

South Sudan Infrastructure Sector Overview

1.1 Economic Opportunity and infrastructure

South Sudan became officially independent on 9 July 2011. Since then, the country has experienced stagnating economic and political progress exacerbated by a new civil war that began in late 2013. A regionally sponsored peace agreement signed in mid-2015 effectively collapsed and fighting seems likely to continue for the foreseeable future. As a consequence, hundreds of thousands have been killed, more than 30% of the population has been displaced and the country has again become the centre of a major humanitarian crisis. There is no obvious way to escape the current cycle of conflict.

Decades of war, underdevelopment and other problems that contributed to South Sudan's fragility of its institutional, economic and social structures. The country has one of the lowest social development indicators in Africa. Although the country's economy is heavily dependent on the oil sector it is endowed with abundant natural resources, including mineral, aquatic and forest reserves, plus fertile rain-fed agricultural land that is potentially irrigable. Achieving peace and stability remain key prerequisites to addressing the country's long-standing infrastructure bottlenecks - along with sustained and concerted efforts in addressing medium to long term structural, human and institutional factors, including devising appropriate financing arrangements.

The following opportunities are key to promoting inclusive growth:

- **Growth and job creation:** 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 peace and state-building, including accommodating the high expectations of the population for peace dividend through job creation and improved livelihood.
- **Inclusion and poverty reduction:** Despite gaining independence, the youngest nation in the world remains fragile and characterized by: ethnic violence, high levels of poverty and exclusion, low literacy levels, border disputes, gender inequality, limited access to basic services, poor infrastructure, and weak institutions. The population are predominantly rural and lack access to infrastructure. Conflict has blocked the path towards inclusive and sustainable growth, built on a diversified economy that would create employment and livelihoods for the poor and war-affected populations. The expectations of citizens for justice, rule of law, accountability, reconciliation, and healing have yet to be met.
- **Investment in infrastructure:** The logistics infrastructure in South Sudan is in a poor state with very little yearly maintenance undertaken. Nearly 40 years of conflict, under-development and virtually no investment has left the country with an ailing road network, limited air, water and rail transport capacity and a large infrastructure gap. South Sudan's annual infrastructure funding gap is estimated to be \$879 million per year.
- **Climate and environmental resilience:** South Sudan is investing in agricultural development projects in an attempt to diversify the economy, alleviate poverty and reduce food insecurity through promotion of inclusive agriculture led growth, linkage of communities to markets, construction of critical infrastructure and provision of policy and governance training. Agricultural production, livestock, and forest resources are expected to be impacted by higher temperatures, while both drought and flooding will also result in negative implications for these activities. Furthermore, it is likely that climate change impacts will also affect investments in transport infrastructure that facilitate trade, potentially disrupting the supply chain. The vast majority of roads and main transport corridors within the country are comprised of unpaved roads which are severely affected by perennial flooding.

1.2 Stakeholder Analysis

This section sets out in short bullet points the relative engagement of key players in infrastructure.

Public sector	<ul style="list-style-type: none"> • South Sudan spends over \$450m per year to meet its infrastructure needs - equivalent to around 7.5% of GDP. Most of the traceable spending goes to capital investment while maintenance flows seem almost non-existent.
Private sector	<ul style="list-style-type: none"> • South Sudan can build on potential inflows of financing from China and the private sector, particularly in the power sector, to close the infrastructure gap however the instability in the country may deter investors.
Donors	<ul style="list-style-type: none"> • The African Development Bank and South Sudan have a history of cooperation which started after the signing of the Comprehensive Peace Agreement (CPA) in 2005 – along with donor support throughout the interim period which focused on re-establishing regional transport links and access to neighbouring seaports plus rehabilitating its river-ports, airstrips, and rail-line. • Most donors do not want to support the current government directly because they fear funds could be diverted to military efforts, which are likely to target civilians.

2.1 Energy

Overview

- South Sudan is the least electrified country in the world, with total installed capacity: 30MW and no interconnected transmission grid.
- Electricity sector comprised of commercial centre networks: Juba, Malakal, Wau and rural mini-grids: Yei, Kapoeta and Maridi
- Industry and business relies on self-generation with diesel generators.
- Remaining population relies on firewood/biomass for energy. Renewable energy supply is not yet tapped.
- South Sudan has abundant unexploited renewable and non-renewable energy sources including oil, large hydro development, sun, wind, biomass and geo-thermal
- Challenges facing the electricity sector include limited power generation and distribution systems, and low per capita consumption of 1–3 kWh.

- The Ministry of Energy and Dams is mandated to generate, transmit and distribute electricity along with oversight and policy framework.
- Priorities include increasing generation, building transmission lines and substations, mobilising investment, regional inter-connection to the EAPP and rural electrification
- According to policy, government priorities will be achieved through effective private sector participation, public-private partnerships and public sector initiatives guided by proper master planning.

2.2 Transport

Overview

- South Sudan is a land locked country.
- Juba Port forms part of a series of fresh water ports that run the length of the country from Juba in the South to Renk in the north on the border with Sudan along the River Nile.
- All port infrastructures are extremely basic. The loading/offloading is completed using manual porters and in the rainy season trucks can have difficulty accessing the port areas due to poor road conditions.
- Port operations in general are constrained by inadequate infrastructure, cargo-handling equipment and management.
- Powerful local labour union still controls all labour at the port and determines the loading and unloading charges.
- Civil aviation falls under the authority of the Ministry of Transport which is a member of the International Civil Aviation Organization (ICAO).

Cross border trade

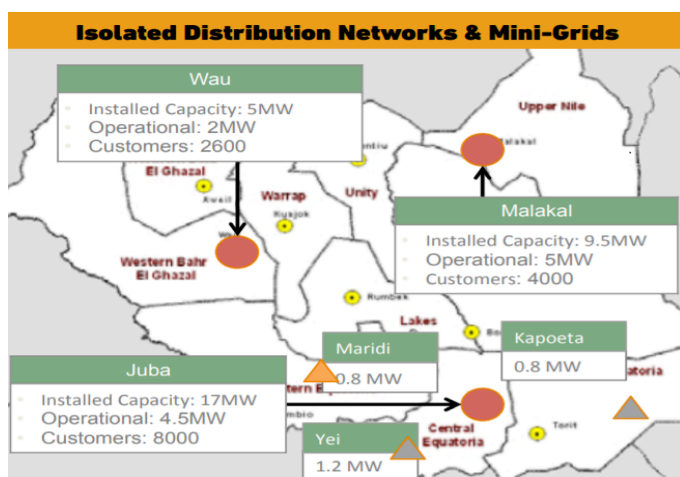
- Doing business rating: 187/190
- Barriers to trade: South Sudan is neither a member nor an observer of the WTO. It is seeking a WTO membership

Import / Export of goods

Top 5 Exports	Top Destination
Crude Petroleum	China – 100%
Oily Seeds	Algeria – 91%
Scrap Vessels	Pakistan – 100%
Scrap Iron	Uganda - 100%
Large Construction Vehicles	Uganda – 100%

Aviation

- In 2013, the South Sudan Civil Aviation Authority was established to formally oversee and regulate the country's aviation industry, airline companies, and operations.
- Juba International Airport (JIA) is currently the only airport receiving flights from international commercial airline carriers. The other major airports include Wau, Malakal and Rumbek.



Energy Access for households and business

- Only 8.9% of population have access to electricity.
- The generation cost for electricity is \$0.70/kWh whereas the current tariff is \$0.45/kWh (subsidised). This is clearly not sustainable.
- Further, insecurity and hyperinflation have made diesel scarce and created a thriving black market for imported diesel, leading to some of the highest energy costs in the region.

Energy Planning

- Growth of electricity sector suppressed by supply, not demand. Demand for electricity is expected to increase 7-8% per annum based on the economic growth rates. Per capita electricity consumption is 1-3kWh.
- Consideration of gradual tariff increase to match generation cost is underway.

Government Priorities

- The aviation industry is characterised by decades of underdevelopment, little investment in infrastructure, low capacity and a poor safety record and adherence to international standards.
- The availability of fuel, aircraft maintenance facilities and handling services remains an issue, especially in remote areas.

Rail

- South Sudan does not have an extensive rail system and current rail infrastructure, constructed between 1959-1962 is in serious disrepair.
- In 2010, the track was rehabilitated through the MDTF's US\$48.5m National Emergency Transport Project (NETREP) with the aim of increasing cargo and passenger transport capacity.
- However current rail operations have been suspended due to border closures, un-serviceable equipment, a lack of capacity and non-operational rolling stock.
- The single, 1067 mm (3'6") gauge, 446km rail connection linking Babanusa in Sudan to Wau in South Sudan forms part of a rail transport corridor to Port Sudan and creates an important transportation link into South Sudan's Northern and Western Bar El Ghazal states including the major towns of Aweil and Wau.
- Regionally, there has been a shift towards road transport due to the relatively high rail tariff costs, unreliable service and unavailability of adequate assets and general poor management.

Roads

- The vast majority of roads and main transport corridors within the country are comprised of unpaved roads which are severely affected by perennial flooding.
- The Juba to Nimule road is currently the only sealed corridor connecting the country with neighbouring Uganda.
- Little maintenance, low adherence to road rules by road users and the inability to enforce road weight limits lead to the quick deterioration of roads and bridges.

2.3 Digital Connectivity

Overview

- South Sudan has the lowest mobile phone ownership in Africa at just 12%, and there is no publically available information on network coverage
- The government is looking to deploy a fibre optic network to connect the country's capital utilising submarine connectivity.
- It is looking to Rwanda as a source of expertise in ICT resource and investment.
- The tele-communications industry is still very much in development and this is expected to lead to increased competition for the country's growing mobile consumer base.
- There are several opportunities for growth for the ICT sector including e-commerce and e-services.

mobile technologies, automation and ICT training.

Infrastructure condition and investment

- Decision makers and the public have not yet understood the importance of ICT.
- Nationally, there is very low internet penetration with services concentrated in Juba
- South Sudan does not yet have backbone networks based on optical fibre.
- Very high cost for international bandwidth/calls and access for Internet services.

Sector landscape

- Five nationwide mobile operators have established operations including Zain, MTN, Vivacell, Gemtel Ltd and SudaTel

Challenges

- Lack of ICT equipment & infrastructure.
- Very low connectivity - if not totally non-existent.
- Lack of reliable electric power supply.
- Prohibitively high costs of radio and TV broadcasts.
- TeleCo taxes increased from 20% to 30%
- Insufficient number of ICT experts.
- Institutional networks yet to be setup for most of the sectors
- Lack of awareness of ICT and related services.
- High illiteracy in ICT
- Weak sector regulation.

2.4 Water and Sanitation

Overview

- More than 30% of people in South Sudan do not have access to safe water supplies
- Only 13% have access to adequate sanitation facilities, making this one of the lowest service coverage rates in the world.
- Only 45% of South Sudan's 3,349 basic primary schools have access to safe water and 17% have adequate sanitary latrines for both girls and boys.
- Sudan remains host to 98% of the world's remaining Guinea worm cases, though case-load reduced to 1,000 in 2011 from 20,500 in 2006
- Decades of sustained conflict and the resulting neglect have turned potable water into a treasured and scarce resource and cause of local conflicts
- The few existing piped water supply systems are often not well maintained and the water they provide is often not safe to drink.
- High open defecation rates
- Limited access to water and sanitation has contributed to poor child-health with a third of children under the age of five suffering from diarrhoea.

Water use and reliance

defects during construction

2.6 Urban Infrastructure

Overview

- The urban and peri-urban areas of South Sudan have experienced unprecedented growth following the signing of the 2005 Comprehensive Peace Agreement (CPA).
- Much of this urbanisation is unregulated and ad-hoc, leading to an ongoing expansion and proliferation of informal settlements.
- After the CPA, Juba's population tripled to 750,000 in just 5 years with the town's built-up area expanding more than four times to 52km²
- In 2014, an estimated 50% of the overall urban population of South Sudan resided on un-registered land.
- Most South Sudanese don't have a regular waste disposal service.
- Over 61% practice open defecation and the few existing sanitation facilities are mostly in disrepair.

Urban Structure

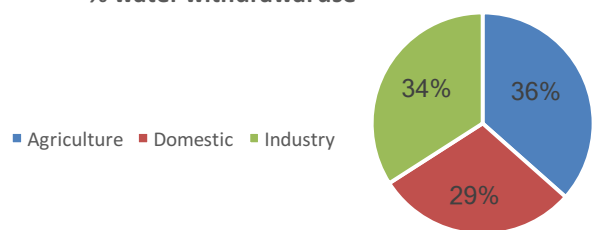
% urbanised	19.2%
# urban residents	12,919,053
Urban poverty (%)	24.4%
Urban employment (%)	
- Total	88.5%
- Youth	60%
- Female	87.2%

City size	# Cities	Tot pop.
200-300k	1	230,195
100-200k	3	338,740
25-100k	4	225,226
5-25k	6	89,948

Urban infrastructure overview

Energy	<ul style="list-style-type: none"> • % of urban population with access to electricity • Power outages in firms in a typical month (number) 	22% 1.5
Water	<ul style="list-style-type: none"> • % access to improved water • % access to improved all piped water 	7% 12%
Sewerage	<ul style="list-style-type: none"> • % access to improved sanitation 	16.4%
Solid waste	<ul style="list-style-type: none"> • Waste is collected in high-income areas of Juba for a fee – leaving majority of residents with no coverage. • This results in high incidence of illegal dumping and burning of waste. 	

% water withdrawal use



Transboundary dependencies

- Surface water and groundwater resources are mostly shared with neighbouring countries.
- The Nile river, which is shared between 11 countries, is the primary source of South Sudan's water.
- However, more than half of its water resources evaporate before reaching the border with Sudan.
- South Sudan is still to decide upon the Cooperative Framework Agreement signature, especially because its water contribution to the Nile is considerable and the country is not presently bound by the 1959 Nile Waters Agreement.

Agricultural water use

- Primary crops; rice, fruit trees and tree plantations
- 65% of population deriving livelihoods from agriculture.
- 83% of the population rural and 80% rural poor.

2.5 Construction

Overview

- Due to South Sudan's fragility, construction appears to be focused around construction of informal urban settlements (without servicing infrastructure), and road construction to increase connectivity primarily led by donors, central government and less risk averse investors such as China and Eritrea
- There is no apparently available data on construction-based employment, GDP contribution, inclusion or safety issues
- UNWFP have undertaken labour-intensive roads constructions programmes in order to create employment for local communities. Programmes included training of South Sudanese engineers and employees of partner ministries
- At the start of 2018 the government announced that the army will now begin road construction to cut costs
- Gaining a construction permit is slow and expensive (takes 12 days, 23 procedures and costs 15% of building value)
- Building laws and regulations are not easily accessible
- Qualified professionals are required to verify construction drawings, but onsite building inspections do not always happen in practice
- Parties are not held liable under law for structural

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| | <ul style="list-style-type: none">• Waste is transported to large dump-site outside of Juba which JICA has invested in for upgrade.• Cholera and other waterborne diseases are common in Juba with major cholera outbreaks in 2006, 2007, 2008 and 2014 and the latest in 2015, with 1,597 cases including 45 deaths. |
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