



REPÚBLICA DE MOÇAMBIQUE
Ministério das Obras Públicas,
Habitação e Recursos Hídricos
Gabinete do Ministro

Priority Project Summary

Katembe Water Supply Program Greater Maputo Water Supply Project

Building operational and social resilience

August 2021

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01 Need for the Project

Quick economic and demographic outlook

Katembe is situated opposite downtown Maputo on the southern side of the Maputo Bay which receives water from the Matola, Umbeluzi & Tembe Rivers and is an access channel for cargo and container ships to the port of Maputo.

The 2017 census estimated the total population of Katembe at 32,248 inhabitants. With the opening of the Maputo-Katembe bridge, and the creation of a surfaced road from Katembe down to South Africa, the Greater Maputo area is likely to expand outside Maputo City, and into the Matutuine district (i.e. south of Katembe). This development (especially in the south east) is already evident on the ground. the urbanisation process is forecast to continue in the next 10 years.

Current water supply situation (2021)

- Katembe has ground water as the main source of water, with 8 production boreholes supplying about 650 m³/d, servicing about 1,300 people against about 40,000 m³/d required for the census population of 2017;
- 2,500m³ ground level reservoir (GLR) and a pumping station is located at the south east. A provision can be made to incorporate these facilities into the new network;
- Approximately 28 km of 150mm diameter transmission main from ES2 to an existing concrete elevated water tower (WT);
- 150m³ and 250m³ concrete WTs;
- 22% coverage (@90l/cap/day) and 15 hrs/day of water supply.



02 Project purpose & actions

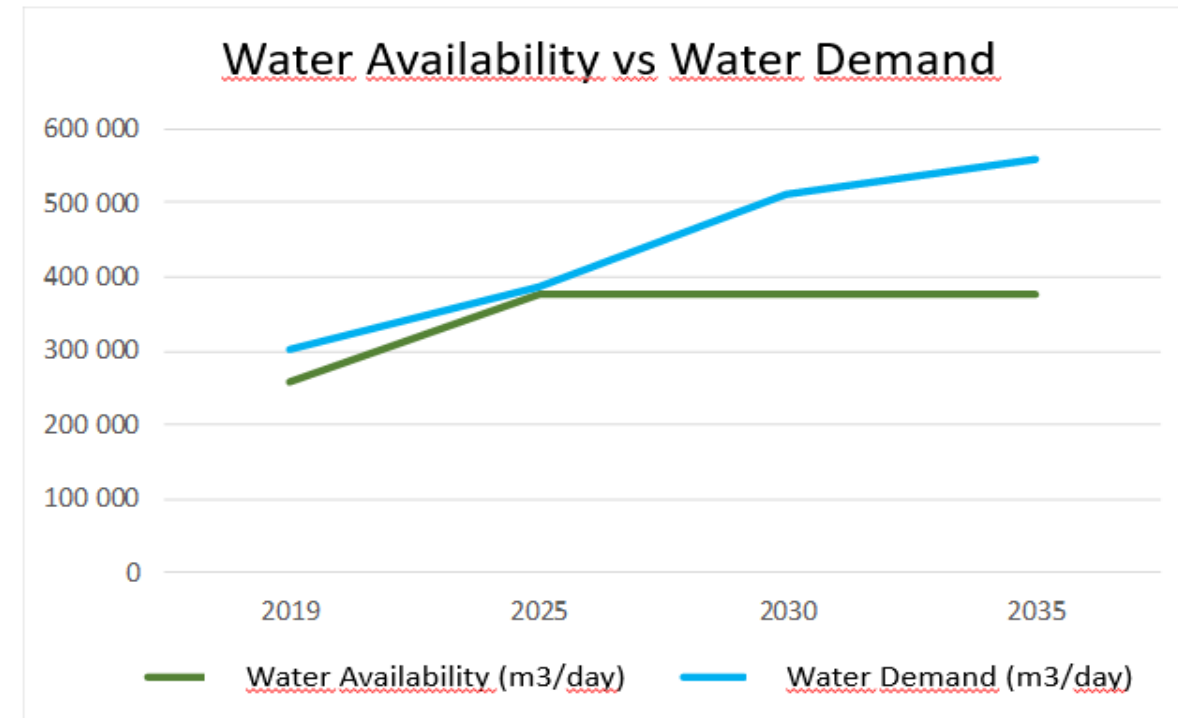
Rationale

- Increasing resilience of the raw water sources to withstand climate change vulnerabilities
- New raw water sources to supply increasing demand
- Expanding the water transmission and distribution networks to keep pace with population and industrial growth.
- Improve the power supply efficiency.
- Increase coverage from 22% to 100% by 2030
- Improve water utility economic sustainability
- Improve the energy efficiency of the system.

Actions

- Increase water production by expanding the Umbeluzi WTP and have a dedicated pump station for Katembe;
- Construction of additional 40 km of Transmission Main 1000 to 600 mmm of diameter from Umbeluzi WTP to Katembe;
- Construction of #2 new distribution centres and 120km of distribution network;
- Complementary study and detailed design for a new intake at Salamanga;
- Rehabilitation of the system and increase the volume of storage.

THE MASTER PLAN: Water Demand Assessment



02 Project purpose & actions

Solution outline and strategic sustainability

Present constraints

The current source for Katembe is the ground water with very low yield reaching a production rates between 5 to 10 m³/hour, which covers 22% of the population to be served, leading to a vast majority of Katembe residents to rely on private boreholes for water. From previous studies done, It was assumed that there will be a rapid growth right after the completion of the new bridge linking Maputo and Katembe and would result in increase in population and also bring some developments as largely seen in nowadays. Further, the Maputo Municipality is developing what is called The PGUDMK (Plano Geral de Urbanização do Distrito Municipal da Katembe, General Urbanization Plan for the Katembe Municipal District), landuse plan generally forecasts the urbanization of Katembe, which to a great extent propose developments that overrides the existing developments in Katembe. Therefore it is clear that Maputo system shall be expanded to new areas with exponential growth.

Technical solution

This second Katembe investment aims to make available a clean and potable water to additional 242,000 inhabitants by 2030 by building a new pump station at Umbeluzi Water Treatment and convey through 40Km of transmission main to the main distribution centers and supply to the 120 km distribution network. 40,000 new connections are expected to be made.

Social and economic sustainability

With the automatic tariff adjustment mechanism approved by the Government in 2021, the tariff is expected to cover all operational, maintenance and debt service costs in mid-term. Furthermore, Greater Maputo Area, by its strategical location and important infrastructure such as the Maputo harbour has registered an exponential growth to the northern and west areas where many private funded infrastructures and business have been established and can afford the tariff to cover costs and thus contributing to the sustainability of the services.

03 Project details

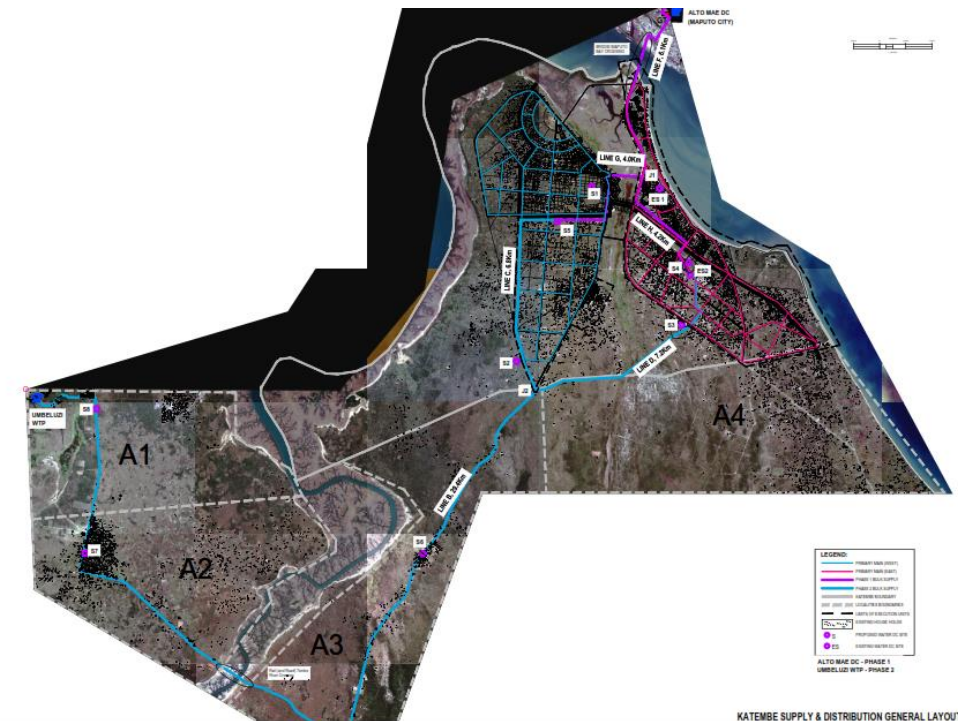
Katembe Project Components

- Construction of Pump Station at the Umbeluzi WTP for Katembe;
- Construction of 40 Km Transmission Main from Umbeluzi to Katembe with diameter from 800 to 600 mm;
- Construction of #2 e and Distribution Centers, located on the West and East side of Katembe including additional storage;
- Construction of 120 km of distribution network.

Estimated costs (2024)	USD (million)
New pump station and boreholes	2.6
Transmission pipe	31.7
Storage volume	12.2
Distribution network	44.5
Technical studies, design, supervision, etc	8.0
Total	99.0

Other Project Components

- Rehabilitation of Distribution Network including supply of fittings, flow and water meters and valves to cover the 40,000 new connections planned for Katembe ;
- Implementation of the Energy efficiency program.



04 Outputs & Outcomes

The **Katembe Climate Resilient Water Supply Program** is a priority project for a region where the effects of climate change and exponential growth are putting pressure on the small available water system. Water services is an integral part of the goals of ending extreme poverty and promoting shared prosperity. More generally, there is a direct link between access to improved water services and the incidence of water-borne diseases and public health. The main outcome of the project will be more people having access to potable water, the improvement of the water supply resilience, improvement on operational level and on economic and financial management.

Outputs

- 25,000m³/day additional water produced with ability to expand
- Coverage increased to 100% @100l/cap/day
- Increased hours of supply and system pressures

Outcomes - Technical

Technical

- Increased efficiency, sustainability and effectiveness in water supply services
- Improved platform for local and external private sector involvement in water supply
- Reduced costs/m³ for water production and supply
- Improved operational processes

Outcomes – Social, Development & Environment

Social, Development & Environment

- Improved access to water for additional 242,000 in peri-urban area
- Approx. 40,000 more customers receiving clean and affordable water
- Customers moving to household connections will improve availability and further reduce diseases
- Improved health and well-being for residents
- Reduction in water scarcity as a barrier to economic development and poverty reduction
- Increased asset and social resilience to weather events

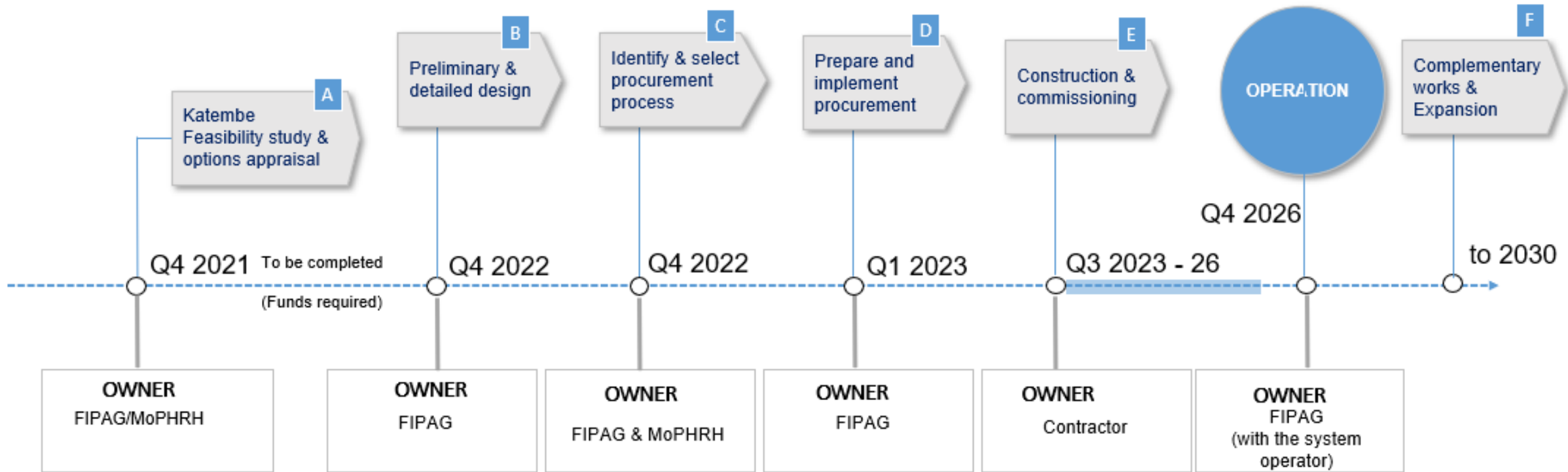
Main benefits

- 250,000 inhabitants benefits from receiving clean and affordable water by 2030;
- Promote the economical growth and generation of employment during the implementation of the project;
- 40,000 new household connections in Katembe;
- Improvement of water service continuity levels even during extreme events;
- 25,000 m³/day additional water produced with ability to expand for peri-urban areas.

05 Main tasks and timeframe

The overall duration of the phase II Project will be 5.0 years, from the conclusion of the Consultancy service for the detailed design for Katembe until start-up of the operation.

A complementary study and detailed design for a new intake at Salamanga shall be taken aiming to cover the demand of 2035.



06 Risks & Mitigations

As part of developing the **Katembe Water Project**, FIPAG have analysed the potential risks and identified possible mitigation measures.

A risk management committee will be set up in the ROC and one of its responsibilities will be to monitor the risk framework and alert the project management team to identify and implement the necessary mitigation actions.

Issue	Risk & Likelihood	Mitigation
Technical		
Lack of capacity within FIPAG/ROCs to undertake <ul style="list-style-type: none"> technical tasks Identify operational issues & constraints 	Poor management of the project Low likelihood	<ul style="list-style-type: none"> Lessons Learned Provide appropriate training to staff Enhance the PMO to pre-sight the project
Contractor failure	Commissioning delayed Low likelihood	<ul style="list-style-type: none"> Select appropriate procurement route and suitable contractor; Select a very competent Supervision team
Financial		
Failure to identify and secure funds for <ul style="list-style-type: none"> Project development phase Project procurement phase Project delivery 	Delay to project development and delivery Low likelihood	<ul style="list-style-type: none"> Be precise on the project estimative Secure adequate resources Streamline procurement to remove or transfer constraints
Operational/External		
Resource or water delivery below requirements	Delay to customer benefits Low likelihood	<ul style="list-style-type: none"> Secure operational input to fully-integrated project
The impact of the climate changes to the water sector	Major impact on service levels Medium likelihood	<ul style="list-style-type: none"> Build up resilient infrastructures Sustainable water management program

7. Project Summary

NEED FOR THE PROJECT

- Katembe is situated opposite downtown Maputo on the southern side of the Maputo Bay & Tembe Rivers and is an access channel for cargo and container ships to the port of Maputo.
- The 2017 census estimated the total population of Katembe at 32,248 inhabitants. With the opening of the Maputo-Katembe bridge, and the creation of a surfaced road from Katembe down to South Africa, the Greater Maputo area is likely to expand outside Maputo City, and into the Matutuine district (i.e. south of Katembe). This development (especially in the south east) is already evident on the ground. the urbanisation process is forecast to continue in the next 10 years.

PURPOSE

- Increasing resilience of the raw water sources to withstand climate change vulnerabilities
- New raw water sources to supply increasing demand
- Expanding the water transmission and distribution networks to keep pace with population and industrial growth.
- Increase coverage from 22% to 100% by 2030
- Improve water utility economic sustainability
- Improve the energy efficiency of the system.

DETAILS

- Construction of Pump Station at the Umbeluzi WTP for Katembe;
- Construction of 40 Km Transmission Main from Umbeluzi to Katembe with diameter from 800 to 600 mm;
- Construction of #2 e and Distribution Centers, located on the West and East side of Katembe including additional storage;
- Construction of 120 km of distribution network.
- Implementation of the Non Revenue Water program.

STATUS OF THE STUDIES

- The Katembe Feasibility Study is ongoing and the detailed design is expected to be completed by Q4 of 2022. The study was financed by AFD

OUTCOMES

- **Overall outcome:** The main outcome of the project will be more people having access to clean and potable water, the improvement of the water supply resilience, improvement on operational level and on economic and financial management. Ensure financially viable and climate resilient city utility to provide safe and continuous water supply through resilient infrastructure systems.
- 250,000 inhabitants benefits from receiving clean and affordable water by 2030;
- 40,000 new household connections Maputo urban areas;
- 25,000 m3/day additional water produced with ability to expand for peri-urban areas.

TIMEFRAME

- The overall duration of the phase II Project will be 5.0 years, from the conclusion of the Consultancy service for the detailed design for Katembe until start-up of the operation.
- complementary study and detailed design for a new intake at Salamanga shall be taken aiming to cover the demand of 2035.

MANAGEMENT & ECONOMICS

- Asset owner: FIPAG (responsible for investment)
- System operator: Maputo Metropolitan Operator
- Operator's revenue covers O&M with limited capital contribution
- Type of funding required: Long-term concessional finance or PPP proposal
- Progressive cost-recovery water tariff with social instruments to assure the access to the most vulnerable

Annex 1: Mozambique - overview

Demographics

In 2014, 32% of Mozambique's 22m people lived in urban areas. By 2025 with urban population growth of 3.4%, this is forecast to be 12.5m (52%).

On current trends, population growth will become more concentrated into the 12 urban areas over 250,000, the largest of which are Maputo (2.5m), Beira (1.0m), Nampula (750,000) and Quelimane (600,000).

Economy

Despite consistent growth for almost 2 decades Mozambique is a Low-Income Country (LIC) with a GNI/head of US\$460. Mozambique's economy has expanded rapidly over the last decade with annual GDP growth between 5% and 7%. This has slowed of late, with the impact of 2 major cyclones (2019) and COVID-19 (2020-1).

Growth and improvements in living standards have not been evenly spread across the country,, being mainly in urban areas and in the southern part of the country. The Government still faces the challenge of reducing poverty and inequality across regions and provinces

Water resources

As a coastal country, Mozambique relies heavily on international water resources , with many of the larger rivers rising outside the country.

Water resources are also unevenly distributed across the country, with greatest limitations in the most developed southern part of the country.

The country is vulnerable to climate change and its related effects on water resources: recurrent droughts, which fail to replenish reservoirs and aquifers, and floods. Groundwater sources for the coastal cities are also affected by saline intrusion.

Current performance

Supply coverage varies across the country even within existing urban districts. There are extensive under-served peri-urban areas . In 2020, the national water utility (FIPAG) provided water to 64% of the population in its service areas.

In Maputo and the Central Region, most received water via a household connection. Outside these areas around 50% of people receiving water from FIPAG did so via stand-posts.

Hours of service increased significantly from 2010, doubling in many cases and reaching 24 hours in some areas. Water quality also improved although recent cyclone damage to water infrastructure has set-back progress in this area .

Annex 2: the water sector

Delivery Organisations

In Mozambique's urban areas water is supplied by FIPAG, a wholly-owned autonomous public entity. FIPAG was founded in 1998 and functions as an asset-holder, fund raiser and operating utility.

At the operating level, the sector policy framework is for delegated management where services can be provided on a commercial basis by private companies. Specific arrangements can vary from area to area.

At the operational level, FIPAG has four regional companies; for Maputo, Sul (FRS), Centro (FRC) and Norte (FRN). These cover all 29 major urban areas, and in 2020, served around 4m of the 7m population through 530,000 connections.

In 2009 AIAS was established to provide rural and small town water supply and sanitation services.

Governance and Regulation

FIPAG's Director-General is appointed by the Prime Minister, with other Directors appointed by the Minister of Ministry of Public Works, Housing & Water Resources (MoPHRH) on the recommendation of the G-D. Financial affairs are also supervised through representative of the Finance Ministry.

FIPAG's performance is set and monitored on a 3-yearly cycle through agreements with the MoPHRH.

The sector is regulated by the AURA (Water Regulatory Authority) who cover service quality economic and financial performance.



Policy Framework & Objectives

The Government of Mozambique has set out the wider sector policy framework and objectives through the Five Year Programme and National Urban Water Supply & Sanitation Strategy (2011- 2025).

Within this Strategy the **Government of Mozambique has set a goal of universal urban population coverage with potable water supply and the achievement of the SDG targets by 2030.**