

Mozambique Infrastructure Sector Overview

1.1 Economic Opportunity and infrastructure

Mozambique's biggest economic challenge is *being able to generate a period of sustained growth and raise revenue to support the various national plans in public investment and infrastructure development*

The following opportunities are key to promoting inclusive growth:

- **Growth and job creation:** Agriculture is the mainstay of Mozambique's economy contributing ¼ of GDP and employing 80% of its workforce, but is vulnerable to climate trends and is limited by poor market access (roads). Natural gas and mineral exploitation are significant growth areas, and railway and port infrastructure has been upgraded or has sufficient existing capacity to accommodate growth. Urbanisation has been steady, with cities home to only 30% of population but accounting for 50% of GDP. Well-managed urbanisation could support broad-based economic development and inclusive growth.
- **Inclusion and poverty reduction:** Poverty is higher in rural areas and geographically concentrated in some provinces. There is limited connectivity and commercialisation (8 in 10 farmers are disconnected from reliable all-weather road networks and do not sell part of their production). The majority of the rural population is disconnected from the growth process and there is low accessibility to and participation in markets.
- **Investment in infrastructure:** The most recent reliable estimate of Mozambique's infrastructure funding gap (2011) suggests the country has an annual shortfall of \$822 million per year, with 60% of this in the power sector. However the picture is complicated due to the hidden loans revealed in 2016. Mozambique has benefited from ODA in power and transport sectors, and non-OECD finance in transport, water and sanitation, and ICT sectors. Mozambique has been spending a share of public expenditure on infrastructure that is comparable to its peers in Africa (Figure 3.7), but on a per capita basis this remains very low and inadequate for the country's significant infrastructure development needs.
- **Climate and environmental resilience:** Mozambique's poor infrastructure (only 6% of highways are paved) limits people's mobility in case of extreme events. Central Mozambique is projected to experience recurrent agricultural losses as a result of droughts, floods, and uncontrolled bush fires. The densely populated coastal lowlands will be increasingly affected by severe erosion, saltwater intrusion, loss of vital infrastructure and the spread of diseases. Donor support, such as the World Bank's flood risk reduction programmes will be critical for Mozambique's adaptation.
- **DFID Comparative Advantage:** Both PIDG and CDC have invested successfully in Mozambique. PIDG has also played a significant role in supporting IPP reforms, restructuring the CFM and improving the investment enabling environment more generally.

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"> • After years of expenditure expansion that pushed debt to unsustainable levels, the government defaulted on its sovereign bond in January 2017. Debt levels remain unsustainably high; external debt fell from 103.7% of GDP at the end of 2016 to 85.2% by the end of 2017. • Parastatals such as EDM and CFM are key players in public sector infrastructure delivery • Prolonged high levels of public investment are likely to put pressure on the government's debt sustainability. For example, Mozambique is currently allocating less than 20 percent of what would be required to maintain its road network—the highest gap in financing of all countries in Africa.
Private sector	<ul style="list-style-type: none"> • FDI has dropped sharply from more than \$6.5 billion in 2013 to \$2.3 billion in 2017. This drop was compounded by the 2016 governance crisis, which reduced external financing and donor support. • Total investment committed to PPPs since 1990 in Mozambique is \$2,743 million - mainly in Energy and Infrastructure. • The private sector is strangled by high credit rates (on average 35% for a one-year commercial loan) and depressed private consumption.
Donors	<ul style="list-style-type: none"> • The World Bank portfolio in Mozambique is composed of 19 projects, with a net commitment of \$1.8 billion for urban water supply, water services, energy reliability and feeder roads, • The IFC's approach is to focus on strategic industries, namely, agribusiness, forestry, mining, energy, industry and financial services, and its interventions seek to address cross-cutting issues. • MCC plays a crucial role in road transportation, water and sanitation... • AfDB and the AFD fund invests across all sectors including electricity transmission, climate resilience, irrigation, transport corridor development and dam rehabilitation

1. Sectoral analysis

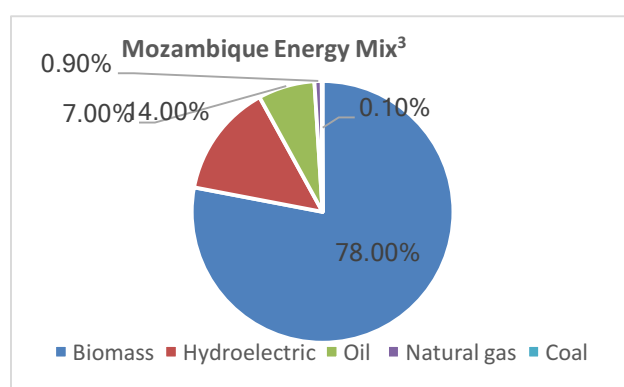
2.1 Energy

Barriers and opportunities

- Mozambique has the largest power generation potential of all southern African countries
- It would benefit from increased investment in new generation and distribution technologies.
- Significant opportunities exist for increased gas-turbine based generation, renewable energy IPPs, and off-grid energy solutions for large off-takers such as mining project.
- Opportunities to improve transmission and distribution including smart metering¹⁰.
- By 2020 Mozambique will have a generation capacity of 17.4 TWh but consume 19.6 TWh
- Whilst its connection to the Southern African Power Pool enables it to access sufficient power poor distribution hampers access

Access to power

- There are significant challenges however in access to power, particularly for households (39% access) and in rural areas due to limited investment in power management solutions at EDM level and in distribution
- Affordability is a significant issue. Though tariffs are highly subsidised they remain unaffordable, and unconnected rural households spend significant income on fuel wood and kerosene
- It is common for industry and business to rely on backup generators for long periods due to intermittent power supply
- **Institutional challenges:** The underdeveloped power grid and bureaucratic challenges make the development of power projects complicated and lengthy.



Current Generation Capacity¹: Total installed capacity: 2.556 million kW (Fossil fuels: 14%, Hydroelectric plants: 85.6%, Other renewables: 0.5%)

Energy Planning

- Electricidade de Mozambique (EDM) is sole utility. selling power at a loss, despite two tariff increases in the last two years, but plans to

- EDM's low capacity and weak financial position make development of power projects challenging, and a combination of DFI financing, and MoF backing for Power Purchase Agreements have been critical in recent IPP's, the first of which came online in 2015
- Gov-M's Energy Strategy states energy diversification, joint planning of energy initiatives, improved sustainable access to electricity and liquid fuels, tariff sustainability and improved co-ordination as priorities
- Energy plans: Mozambique recently commissioned several gas thermal plants; gas-based generation is expected to increase by 18.1% per year through 2025.

Major investments planned

- Construction of onshore LNG plants by two consortia led by Anadarko and ExxonMobil (\$25-30 billion and over \$20 billion, respectively)
- \$2.1Bn CESUL Backbone transmission project: Double transmission line (Central-Southern Mozambique-South Africa)
- 1,500MW Mphanda Nkuwa Dam, Zambezi River is dependent on completion of CESUL
- \$150m World Bank grant to help utility EDM improve operational capacity
- Feasibility studies for Moz-Zambia 400KV Power Interconnector ongoing (AfDB)
- ADF is dam rehabilitation and electricity transmission projects

2.2 Transport

Barriers and opportunities

- Several important region transport corridors link the landlocked Southern African to Mozambique's seaports in Mozambique.
- However, network is fragments and there's very limited north-central-south transport connectivity apart from one national road.
- Varied port efficiency: Maputo, competing with Durban. Nacala, improving, one of best African deep-water ports. Beira, very inefficient
- National airline, Linhas Aéreas de Mozambique, held a monopoly on domestic flights until 2017.
- Opportunities for investment in;
 - Efficiency-improvement projects for seaports (esp Beira, Nacala, Pemba)
 - Dry-ports / inland container terminals
 - Roads improvements along the transport corridors (through PPPs)
 - Infrastructure services to optimise transport infrastructure (e.g. traffic management systems; passenger services etc.)

- All transport projects requiring a sovereign guarantee are on hold due to the current debt crisis. (Though some financiers, including DFIs, can still finance through limited recourse finance without a sovereign guarantees.]
- PPP legislation and capacity weak – lack of political will by CFM and national road agency to engage in PPPs
- The far northern ports of Pemba and Palma require significant upgrades to facilitate planned gas projects.
- Serious governance issues at CFM and national road agency
- The road network is poor and fragmented.
- Strong trade agreements: Trade agreements: GSTP; SADC; EU – SADC; Malawi and Tripartite Free Trade Agreement (COMESA-SADC AND EAC).

Import / Export of goods

Top 5 Exports	% GDP	Top Destination
Raw Aluminium	7.28	Italy – 38%
Coal Briquettes	4.6	India – 40%
Raw Tobacco	2.53	Turkey – 17%
Rough Wood	2.36	China – 99.8%
Electricity	2.28	South Africa – 89%

Trade and transport corridors

- 3 main trade corridors: Maputo Corridor (south, linked with South Africa and eSwatini); Beira Corridor (centre, linked with Zimbabwe); NDS Nacala Corridor (Malawi and Zambia).
- National corridors: Beira (Tete-Beira), and Zambezi corridors (Licinga-Ncala)
- Extensive transport network;
 - 4,787km railways (primarily east-west)
 - 31m083 km roads, >30% is paved¹. One major road, the EN1, running north-south.
 - 3 major ports: Beira, Maputo, and Nacala.
 - Smaller ports: Quelimani, Ihnamani, Pemba, Las Palmas

Cross border trade

- Doing business rating: 138/190
- Average time through customs: 10.1 hours
- Does not apply import quotas; however, the time consuming and bureaucratic customs clearance procedures are often considered a non-tariff barrier.
- Mozambique’s cost and time to export/import are well under Sub-Saharan Africa averages.
- New policy aims to provide more integrated services with one-stop border posts and digital migration management at 100 border posts

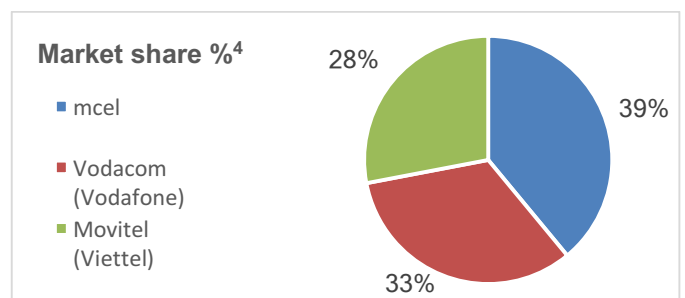
Major investments planned

- In May 2018, the World Bank approved \$150m IDA grant for Government of Mozambique’s Integrated Feeder Road Development Project.
- EU E750m transport infrastructure programme
- Maputo Port Development Company \$750m to boost handling capacity to 48m tons/pa
- Vale and Mitsui are investing \$2.7bn in the Nacala logistics corridor
- ADF is funding road and transport corridor development programmes

2.3 Digital connectivity

Barriers and opportunities

- Growth has been strong in recent years, as the telecoms sector grew by 11% in 2016⁹.
- Phone contracts cost 6-12% of per capita GNI making then relatively affordable, however handset costs are high and the average mobile user spends \$187/pa
- Fixed broadband is unaffordable for most households, costing 26% of per capita GNI, and 26m people remain offline
- But according to ICASA Mozambique has the cheapest mobile internet access in SADC
- However Mozambique has fairly poor network coverage (2G 69%, 3G 50% 4G 21%), and only 66/100 people have a mobile phone (Inclusive Internet Index)
- This puts digital connectivity out of reach for rural residents and the urban poor
- % of adults with mobile money accounts rose from 1-40% from 2012-2016
- Mozambique’s Communications Regulatory Authority (INCM) regulates telecommunications.
- Mozambique’s National Communications Institute (INCM) has opened applications for its auction of 4G wireless spectrum. In Oct 2018, if all frequencies are sold the auction will raise at least \$390m.
- Huge opportunities for investment in ICT along the transport corridors



2.4 Water and Sanitation

Barriers and opportunities

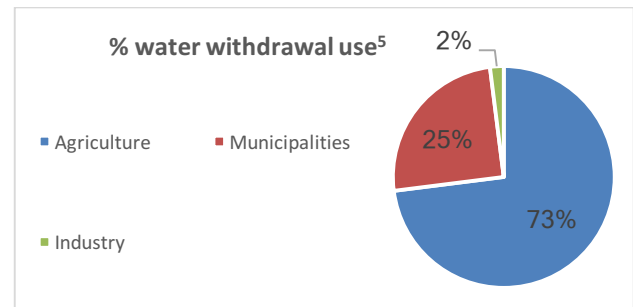
- Mozambique has low levels of improved water resource access (58% WB 2018), with significant urban (94%)-rural (46%) disparity
- Improvements in access have stagnated
- Improved sanitation is lower than most African countries (28% Nat, 59% Urb 14% Rur)
- Mozambique is dependent on river discharge from Swaziland and South Africa
- Mozambique is one of Africa's most climate-vulnerable countries.
- With 73% of residents deriving livelihoods from agriculture, and primary crops contributing 25% of GDP, its population and economy are highly exposed to climate risk

Climate Vulnerability

- Precipitation is predicted to fall by 2 to 9%
- Drought, flooding and tropical cyclones are expected to become more frequent, intense and unpredictable.
- Droughts are already common in the south, and tend to manifest themselves slowly, lasting up to three to four years
- Mozambique ratified the SADC Shared Water Course System Protocol in 1995.
- Rivers in south are heavily dependent on water resources from upstream countries. Increasing water demand in upstream countries poses a challenge for future supply.
- The Zambezi basin accounts for 50% of surface water resources and 80% of its hydropower potential (Cahora Bassa dam).

Agricultural water usage

- 73% of water withdrawn for agricultural use
- 73% pop deriving livelihoods from agriculture, 67% population rural and 56.9% rural poor
- Primary crops; rice, maize, sorghum and cassava. 24.77% of GDP
- Government aims to expand the irrigated areas by > 50 00 ha by 2020 (>20 000 ha via private investment) and add a capacity of 30m m³/year of water storage through rehabilitation and construction of small dams



WASH Infrastructure condition and investment

- Need to invest \$250m annually to ensure water supply in the next two and half years. This represents an increase of \$100m per year compared to the amount used to guarantee water supply over the last ten years and this is justified by the increase in population.
- MCC massively invested in WASH infrastructure

Major projects

The World Bank is supporting the government's goal to improve financial readiness to withstand recurrent natural disasters, such as droughts, flooding and tropical cyclones. The storm water drainage system has been rehabilitated, resulting in a 70% reduction in the risk of flooding. Upgrades include the rehabilitation/construction of 11 km of drainage canals, installation of flood control stations and the construction of a large water retention basin.

Other projects include:

- Water Services & Institutional Support II: \$90m
- Smallholder Irrigated Agriculture and Market Access Project: \$55m

2.5 Urban Infrastructure

Barriers and opportunities

- Mozambique is 36% urbanised, with 10m urban residents, 70-80% of which live in informal settlements
- Mozambique's top 23 cities, home to 22% of population, generation 51% of GDP (WB Urbanisation review), and see per capita consumption 3x rural areas (\$1,160 vs \$336)
- Urban poverty is extremely high compared to many African countries, at 50%
- Whilst urban employment is high at 90%, youth who make up 66% of the population suffer 50% unemployment
- Regional GDP per worker is significantly higher in towns (\$1447) and cities (\$2817) compared to rural areas (\$659)
- Natural population growth accounts for much of Mozambique's slow urbanisation rate, but

more rapid urbanisation could be a pillar for broad-based economic development

- 15% of the national population live in Mozambique's 4 largest cities

City size	# Cities	% Nat pop.	Tot pop.
Over 1m	2	10.0%	2,717,437
500k-1m	2	4.7%	1,276,950
100-500k	10	8.8%	2,385,622
50-100k	9	2.3%	633,814
20-50k	68	4.4%	1,195,255

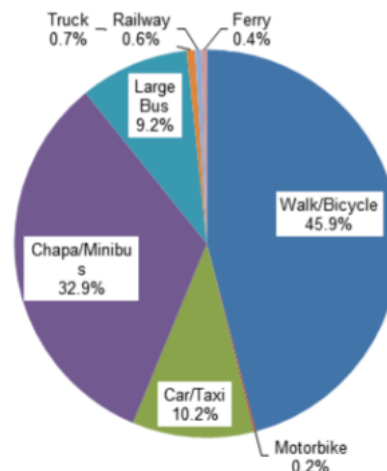
- 66% of urban resident have access to power, however power can be unreliable and one study reports 25% of connected households receiving only 4 hours of power/day (UCL)
- Financing investment in municipal infrastructure is challenging as towns are not creditworthy.
- Major projects: National Urban Development and Decentralization Project: \$100m

Urban WASH

- Municipalities struggle to invest in WASH improvement, only 42% pop. have access to improved sanitation and 70% uses pit latrines
- *Whilst 80% of urbanites have access to improved water, only 63% of households are mains connected and the capital, Maputo, has become accustomed to living with restrictions on water supply, which only flows from taps every other day.*
- Water utility tariffs are infeasibly low (0.8% household spend) and unaccounted-for-water (UFW) remained over 50 percent in most service areas – due to poor condition of the networks, illegal connections and vandalism of meters
- Maputo suffers frequent flooding, and many residents live in inadequate housing in low-lying flood prone areas
- 40-65% of households receive SWM services, and >80% in Maputo, however waste recovery is low (<1%)
- Smaller cities suffer from insufficiencies in all aspects of SWM, i.e. collection, transport, treatment and final deposit as well as from lack of sanitation. Illnesses such as cholera, meningitis and dysentery are often associated with the lack of proper waste disposal

Modal Split in Cities

- Households spend relatively little on transport (6%), walking and cycling still predominates (46%) and air pollution deaths are low



Ongoing x-HMG Engagement

Dpt / Org	Initiative	£ value
DFID	Water, Sanitation and Hygiene Results Programme	72m
	Supporting the Transformation of Rural WASH Service Delivery in Mozambique	38m
	Support to the Water and Sanitation Programme (WSP) 2011 - 2015	36m
	Kenya Clean Energy Programme (ACE)	28m
	Scaling up of the Energy and Environment Partnership with Southern and East Africa	25m
	Transboundary Water Management in Southern Africa: Climate Resilient Infrastructure Development Facility	20m
	BRILHO - Energy Africa Mozambique	19m
	Transboundary Water Management in Southern Africa: Capacity building to better manage shared water resources in the SADC	9m
	Research on Growth and Urbanisation in Low Income Countries	5m
	BEIS	Pilot Programme for Climate Resilience
	Renewable Energy Performance Platform	48m.0

