follows: assuming the current cost of freight from Mombasa to Juba is $350 per ton based on about 20 US cents per ton km and a distance of 1,800 km, a reduction in freight rates from 20 to 8 US cents per ton km reduces the total freight cost to about $145 per ton. As a result, the total cost of transporting 2.5 million tons of imports declines from $875 million to about $350 million – a reduction of some $525 million a year.

15 About one-third of these maintenance expenditures would be for labor services ($850 million), with most of the remaining $1.72 billion used for spare parts and supplies.

16 The assumed fully-loaded average cost for international consultants with extensive experience is assumed to be about $300,000 a year.

X Managing Risk and Uncertainty: Key Issues for Government

10.1 Review of Major Risks and Uncertainties

Successful implementation of this ambitious program for development of the basic infrastructure of the country will require effective strategies for dealing with the wide range of risks and uncertainties that typically confront a program of this kind. These challenges, and the implications for actions by the Government, are discussed at greater length in Chapter 4 of the full report. This Report calls for the design and implementation of a major program of infrastructure development in the decade ahead. It does so in the full knowledge that there are many possible outcomes for growth and development in South Sudan in this period and beyond.

The wide range of risks and uncertainties include: (i) major **political risks such as deterioration in internal security in the country and or civil disturbances in neighboring countries** that affect conditions in South Sudan and its attractiveness as a destination for foreign investment or require deployment of financial resources from development programs to increased spending on security; (ii) **risks that stem from the international environment,** including sharply higher food and raw material prices, or weak growth international demand for the types of agricultural products and other raw materials that are potential exports from South Sudan; (iii) **the financing capacities of the National Government** could also be adversely affected by a weakening oil prices in the decade ahead, or lower than estimated levels of oil production; and, (iv) **the risk related to the extent to which South Sudan will be able to use the waters of the Nile Basin** for development of its very large potential for irrigated agriculture and the hydropower potential of particular sites on the White Nile that are located in South Sudan. Indeed, the development of this potential will require some form of agreement with the other nine Nile Basin riparian states.

For the purposes of this Report, the risks and uncertainties of greatest interest at this stage relate to the design, funding and implementation of the proposed Infrastructure Action Plan. It is therefore assumed that internal security in South Sudan continues to improve and that there is social and political stability for the decade ahead and that the Government continues to adhere to sound macroeconomic policies. It is also assumed that there are no new oil finds that affect production in the decade ahead, and no assumptions are made about the very real possibility that improved oil recovery (IOR) may boost production from existing fields within the decade ahead.

Table 16 provides a summary of eight possible scenarios for investment and economic growth in South Sudan in the decade ahead. **Scenario A is the High Growth Case** discussed in the preceding section. In this scenario, the Government's share of oil revenues is 80% of total net income and the full IAP is implemented during 2011-2020. As indicated earlier, the scenario is built on the assumption that the vision articulated in the SSDP will be realized over the medium- and longer-term. South Sudan makes steady progress in the next five years in building the enabling environment for broad-based private investment and in providing the internal security that is required for sustained strong development.

For the purposes of this Report, the economic impact of **two alternative scenarios for the level of net oil income received by South Sudan** have been examined (Scenarios B and C in Table 16), along with **five alternative scenarios for the level of fixed investment and its distribution between the public and private sectors** (Scenarios D, E, F, G and H in Table 16).

Table 16: Aggregate Non-oil Fixed Investment During 2011-2020 for Each Growth Scenario
(In $ billions at 2010 constant prices and exchange rate)

Scenario	Description	Total non-oil investment			Infrastructure investment			Infrastructure % of total		
		Public	Private	Total	Public	Private	Total	Public	Private	Total
A	High Growth Scenario (RoSS receives 80% of oil income)	14.2	10.6	24.8	10.0	2.5	12.5	70.4	23.7	50.4
	Alternative Outcomes for Net Oil Income									
B	RoSS receives 96% of oil income	14.2	10.6	24.8	10.0	2.5	12.5	70.4	23.7	50.4
C	RoSS receives 69% of oil income	14.2	10.6	24.8	10.0	2.5	12.5	70.4	23.7	50.4
	Alternative Outcomes for Private Investment									
D	Private infrastructure investment 50% of Scenario A	14.2	9.4	23.6	10.0	1.3	11.3	70.4	13.7	47.8
E	Same as D, but increase public investment to offset cut in private	15.4	9.4	24.8	11.2	1.3	12.5	72.8	13.7	50.4
F	Total private investment 50% of Scenario A	14.2	5.7	23.6	10.0	1.3	11.3	70.4	13.7	47.8
	Alternative Outcomes for Total Investment									
G	Total investment 75% of Scenario A	10.8	8.1	18.8	7.6	1.3	8.9	70.2	15.9	47.0
H	Total investment 50% of Scenario A	7.6	5.7	13.3	5.3	1.3	6.5	68.8	22.7	49.2

Source: Table 4.6

10.2 Uncertainties about the Level of Net Oil Income for Sudan

At the time that this Report was drafted, there was no agreement between the Republic of South Sudan and the Republic of Sudan on the arrangements for sharing income from oil fields currently in production. Annex 5 of the full report sets out a range of possible outcomes to illustrate the effect of various sharing arrangements on the net oil income of South Sudan.

As noted earlier, in the High Growth Case (Scenario A), it is assumed that South Sudan receives 80% of the net oil income. As Table 15 indicates, with full implementation of the proposed IAP, the overall national budget balance turns from surplus in 2019 to a small deficit. As Table 17 indicates, for 2011-2020 as a whole the cumulative budget surplus is projected to be $6.1 billion under the High Growth Case (Scenario A). Allocation of this surplus to a wealth fund, while at the same time closing the infrastructure gap of the country, would represent a significant achievement.

The following **two alternative scenarios for net oil income and the overall balance of the national budget** have been included in Table 17:

- **In Scenario B,** it is assumed that the National Government receives 96% on the net oil income, with 2% going to the oil producing states and the remaining 2% to the Republic of Sudan. With full implementation of the IAP, the cumulative national budget surplus is projected to be $12.6 billion during 2011-2020 – a substantially larger build-up in the proposed wealth fund of the country than projected in Scenario A, for example.

- **In Scenario C,** it is assumed that the National Government receives only 69% of the net oil income, with 2% going to the oil producing states and 29% going to the Republic of Sudan. Again, with full implementation of the IAP, the overall balance of the national budget shrinks to $1.7 billion for the period 2011-2020. By the latter part of the decade, full implementation of the IAP results in a very large overall deficit in the national budget that may be difficult to finance. In this scenario, therefore, it is very likely that the IAP would have to be scaled back quite substantially. In all likelihood, the proposed roads program would have to be implemented over a much longer period of time and the ability of the country to meet growing demand for electric power from a national grid may also be in doubt.

Table 17: Summary of Alternative Growth Scenarios for 2011-2020
($ at 2010 constant prices and exchange rate)

Scenario	Description	Non-oil investment average 2011-20 (% of non-oil GDP)	Net oil income total 2011-20 ($ billion)	Non-oil GDP 2011-20 (% p.a.)	Gov't budget surplus total 2011-20 ($ billion)	Non-oil GDP per capita 2020 ($)
A	High Growth Scenario (RoSS receives 80% of oil income)	32.5	35.6	6.8	2.8	728
Alternative Outcomes for Net Oil Income						
B	RoSS receives 96% of oil income	32.5	42.0	6.8	9.2	728
C	RoSS receives 69% of oil income	32.5	31.1	6.8	-1.6	728
Alternative Outcomes for Private Investment						
D	Private infrastructure investment 50% of Scenario A	31.4	35.6	6.5	2.8	709
E	Same as D, but increase public investment to offset cut in private	32.5	35.6	6.8	1.6	728
F	Total private investment 50% of Scenario A	27.8	35.6	5.6	2.8	655
Alternative Outcomes for Total Investment						
G	Total investment 75% of Scenario A	26.9	35.6	5.3	5.6	636
H	Total investment 50% of Scenario A	19.3	35.6	4.9	8.1	611

Source: Table 4.7.

10.3 Uncertainties about Availability of Funding

Successful mobilization of the funding required for the IAP will require a strong partnership involving the National Government, the international donor community and the private sector. During 2008-2010, the Government, donor community and the private sector spent a total of $1.24 billion on the rehabilitation and development of the infrastructure assets in South Sudan and on related capacity building and technical support. The average level of spending on these activities in this three-year period was about $415 million a year. The National Government accounted for 65% of these outlays, the donor community funded 22%, and the private sector accounted for the remaining 13% (Annex 3 of the full report). Actual disbursements by donors were 71% of the amount budgeted in those three years. Actual disbursements by donors for the infrastructure program were 22% of the total development assistance program (excluding humanitarian assistance) of donors during 2008-2010.

As indicated earlier, implementation of the Action Plan requires a total of $13.8 billion for the ten-year program. The proposed annual levels of spending are substantially larger than during 2008-2010. **The program calls for mobilization of $7.13 billion of funding from the resources of the Government of South Sudan (52% of the total required), an allocation of $3.75 billion to the IAP by the international donor community (27% of the total requirements), and mobilization of $2.9 billion of investment capital in the private sector (equal to 21% of the total required**).

There are major uncertainties about the availability of the financing on this scale from these three sources.

Availability of donor funding. During 2008-2011, ODA allocations for basic infrastructure were about 22% of total development assistance. For the purposes of this Report, it is assumed that allocations for basic infrastructure would account for 25% of total development assistance during 2011-2020. Allocations for infrastructure are therefore projected to rise from about $185 million in 2010 to about $525 million a year by 2020. Given the preferences of bilateral donors for this type of assistance, it is assumed that a substantial portion of this support would go to urban and rural water supply and sanitation, development of rural and feeder road networks, and irrigation programs that raise productivity and incomes of small-scale farmers. The multilateral financial institutions such as African Development Bank and the World Bank, on the other hand, may play a substantial role in supporting the development of Sudan's infrastructure connections with other countries in the region.

A basic assumption used in this Report is that allocations of ODA to South Sudan will rise steadily in the decade ahead from $104 per capita in 2010 to about $140 per capita by 2020. This translates into a total allocation of $14.5 billion for development assistance in the decade ahead for the High Growth Case. It is possible that the international donor community may not be able to expand resource allocation by this amount. Reasons for smaller allocations may vary.

Donors may have difficulty in justifying an increasingly large allocation per capita for South Sudan, especially if implementation performance of aid-supported programs is slow to develop. Alternately, donors may choose to reduce their allocation to basic infrastructure in favor of increased support for say health and education programs. In the event that donors keep their per capita allocation of development assistance at $100 for the decade ahead, the total amount of development assistance would amount to $11.9 billion. Assuming the allocation for infrastructure remained at 25% of total development assistance, donor support for infrastructure would be reduced by $650 million in the decade ahead. This would require the national government to fund a somewhat larger share of the public investment program for infrastructure, or defer part of it.

Mobilization of private investment. The current amount of private investment in basic infrastructure assets in South Sudan is very modest and is estimated to be in the range of $200 million. It is concentrated in communications and private diesel generation plants for electricity supply in state capitals. The High Growth Scenario used in this Report proposes that about $2.9 billion of new private investment should be mobilized in the decade for investment in basic infrastructure assets and that $600 million of private investment is mobilized for development of irrigation services for commercial farming operations. The expected areas that will be attractive to private investors will be power generation, inland water transport, airport concessions, communications and water storage and irrigation for large-scale commercial agriculture.

Under the assumption that the overall debt: equity ratio for this private investment is a conservative 70:30, the implication is that potential investors would aim to mobilize about $1 billion of equity funding and $2.5 billion of debt financing from their internal resources or from international financial markets. As the discussion in Chapter 3 of the full report indicates, successful mobilization of this amount of commercial debt may require the involvement of government guarantees or other enhancements that would address potential investor concerns about risk sharing arrangements.

10.3.3.6 The underlying assumption in the High Growth Case (Scenario A) is that the Government will make a concerted effort in the near- and medium-term to improve the operating environment for private investment. In this regard, the Government will need to address a number of

potential concerns of private investors in advance of its launch of a major international program of investment promotion. In that connection, it will be useful to make a clear distinction among the various types of private investments that are to be mobilized. These include the following: (i) investments that would be undertaken under **some type of PPP arrangement**, such as investment in power generation under take-or-pay contracts with a government entity for the supply of electric power to a national or local grid; (ii) **concession agreements** in which the government retains ownership of the basic infrastructure and awards one or more concessions to private investors for the operation of these assets and provision of related services (e.g., concessions for operation of airports, river ports, and railway services); and (iii) **investments in infrastructure assets** that would be used directly by the investor for the manufacture of a product (e.g., investment in irrigation for commercial agriculture), or provision of a service (e.g. telecommunications services from a national grid developed by one or more private investors).

In each of these cases, private investors will have a range of concerns that will need to be addressed by the government. To mobilize some $3.5 billion of private investment for basic infrastructure and irrigation, the government will need to develop effective capacities to address concerns of potential investors in a timely manner. An inability to address such concerns may result in potential investors shifting their attention to other countries where the risk-reward relationship is more attractive.

There is typically a wide of concerns that potential investors will have in assessing the risk-reward framework for a country such as South Sudan. These range from concerns about ***force majeure*** **to political risks** (such as changes in the regulatory environment), **environmental risks** and the current status of environmental laws and regulations in South Sudan, **currency exchange risks** especially in those cases where substantial amounts of debt financing are used and are denominated in a currency other than that of the bulk of the revenues generated under the project, and **social risks** where a project may have important impacts on local communities. Unsatisfactory arrangements regarding land tenure or use of local water resources, for example, can lead to significant local opposition to a project that may in turn result in delays in project completion, increased completion costs, or even undermine project viability.

Apart from building capacities within Government to address these types of investor concerns, the Government will also need to give close attention to other aspects of the operating environment for private investment. Investors will be concerned about the adequacy of the legal framework for PPP-type investments (such as take-or-pay contracts in power, and concession agreements for civil aviation, railways or river transport and ports) and about the extent to which there is clarity in the regulatory framework. As noted in Chapter 3 of the full report, development of the regulatory framework is at a rather rudimentary stage at this time; much of what is required is not yet in place. **Successful mobilization of these private funds will also depend on early progress on these institutional arrangements and the development of financially viable public entities that will enter into these partnerships.**

Delays in addressing these types of concerns may result in potential private investors deferring decisions about particular investment proposals. Table 17 includes **three different scenarios in which the proposed level of private investment is not realized because of uncertainties about the operating environment or about the risk-reward characteristics of particular projects.** These three alternative scenarios are as follows:

- **In Scenario D**, the government is unable to mobilize the proposed $2.9 billion of private investment for the infrastructure program and the $600 million for commercial irrigation because of uncertainties about the environment and the quality of projects available. In this scenario it is assumed that only half of the required amount is mobilized (about $1.75 billion). It is further assumed that the unfunded projects, primarily in the power, telecommunications and water supply and sanitation sectors, are postponed. This results in a somewhat slower expansion infrastructure related services, and with a lower level of investment somewhat slower growth. The average growth rate for non-oil GDP during 2011-2020 drops from about 7% a year in the High Growth Scenario A to 6.5% a year.

- **In Scenario E**, it is assumed that the national government steps in and funds the $1.75 billion shortfall in private investment in basic infrastructure. As a result, the non-oil GDP growth rate remains at an average of about 7% for the decade as a whole; but with a higher level of government spending the cumulative budget surplus for 2011-2020 declines from $6.1 billion to $4.4 billion. This scenario underscores the fact that there may be a trade-off between building the wealth fund and building basic infrastructure for the country.

- **In Scenario F**, it is assumed that the obstacles to the mobilization of private investment are more severe than in Scenarios D and E above. In this case, the overall level of private investment in the economy, and not just in infrastructure, is only 50% of what is assumed in the High Growth Case (Scenario A). In this case, the government does not step in to offset the weak private investment response. As a result, the average investment rate in the economy declines to about 27% of non-oil GDP, compared with 32% in Scenario A, and the non-oil GDP growth rate drops to an average of 5.7% a year for 2011-2020 as a whole.

The key point about these alternative scenarios for private investment is that in the event that private investment is not forthcoming, the Government faces difficult decisions about the allocation of its own financial resources or those of the international donor community, among competing demands for infrastructure development and whether to draw down the resources of the wealth fund to compensate for the weak private investment response.

10.4 Slow Development of Implementation Capacities

The final outcome for the decade ahead will also be shaped by the extent to which there is a rapid build-up in implementation capacities for civil works programs and related installation of capital equipment. Efforts to improve implementation capacities will center on developing the required skills in the labor force, or importing these skills required, and on the development of key domestic industries, including fabrication of goods and equipment, construction activities, transport and communications. Strategies for developing these domestic capacities are discussed earlier in this report summary report and in Chapters 2 and 3 of the full report. The underlying assumption in the High Growth Case (Scenario A) is that with the help of the international donor community, the Government continues to make steady progress in building effective internal capacities for the implementation of development programs in general.

Scenarios G and H in Table 17 above look at the impact of slower progress in building these implementation capacities in the public sector and in promoting the development of domestic business activities. The key findings in these two alternative scenarios are as follows:

- In Scenario G, it is assumed that public and private investment in the decade ahead is only 75% of that in the High Growth Case. In other words, instead of an aggregate level of investment in the economy of about $25 billion in the decade ahead, a weak implementation and operating environment results in total investment of about $18 billion for the decade as a whole. The result is that the average investment rate declines to about 27% of non-oil GDP and the latter grows at an average of only 5.5% a year.

- In Scenario H, it is assumed that public and private investment in the decade ahead is only 50% of that in the High Growth Case. The implication in this scenario is that the proposed IAP program of almost $14 billion is reduced to a total of $7 billion for the decade ahead, thereby prolonging the difficulties faced by many residents in getting access to basic services and markets at reasonable cost. In this scenario, non-oil GDP grows at an average of only 4.7% a year – the same as the labor force – and the aggregate investment rate remains at the current level of about 20% of non-oil GDP.

These two slow growth scenarios underscore the importance of early action to lay the foundations for sustained strong economic growth. In these two scenarios, non-oil GDP per capita is the same as or lower than the average of about $535 for the period 2010-2011. With the non-oil economy growing at the same rate as the labor force, or at a rate that is only marginally higher, there is little prospect for creating productive employment for all the new entrants into the labor force and of reducing the current very high unemployment and underemployment levels. **The implication is that the current high levels of poverty would continue. In these circumstances, the risk is that internal security may become a matter of concern,** further compounding the difficulties associated with attracting foreign investment to the country. Moreover, with substantially lower levels of public investment, the overall budget balance rises. In Scenario H, for example, the cumulative increase is $11.5 billion for the decade as a whole. In a setting in which there was weak economic growth and high unemployment and underemployment, the political pressures to spend the resources of the wealth fund on welfare programs for the existing population would be considerable and may be difficult to ignore.

10.5 Promoting a Strong Domestic Supply Response

A sustained strong growth of non-oil GDP of about 9% a year by the end of the decade will require a strong domestic supply response as an alternative to substantially higher levels of imports where much of the benefits of the high growth accrue to offshore suppliers of goods and services. **A number of initiatives can be taken by the Government to promote business opportunities for domestic firms and entrepreneurs. These actions include:** (i) improvements in the business environment and information about business opportunities that flow from the proposed program; (ii) programs to ensure that small and medium business entities in South Sudan are able to benefit from the program; (iii) measures needed to promote the development of technical skills in the labor market; and, (iv) development of contracting arrangements for domestic supply of goods and services for the program.

Improving the business environment. As the earlier discussion about the recent report on Doing Business in Juba 2011 (IFC, 2011) indicates, South Sudan currently has limited capacity for providing institutional support to the domestic business community. A number of fundamental laws and institutions are still missing. In addition, there is a need to clarify existing laws, streamline existing procedures and improve the efficiency of existing institutions. The cost of business start-up and operation in Juba is high. The National Government, state governments and counties (payams) can identify key areas

for improvement and take specific action to address these bottlenecks.[17] The Government of South Sudan can follow a path that is similar to that of these other successful reformers in Sub-Saharan Africa (e.g., Ghana, Mali, and Rwanda); the latter usually have a long-term agenda and push forward continuously. Their programs typically include all relevant stakeholders in the process, set specific goals, institutionalize the reform effort, and regularly monitor progress. The benefits can be substantial. Business reforms expand the reach of regulation by bringing firms and employees into the formal sector. Businesses pay taxes. Products are subject to quality standards; and in addition, formal firms have greater access to bank credit to fund expansions and courts to resolve disputes.

Support for small and medium business. A range of initiatives can be taken to promote and development small and medium business entities in South Sudan. A widely used approach in other developing countries relies on the use of a network of business development centers (BDCs) throughout the country. The programs of these centers typically include training and support for small and medium entities to bid on and implement construction and or maintenance contracts. Such training programs include preparation of tender documents, support for preparing applications to the banking sector for working capital loans, arrangements for lease of equipment, and bookkeeping and record keeping.

Improving the supply of technical skills for the labor market. As the preceding discussion indicates, the proposed IAP will generate a large demand for a wide range of skilled and semi-skilled workers, as well as creating job opportunities for large numbers of unskilled workers. Equipment operators will be required in the construction industry, for example, along with electricians, welders, mechanics, and others. The key policy issues here will be the manner in which these people are trained, by whom and at what cost. In the case equipment operators, it is not unusual for the successful contractor to assume responsibility for hiring and training the personnel required. To meet the demand for skilled people such as electricians, surveyors, welders, the issue is the extent to which South Sudan can build accredited training institutions whose programs meet specific standards that are consistent with international practice. Closely related to these concerns is the actual accreditation of those training institutions whose programs conform to agreed standards for the industry. In the absence of agreed standards and an accreditation process, donor support for such capacity building may be considered. In the event that the development of these domestic capacities is slow, consideration might be given to support by donors for skills training of South Sudanese at appropriate qualified institutions in neighboring countries.

Procurement policies and programs for the domestic market. A range of initiatives can be taken to ensure that a reasonable share of the infrastructure-related procurement by government, donors and private investors is awarded to qualified domestic suppliers of goods and services. Procurement policies for various parts of the infrastructure program will need to address the following types of issues: (i) the choice of standards for civil works and goods and materials; (ii) to what extent can local materials be used and do their technical specifications comply with contract requirements: (iii) the number, size and type of contracts to be tendered and the extent to which locally bid contracts will be geared to contractor capacities within the domestic market. A key issue going forward is the extent to which domestic suppliers of materials will be able to meet specific product standards required for these programs. If it doesn't already exist, South Sudan will need to develop a uniform set of internationally accepted standards for domestic production of construction materials. Without these types of standards, there is strong prospect for the award of contracts external contractors for supply of materials that can comply with specifications in procurement notices.

Further work is needed on these types of issues to develop a clear set of policies for procurement. Early consideration could, for example, be given to awarding maintenance contracts to qualified local firms in various infrastructure sectors, initially for a year or less. As capacities of these firms increase, consideration could be given to the competitive award of multi-year or so-called "period" contracts for routine maintenance. Such contracts might start at say, $100,000 a year. The size of such contracts could be increased, consistent with the further growth of local capacities. Longer-term contracts that are implemented according to standards required can help reduce the cost of asset maintenance, and will also permit contractors to purchase necessary equipment and meet the costs of staff training. These types of techniques were used with great success in a number of countries in East Asia several decades ago to build small domestic firms into major construction companies that were able to compete effectively with international suppliers of such services.

10.6 Adverse Macroeconomic Impact of the Program

The importance of a stable macroeconomic environment is discussed elsewhere in this report in the context of South Sudan's continuing dependence on very large inflows of financial resources from abroad, including oil revenues and development and humanitarian assistance from the international donor community. Full implementation of the IAP could add to these pressures with the proposed large inflow of private investment capital as well. The rapid development of the non-oil economy in the decade ahead will help lessen some of the potential strains that can stem from instability in the inflow of these resources from abroad. For example, non-oil revenues in the national budget are projected to account for almost 40% of total revenues by 2020, compared with about 2% in 2010. This diversification of public revenues, along with the development of a substantial wealth fund and access to international financial markets via the issue of public bonds by the National Government, will all contribute to reducing the current high potential for instability that stems from the heavy dependence of the economy on oil revenues. Nonetheless, there is a continuing risk of upward pressures on the exchange rate as a result of the projected large inflow of these resources from abroad. Mechanisms for dealing with these pressures center on early development of a sovereign wealth fund that can compensate for boom and bust cycles in oil prices and production, in conjunction with well-coordinated management of monetary and fiscal policy. These initiatives will be essential in providing the government with the required tools for dealing with these pressures.

There is also a risk that the levels of investment spending proposed in the High Growth Case may impose other types of macroeconomic strains on the economy, including for example, shortages of skilled and semi-skilled labor that translate into inflationary wage pressures, and crowding out of private investment in areas unrelated to the propose Infrastructure Action Plan. Given the very limited development of the domestic banking and financial market, demand for working capital loans by the construction industry, for example, may pose serious constraints on the availability for such funds for other types of business activity. There are no quick and easy answers to these types of pressures. Cost push inflation can be moderated through the use of imported labor and materials.

However, the development of the domestic financial market will take time. As Chapter 1 of the full report indicates, the domestic savings rate is low and at this time, only a relatively small portion is in the form of financial assets. Indeed, much larger amounts of domestic savings occur in the form of livestock herds, for example. The Government will need a clear plan for the development of the domestic financial market that can be a reliable and growing source of funding for the domestic business activity. The plan will need to encourage residents to hold larger shares of their savings as financial assets in the banking system. To the extent that the domestic banking system is dominated by branches of foreign banks, the South Sudanese authorities will have to ensure that these savings are not then transferred out of the country by the banks concerned for lending elsewhere. Building the capacities of the central bank for regulation and oversight of the domestic financial market will be an essential part of a well-managed macroeconomic policy framework. To some extent, strong growth in demand for working capital loans and investment loans from the domestic banking system can also be met with lines of credit provided by the multilateral development institutions.

17 The IFC report indicates that 27 of 46 Sub-Saharan economies have implemented reforms aimed at improving their business environments. Rwanda was identified as one of the top improvers globally. Since 2005 Rwanda has implemented 22 business regulation reforms in areas measured by the Doing Business surveys of the IFC. Other countries such as Ghana and Mali have initiated similar programs.

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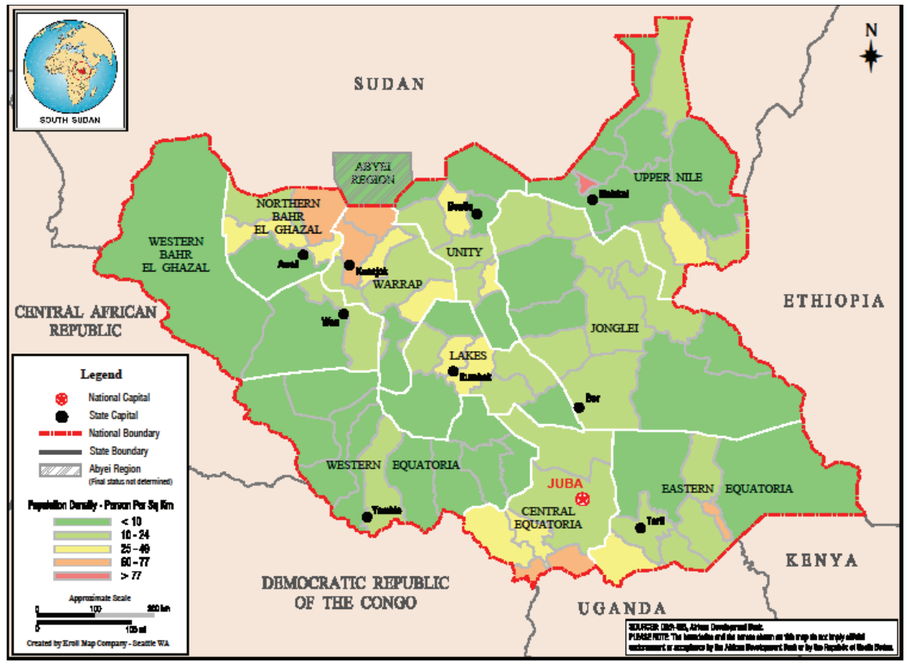
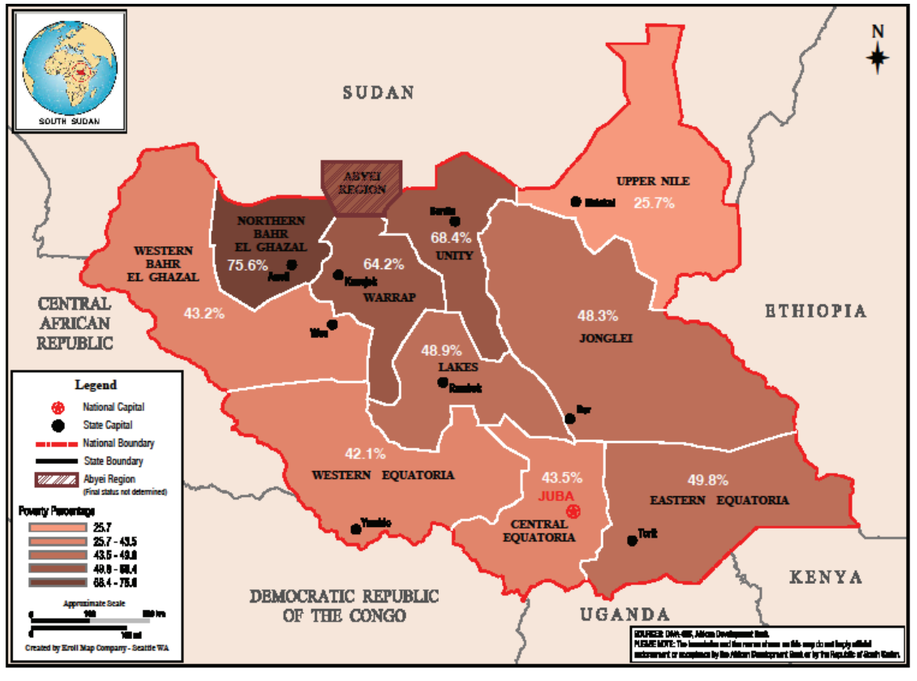
MAP 1: South Sudan and the Northeast Region of Africa

MAP 2: Administrative map of the Republic of South Sudan

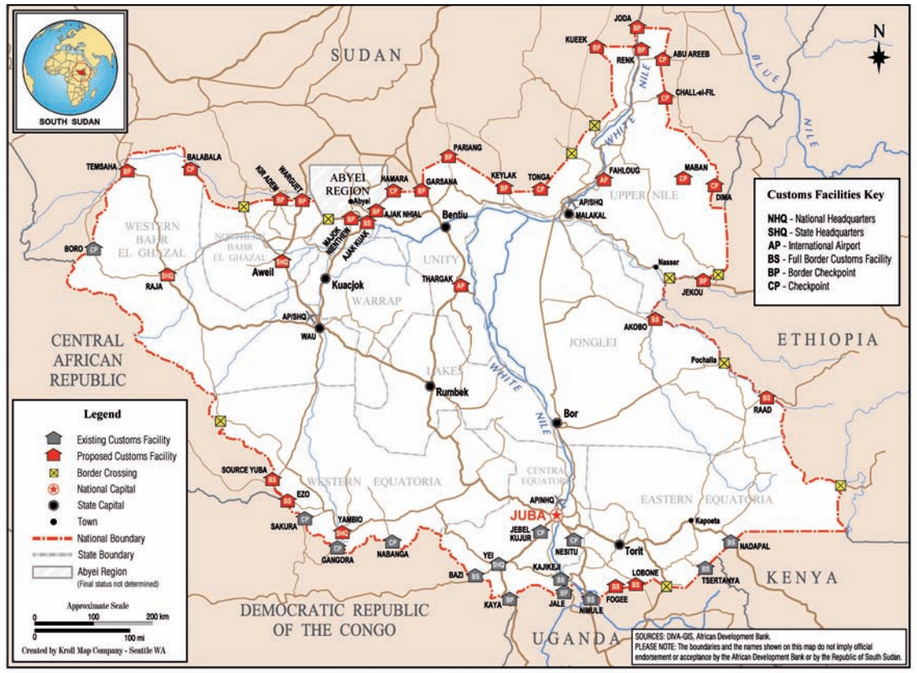
MAP 3: Population Densities in South Sudan



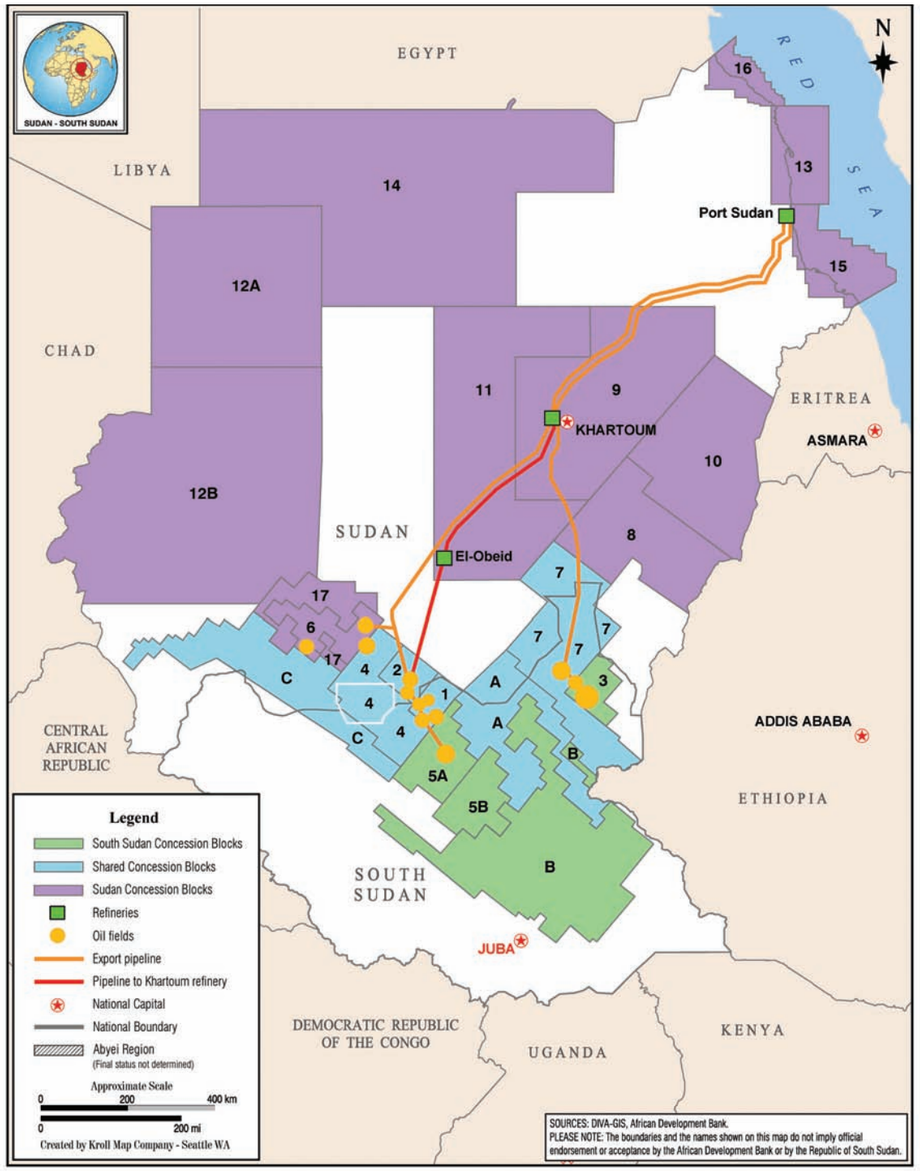
MAP 4: Incidence of Poverty by State in South Sudan



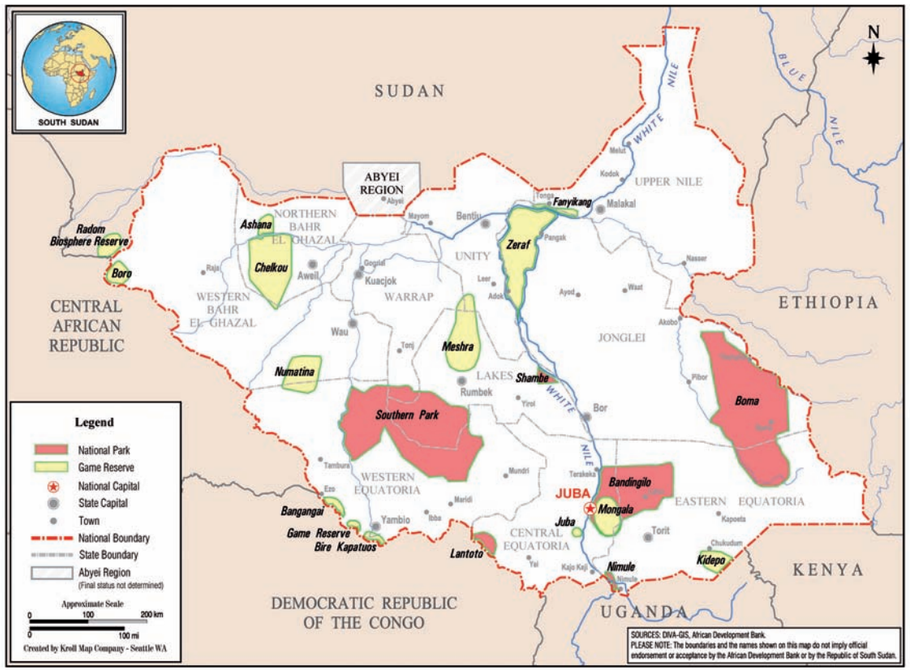
MAP 5: Border Crossing and Customs Stations in South Sudan



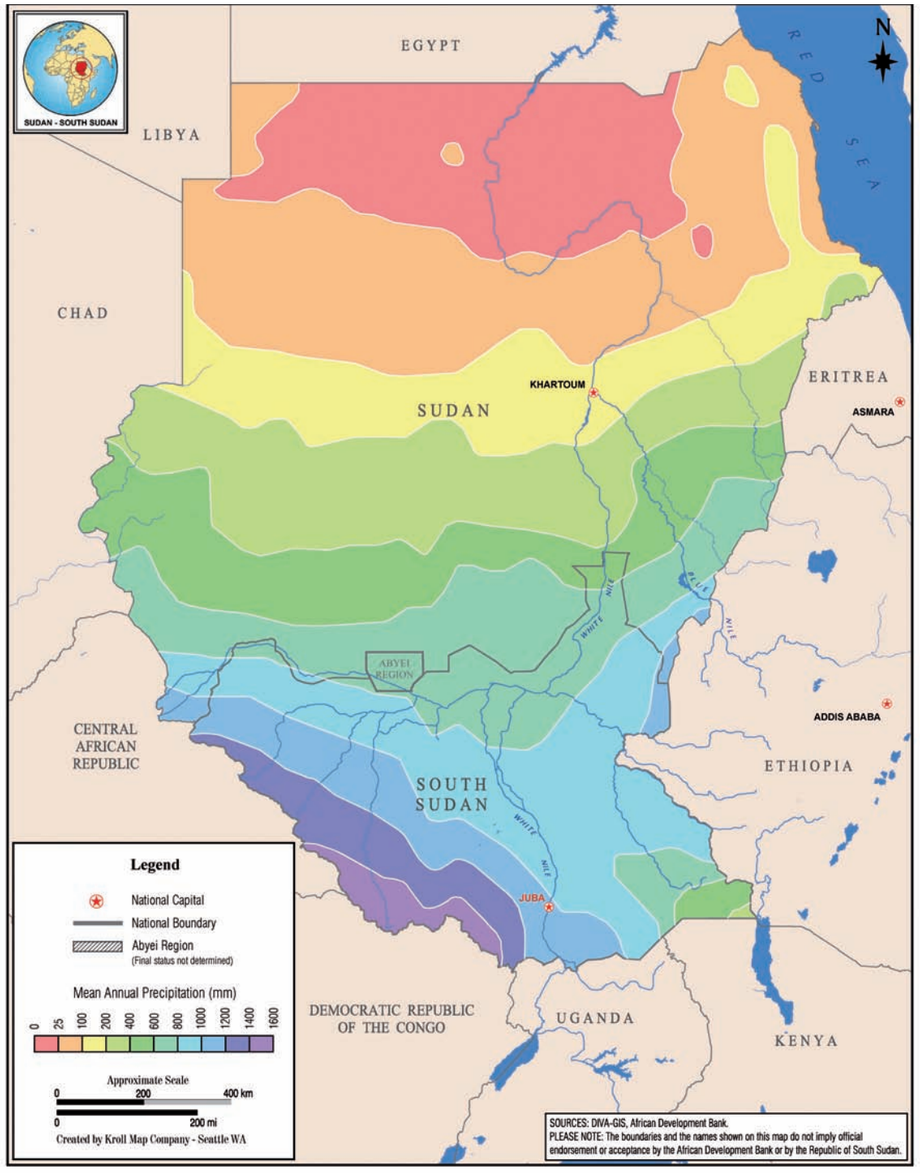
MAP 6: Oil and Gas Concessions in South Sudan and Sudan



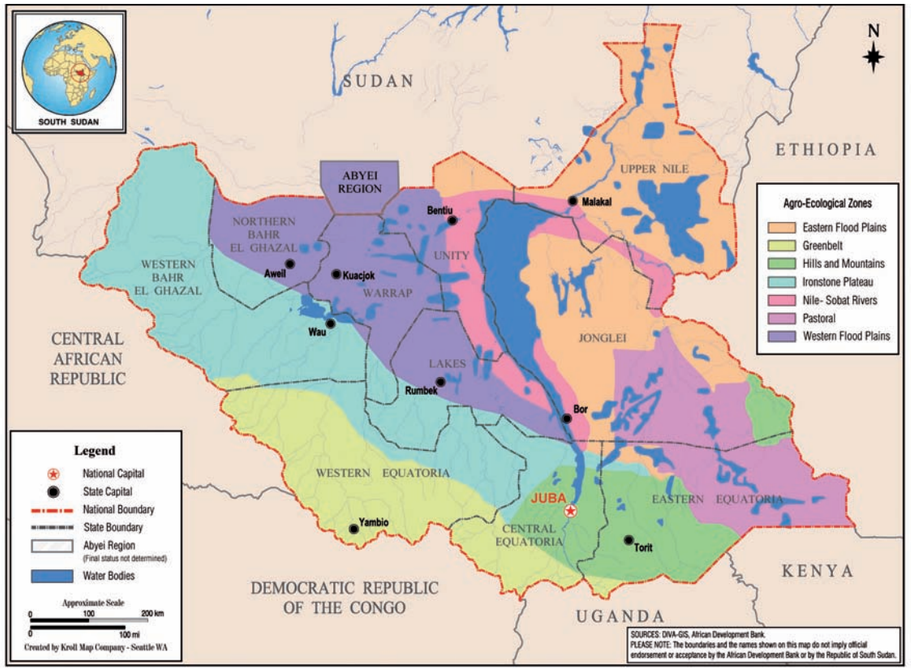
MAP 7: National Parks and Game Reserves of South Sudan



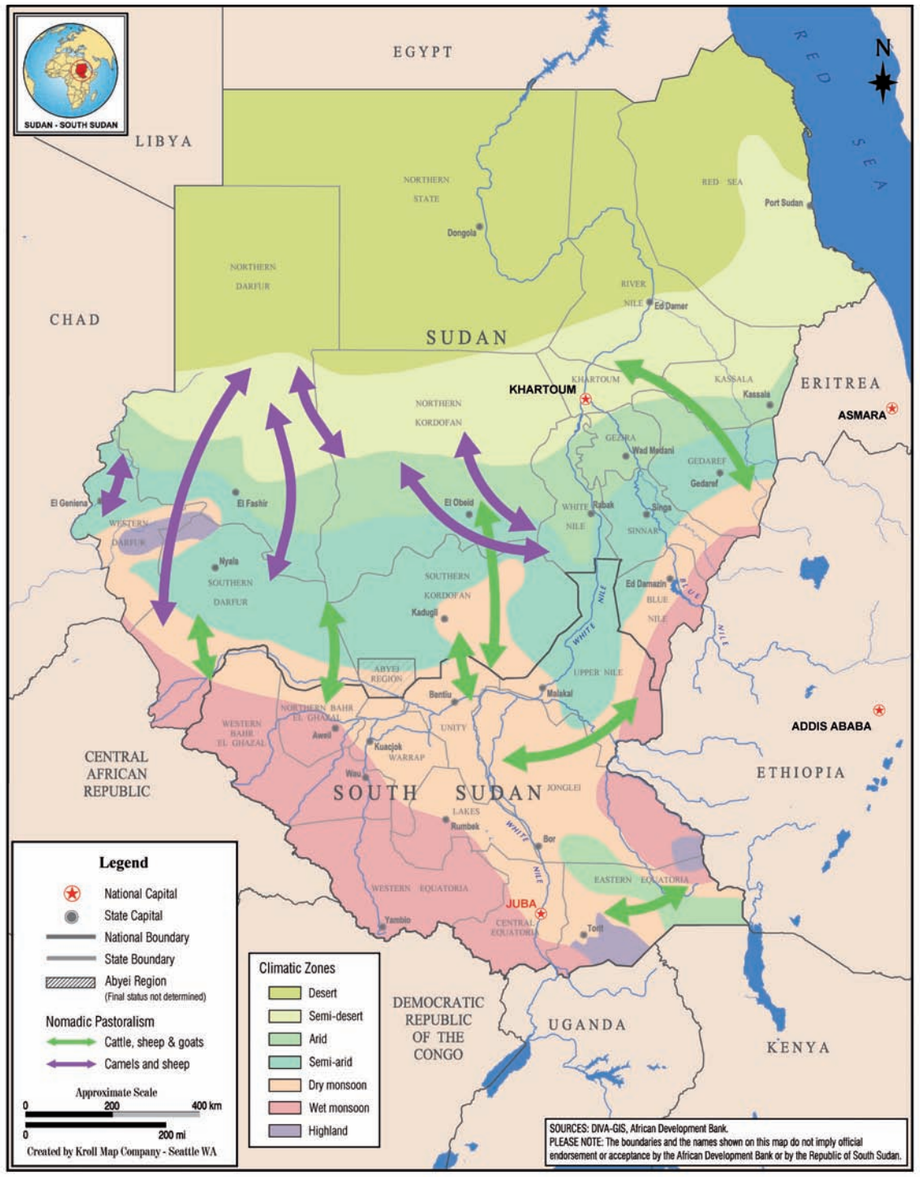
MAP 8: Average Annual Rainfall in South Sudan and Sudan



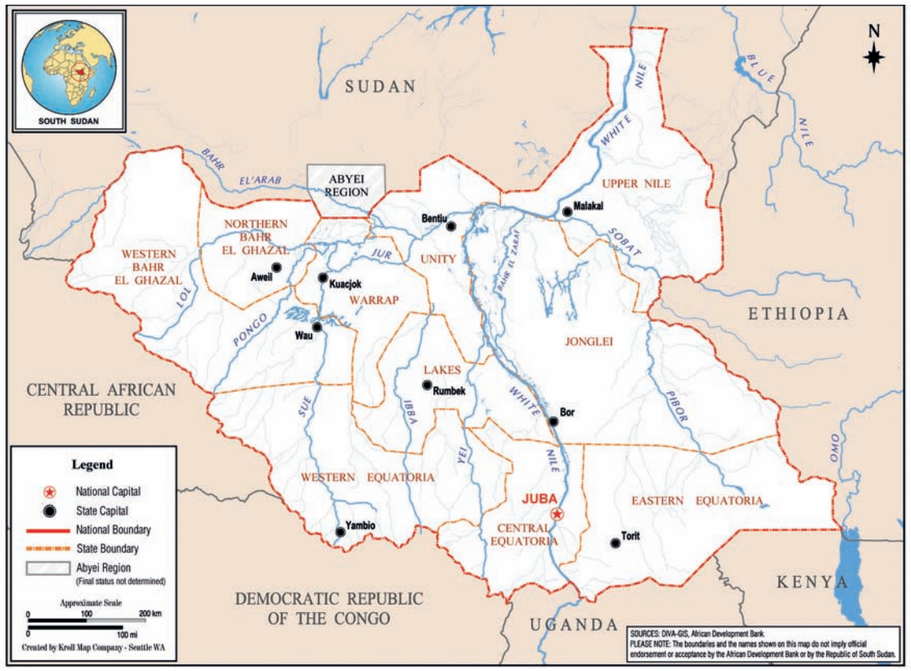
MAP 9: Agro-Ecological Zones in South Sudan



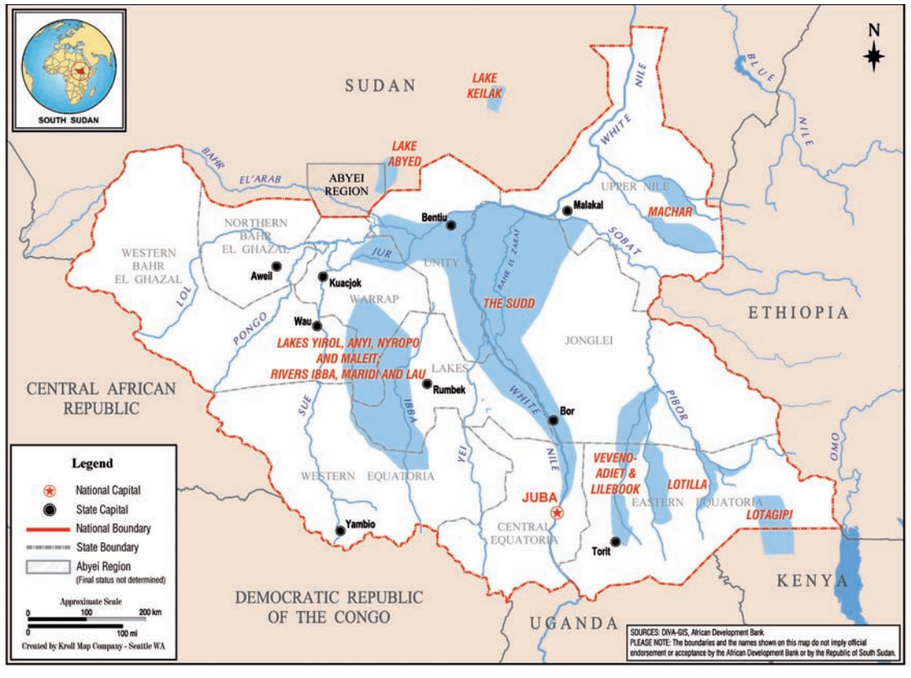
MAP 10: Annual Pastoral Migration Routes in South Sudan and Sudan



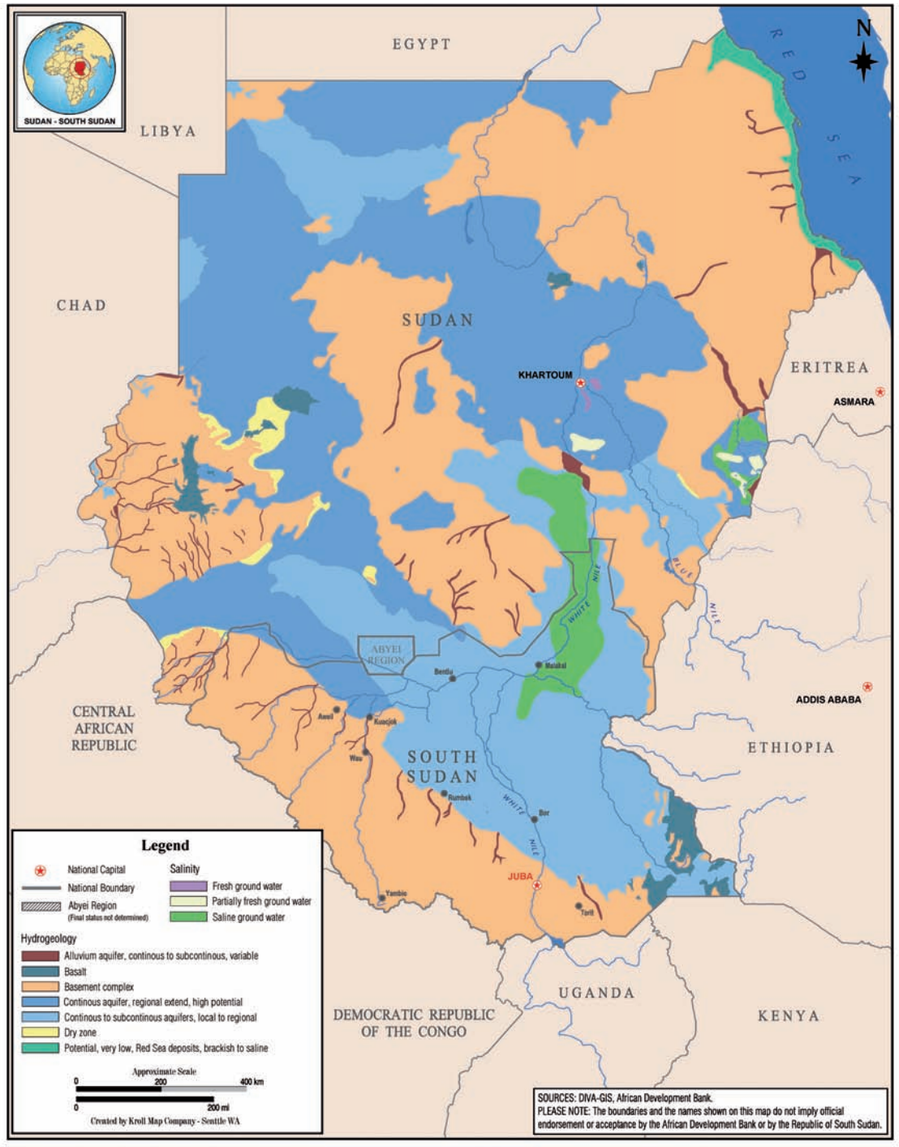
MAP 11: Major Rivers and Water Bodies in South Sudan



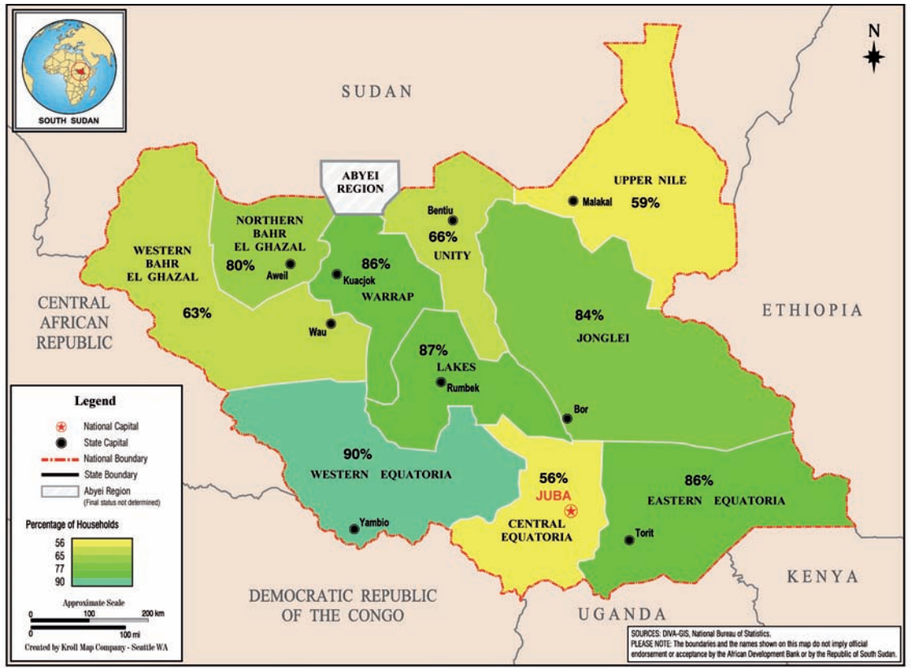
MAP 12: Location of Surface Water Resources of South Sudan



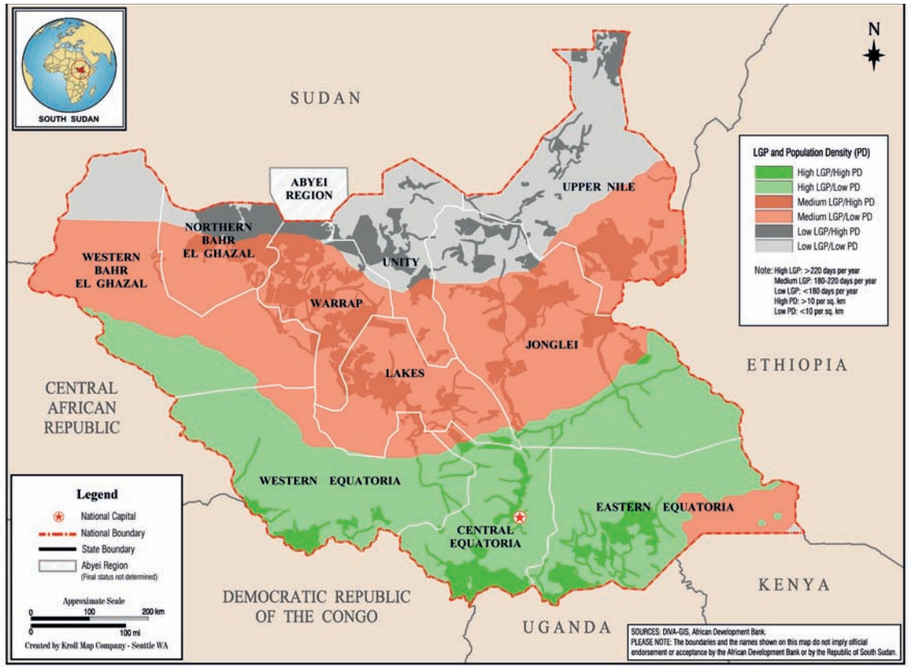
MAP 13: Hydrogeological Map of South Sudan and Sudan



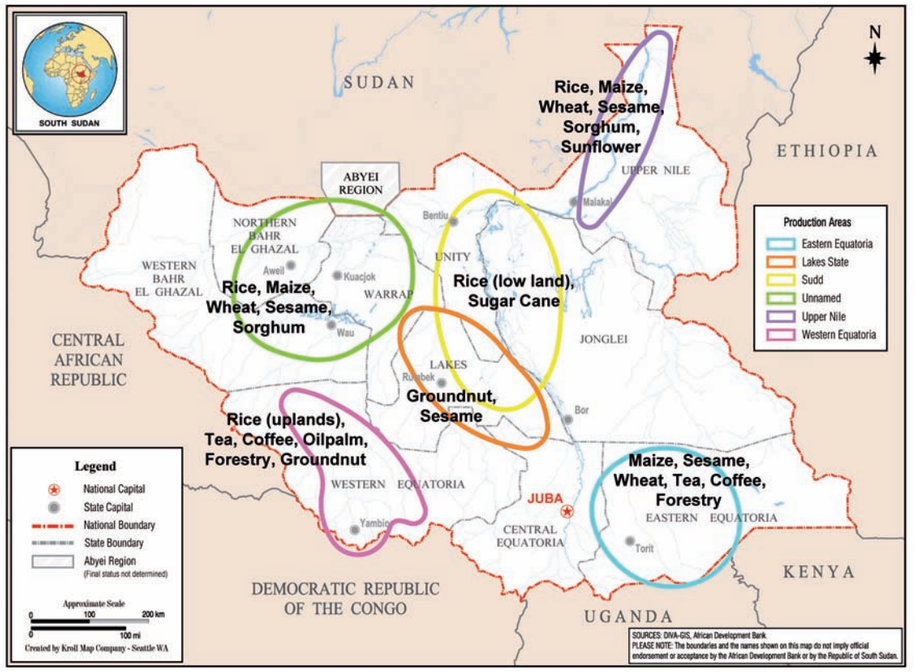
MAP 14: Share of Households Depending Primarily on Agriculture and Livestock



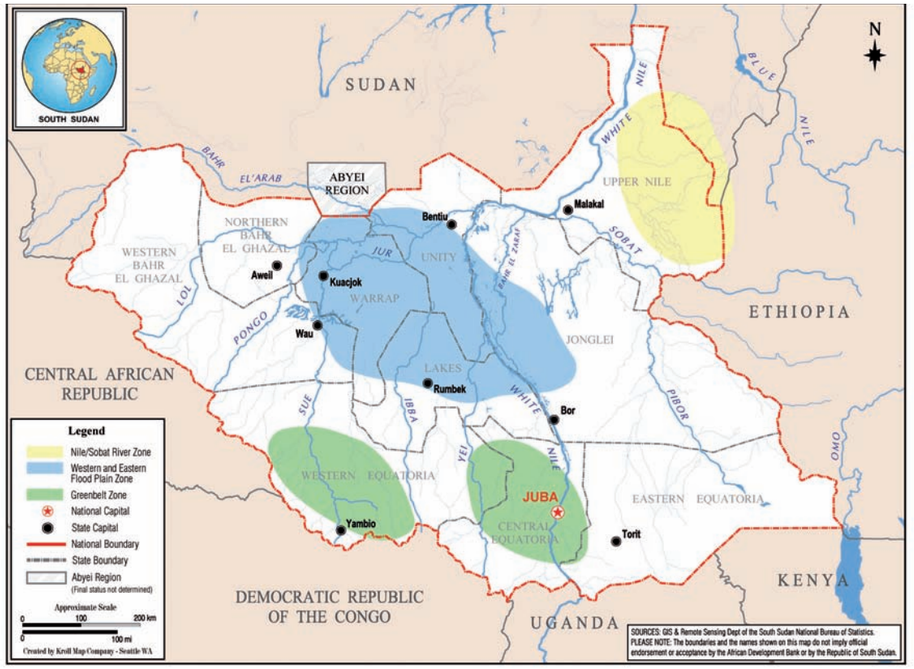
MAP 15: Spatial Patterns of Agricultural Potential and Population Density



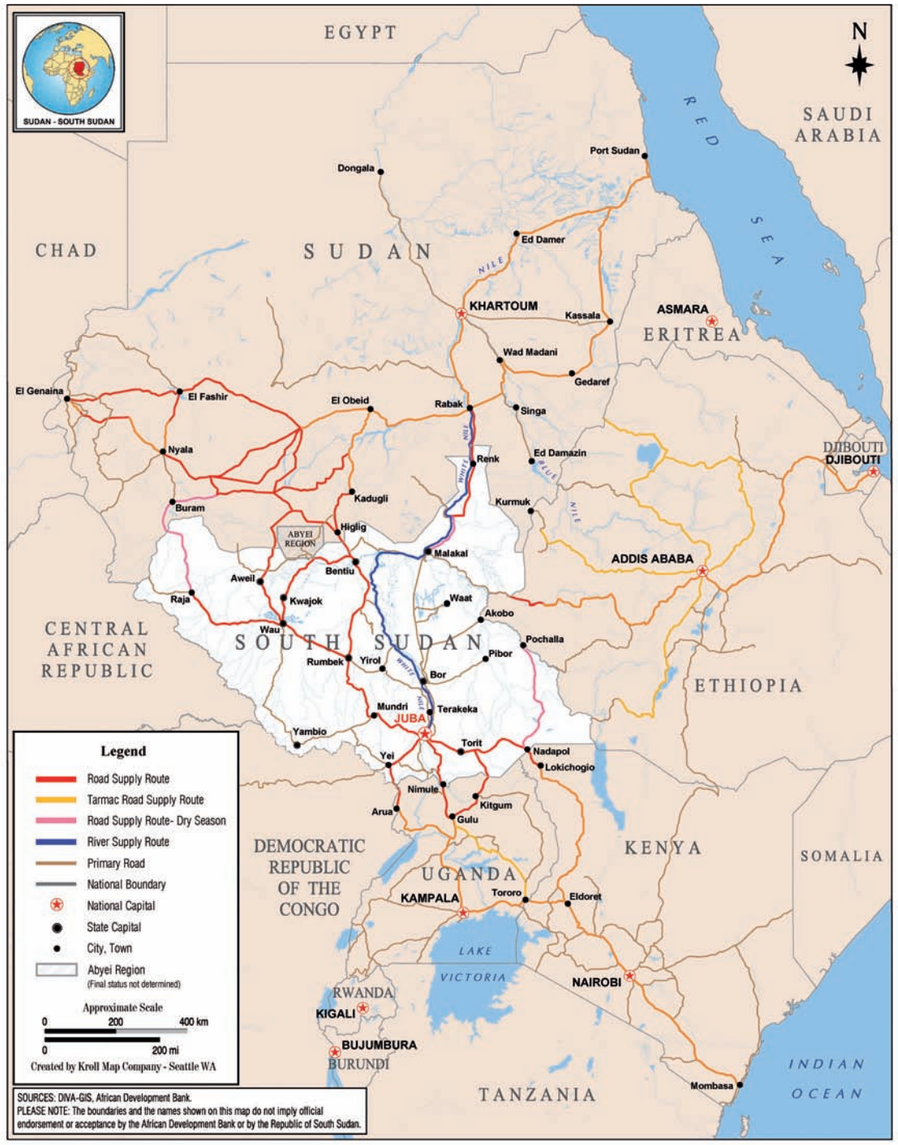
MAP 16: Locations for Potential Commercial Investment in South Sudan



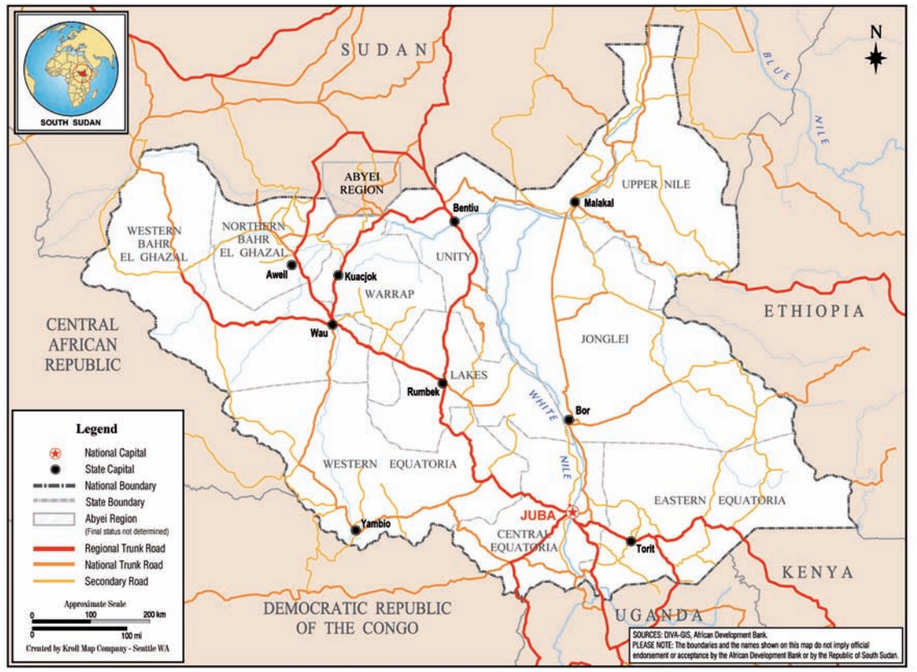
MAP 17: Location of Prospective Areas for Development of Irrigation Schemes



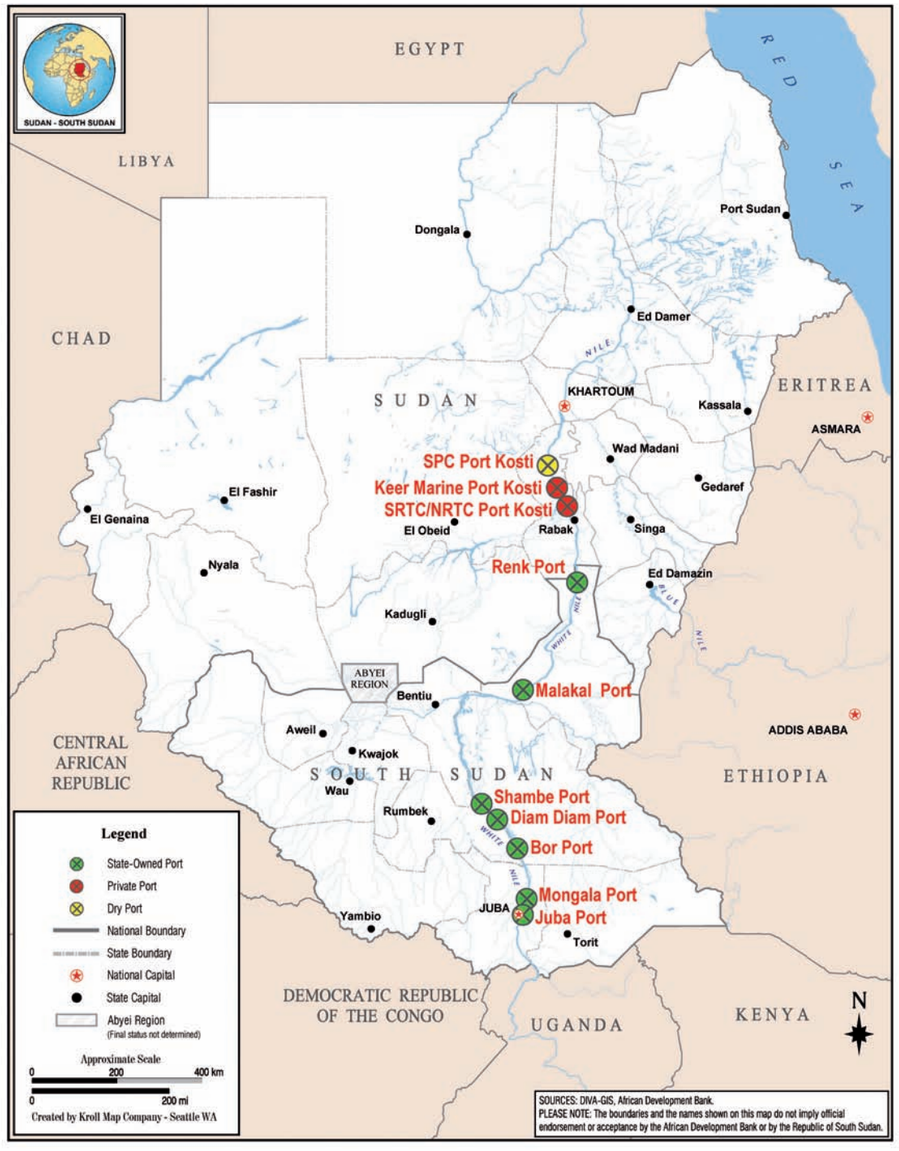
MAP 18: Regional Routes from South Sudan to Seaports



MAP 19: South Sudan Road Network

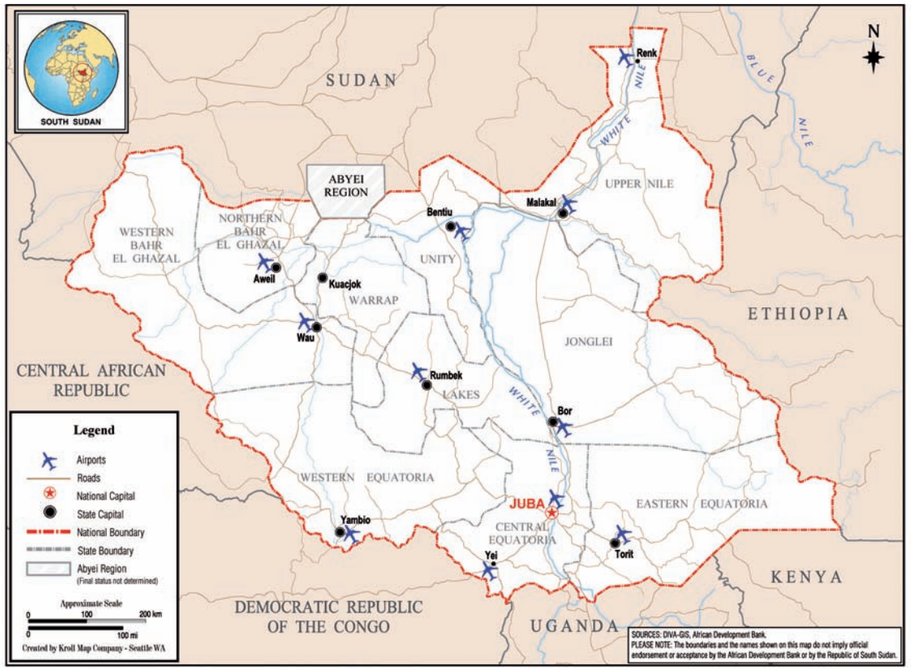


MAP 20: White Nile River – Main Ports on Kosti-Juba Corridor

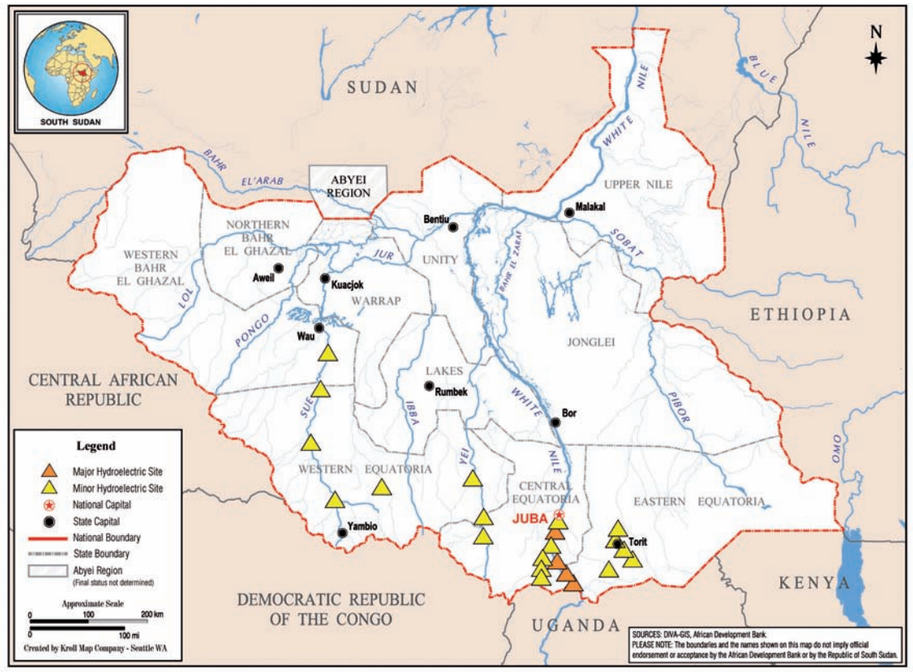


MAP 21: Railways Network in South Sudan and Sudan

MAP 22: Main Airports in South Sudan

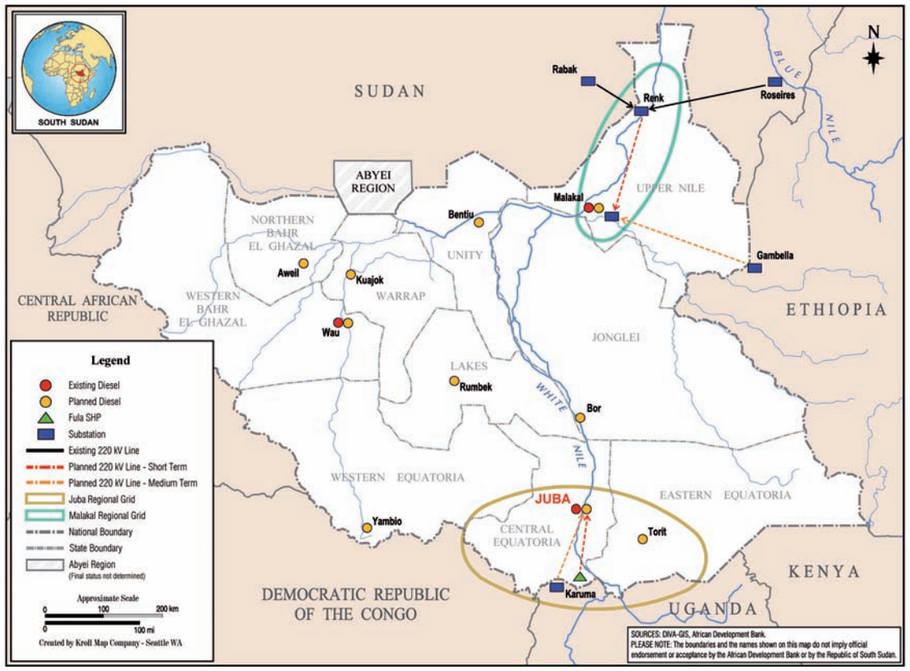


MAP 23: Location of Potential Hydropower Sites in South Sudan

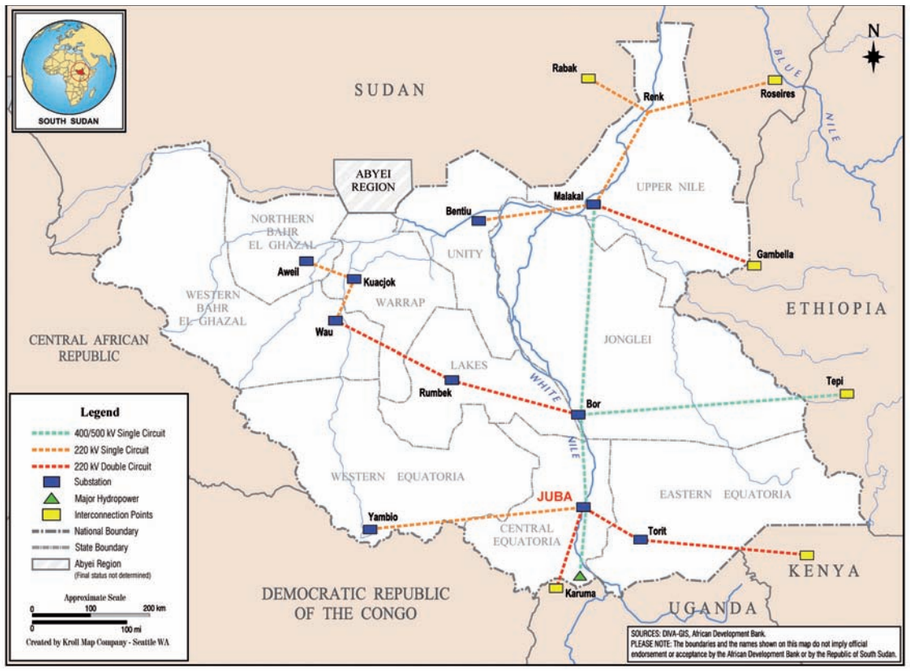


MAP 24: Existing Electric Power Transmission Grid for the Region

MAP 25: Proposed Transmission Grid for the Short- and Medium-Term

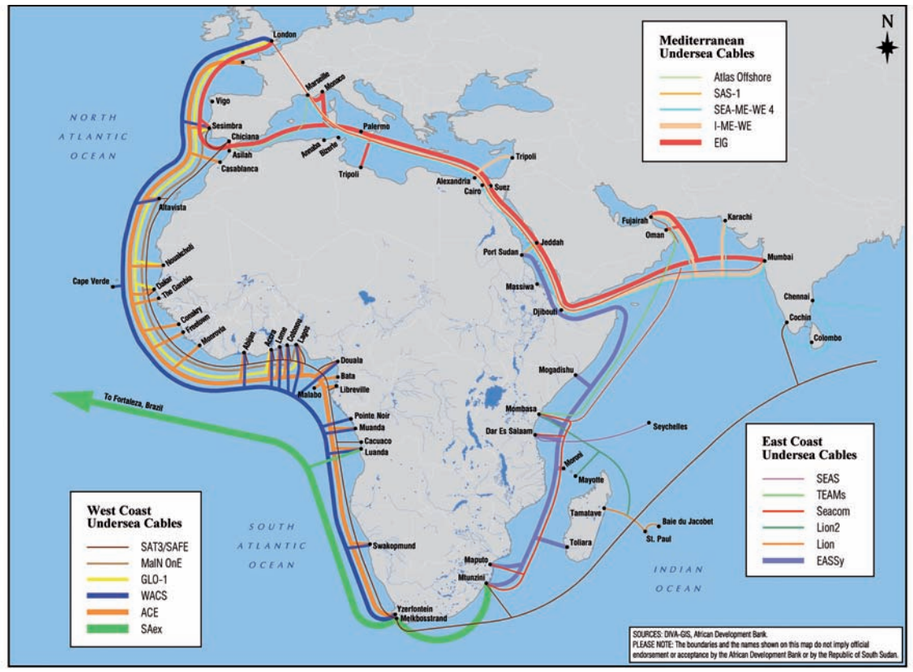


MAP 26: Indicative Transmission for South Sudan in the Longer-Term

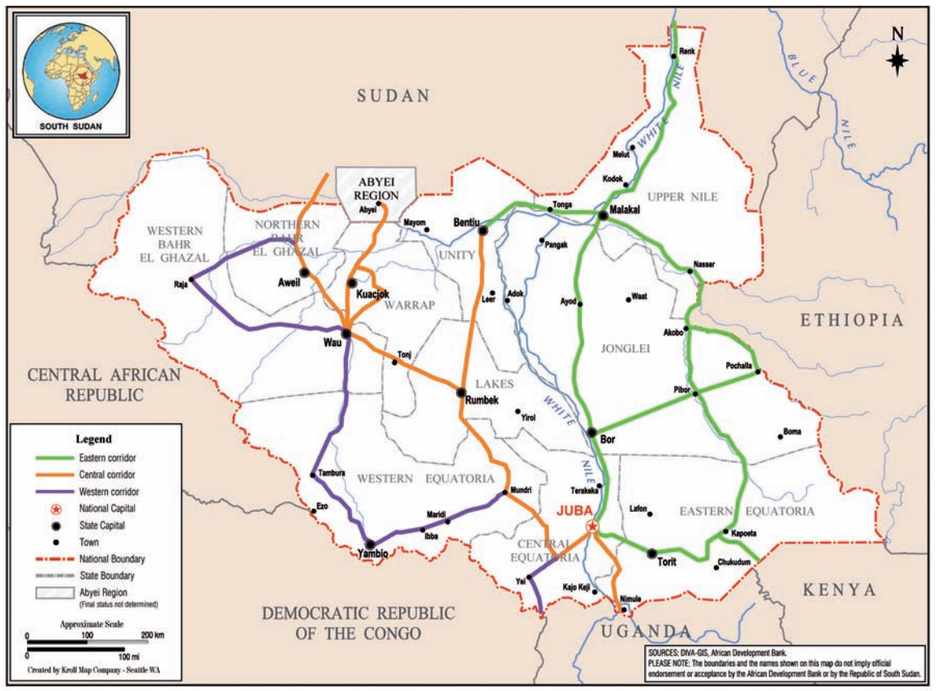


MAP 27: Existing Backbone Communications Network for South Sudan and Sudan

MAP 28: Undersia Fiber Optic Cables Along Africa's Coastline



MAP 29: Proposed Expansion of National Broadband Network



Annexes

Please see website

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