

Ghana Infrastructure Sector Overview

1.1 Economic Opportunity and infrastructure

Ghana's biggest challenge is how to balance the development of more productive urban centres, with ensuring improved access markets, basic sanitation, energy and agro-processing facilities to help empower the 50% of rural dwellers living in poverty. Investment in irrigation, and road infrastructure and facilities required along the value chain such as for inputs or storage and packaging are required. Ghana's infrastructure gap is estimated at \$40 billion, or between \$3.9 billion and \$5.5 billion each year until 2026. Infrastructure deficits are constraining growth in key sectors.

The following opportunities are key to promoting inclusive growth;

- **Growth and job creation:** Ghana's growing oil and gas and mining sectors, investments in infrastructure, development of central business districts, and growing middle income housing developments continue to place demand on the country's construction sector. The manufacturing sector has been depressed for a long time but is poised for new growth. However, the rising prices of both electricity and building materials pose long- and short-term challenges. The Ghana Statistical Service, recognises construction as the largest subsector of industry in 2015, with a growth rate of 30.6% and a 14.8% share of GDP. It has grown consistently over the past five years, up more than 70% since 2010 and employing around 320,000 people.
- **Inclusion and poverty reduction:** Policies in this thematic area seek to expand existing social and economic production infrastructure to ensure that services provided are reliable, affordable and efficient. The medium term policies on infrastructure and human settlement development focus on the following key areas: Education (free education for all up to secondary level), Transportation (including road, rail, air, maritime and inland transport); Science, Technology and Innovation to Support Productivity and Development; ICT; Energy, Water and Sanitation; Urban policy implementation
- **Investment in infrastructure:** Ghana has secured significant investments from bi-lateral partners, donors and the private sector. This includes \$19bn of support from China into construction of a 1400km railway network and aluminium processing plants, and significant investment from Russia for construction of the Accra-Paga railway on a BoT basis, and \$100m from JAICA for construction of the Dofor-Adidome Volta bridge (aimed at boosting connectivity to Ghana's Tema port). In addition, Ghana has signed a number of power IPPs in order to meet growing demand, but high tariffs threaten Ghana's export agenda.
- **Climate and environmental resilience:** The electricity supply is currently vulnerable to climate change, with 67% of electricity generation from hydropower. Salt water intrusion along coastal communities without centralised water systems deprives these communities of potable water for domestic and industrial uses. Potable water and forests in the south western area have been severely contaminated by illegal mining. Meanwhile urban communities suffer from seasonal flooding and congestion-related air pollution.

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

Public sector	<ul style="list-style-type: none"> • Presidnet Akufo-Addo has pledged to provide one dam every village • Ghana Infrastructure Investment Fund (GIIF) is an independent fund set up by the Government of Ghana to mobilise, manage, coordinate and provide financial resources for investment in a diversified portfolio of infrastructure projects in Ghana. • Estimated that 24% of resource is lost from corruption in road building • Approximately one-third of projects that start are never finished, consuming nearly 20% of local government capital expenditure, though policies are now in place to prevent this..
Private sector	<ul style="list-style-type: none"> • The Government has introduced the One District One Factory programme to encourage privately financed local value addition initiatives, receiving substantial support • Ghana's Free Zones Board has a small, near fully occupied zone near Tema and is now developing further zones at Sekondi-Takoradi (2000ha), Boankra (1000ha) and Tamale. • Since adoption of the PPP policy in 2011, the MoF has registered 93 projects under PPP out of which 24 have received interim approvals, and 13 are in progress. • MoF is using the Ghana PPP programme to attract public and private sector resources • PPP bill being introduced - seeks to establish a legal framework for the development, implementation and regulation of PPP arrangements. • Current PPP procurement: the construction of the Eastern Railway Line will include financing, development and operation of a 330km line and will include the provision of rolling stock, station upgrades, signalling and communication equipment.
Donors	<ul style="list-style-type: none"> • The World Bank Ghana portfolio comprises \$2.140 billion in 24 projects, with a disbursed amount that has been increasing since FY09. In FY2015, \$323 million was disbursed, and as of March 2016, \$342 million had been disbursed. • Ghana's regional projects reflect the country's role as a West African hub, with four projects of nearly \$382 million in transport, energy, education, trade and agriculture.

1. Sectoral analysis

2.1 Energy

Constraint to growth

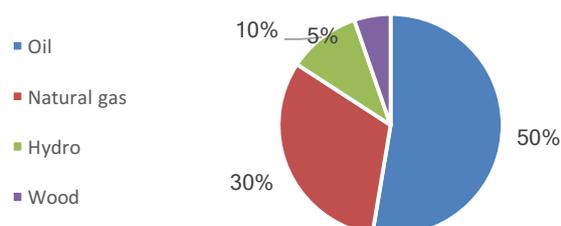
- **Unreliable power supply and poor rural energy access** causes 3.5% reduction in GDP, and lost 2% of GDP due to power crisis in 2014¹
- Power availability rarely matches demand.
- Though current demand of 3,800MW is matched by >4,000MW installed capacity, availability rarely exceeds 2,400 MW due to changing hydrological conditions, inadequate fuel supplies and dilapidated infrastructure
- Connection in rural areas remains low (50%, vs 91% of households in urban areas)
- 57% of businesses cite energy as constraint

Generation

- Ghana has abundant supplies of fossil fuels (Oil 5-7 billion barrels and Gas 1.5-1.7 tr cubic feet) used to generate 2,600MW or 60% of power
- Hydro generates 40% of power (1,600MW)
- Dependence on Akosombo Dam has been problematic, due to insufficient water levels
- Policy to extend electricity to all communities by 2020 (one dam per village)
- 60% increase in thermal generation from natural gas between 2016-17, via unreliable West African Gas Pipeline
- Significant \$550m planned Chinese investment to resurrect Tema LNG import terminal would significantly reduce reliance on foreign reserves

Sustainability

- Fiscal sustainability of power sector is poor
- Energy costs account for 5% household costs
- Tariff increased between 2012-2016 (\$0.12 to \$0.17/KWh), but remain remain below \$0.20 cost of generation
- Perceived 'high' tariffs and poor reliability promoted increase in captive generation (equivalent to 500MW thermal plant), further endangering sector sustainability
- Tariffs are currently falling, further pressuring sector sustainability
- Ghana continues to diversify supply, with \$400m 155-MW solar project at Nzema



2.2 Transport

Barriers and opportunities to trade

- Lacks multi-modal transport linkages with neighbours – despite being potentially attractive export route for landlocked neighbours
- Significant focus on improving road linkages - 45% primary network in good condition
- Recently attracted investment into railways from both China and Russia
- Significant capacity constraints at ports – but \$1.6bn is being invested in a new 3.5m TEU-capacity deep-water port and logistics centre in Tema
- The ECOWAS Trade Liberalisation Scheme (ETLS) allows for Free Trade in the region
- Ghana maintains a positive trade balance (+\$760m) with ECOWAS, however poor sub-regional integration hinders Ghana's ability to make the most out of the ETLS
- Av time to clear customs is 8 days
- Doing business rating 120/190
- The Ghanaian tax system is replete with tax concessions that considerably reduce the effective tax rate.

Import / Export of goods

Top 5 Exports	% GDP	Top Destination
Gold	21.98	Switzerland - 44%
Cocoa beans	5.16	Netherlands - 23%
Crude Petroleum	2.78	China - 68%
Nuts	1.45	Vietnam - 86%
Cocoa Paste	0.93	Netherlands - 25%

2.3 Digital connectivity

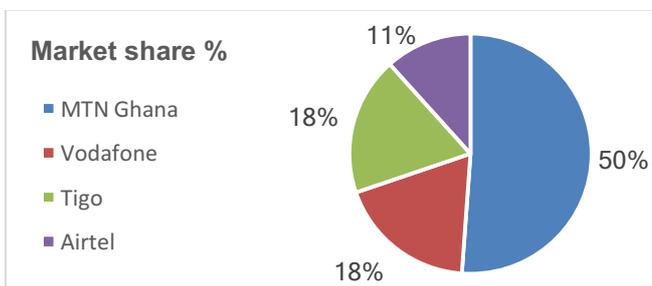
Access

- Good network coverage (85% 3G+)
- Coverage will improve with planned investments
- 35% of individuals use the internet
- Mobile subscription 127 per 100 people, indicating that mobile penetration is high, and that individuals subscribe to multiple networks
- Whilst mobile data is more competitively priced than in some African countries, businesses complain about cost and poor reliability of high volume internet services
- Cost of entry level handset 93/170. Entry usage data 86/170, internet speed 37bps

Non-technical barriers

- Low computer literacy and PC penetration, and low female literacy (65%) limit adoption
- Well-structured regulatory environment has supported 3G+ rollout and major investments

- Planned \$100m Broadband investment: CSquared (Google, Convergence Partners, Mitsui and International Finance Corporation)
- Whilst MTN Ghana has 50% market share, presence of Vodafone, Tigo and Airtel ensure reasonable price competition



Digital usage

- Uptake of digital services is strong and growing:
- 40% social media penetration, 17% use mobile money and 5% mobile banking.
- Reasonable range of e-governance services and apps available in local language
- Internet usage dominated by messaging (Whatsapp, messenger) and Opera news

2.4 Water and Sanitation

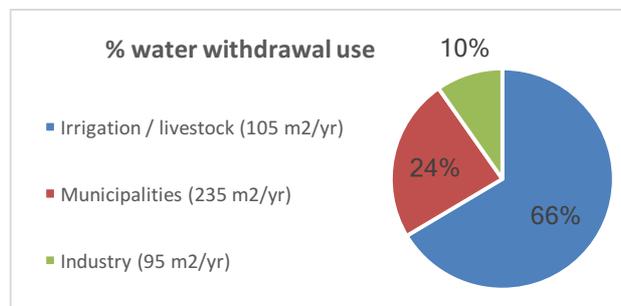
Water access and availability

- Improved water resource access low compared to peers: 44% Urban, 7% Rural
- Current freshwater withdrawal rates sustainable (1.8%), but heavily dependant on water received from neighbouring countries (43%)
- Volta River Basin is shared by Benin, Burkina Faso, Côte d'Ivoire, Ghana, Mali and Togo, managed by transboundary Volta Basin Authority
- Climate-related precipitation impacting hydro-power reliability (40% of generation)
- Drought prone regions: Upper East, Upper West, Ashanti, Brong-Ahafo and Northern Region
- Regions experiencing periodic flooding: Greater Accra, Central, Western and Eastern Regions

WASH Service issues and opportunities

- Water provided by the Ghana Water Company is rationed due to inadequate supply
- Water tariffs kept artificially low by politicians
- Tariffs insufficient for cost recovery, with GoG financing 41.49% of cost through budgetary allocations and 48.98% via loans and grants
- Infrastructure poorly maintained, resulting 19k premature deaths pa, and 1.5% GDP drag, largely due to poor sanitation and hygiene.
- GoG significantly underinvests in WASH, with WaterAid estimating that only 40% of budget allocations are assigned to ops and maintenance
- There is a weak culture of paying water tariffs in most rural communities further exacerbating cost recovery and sector funding issues

Water use and reliance



Agricultural water use

- 66% of water withdrawal is for agricultural use, despite high proportion of rain-fed agriculture
- Agriculture generates 54% GDP. Primary crops: Cocoa beans, coconuts, brazil nuts & cashews.
- 40.65% pop deriving livelihoods from agriculture, and 39% rural residents live in poverty

Infrastructure condition and investment

2.5 Urban Infrastructure

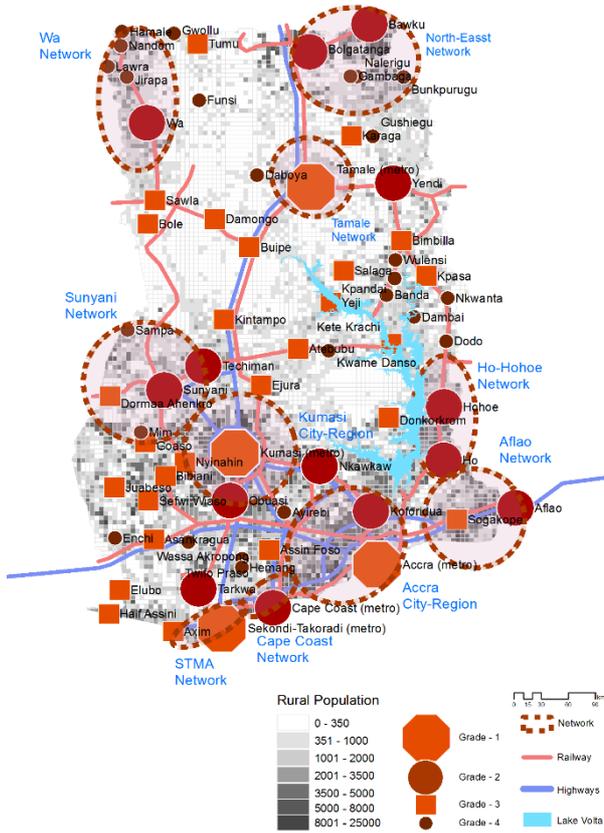
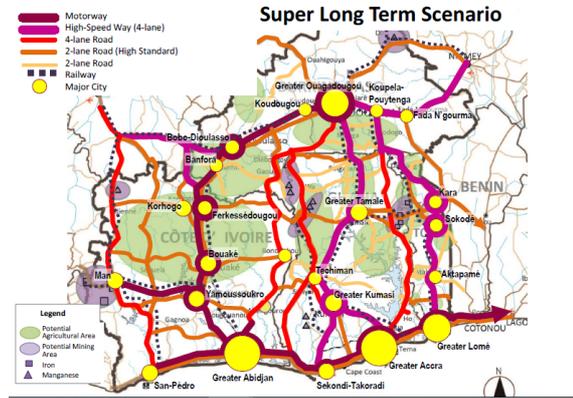
- Ghana is highly urbanised (55.32%) but highly informal (World Bank estimates 90% of housing in cities is built without local authority control)
- 88% of urbanites work in the informal sector
- 15% of the nation (4m people) live in Ghana's two largest cities, with another 13% resident in towns of 20-500k
- Formal employment is low (28%)
- Household energy access is good (87%), but power is unreliable (116 days/year)
- Power reliability severely constraints businesses, with 30% owning a generator
- 89% of urban residents have access to improved water, but poor maintenance results in disease and death and only 320,000 households (of 16m urban residents) are connected to mains
- Poor SWM (40% coverage and only 2% waste recovery) and dumping in drains and rivers causes localised flooding during rainy season, with the most recent flooding costing \$105m
- Urban residents experience significant commute times of 1hr+, spend 19% of household income on transport, 75% of residents use mini-buses and 12% private cars. Congestion is common and air pollution cause 17k+ deaths per year
- Only 20% of households have a toilet, and only 24k (of 5m+) households have sewer connection

City size	# Cities	% Nat pop.	Tot pop.
Over 1m	2	14.53	4,105,527
500k-1m	0	0	0
100-500k	10	6.74	1,900,163
50-100k	16	3.59	1,014,689
20-50k	34	3.42	966,743

Donor engagement in cities:

- World Bank:
- Transport Sector Improvement Project - \$150m
 - Ghana Social Opportunities Project - \$50m

GH-GAMA Sanitation and Water Project - \$150m



Ongoing x-HMG Engagement

Dpt / Org	Initiative	£ value
DFID	Water, Sanitation and Hygiene Results Programme	£72.8m
	Africa Clean Energy Programme (ACE)	£28.3m
	SHARE - Sanitation and Hygiene Research Programme	£16m
	Urban Sanitation Policy Programme	£13.5m
	Research on Growth and Urbanisation in Low Income Countries	£5.8m
BEIS	Renewable Energy Performance Platform	£48m
AfDB	424MW Early Power Project Ghana	\$1bn

