



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

Priority Project Summary

Nampula Water Supply Program

Mugica Water Supply Project.

Building operational and social resilience

August 2021

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01 Need for the Project

Quick economic and demographic outlook

Nampula City & region is the Industrial and commercial centre of northern Mozambique and the major centre on core rail link between Malawi. Mozambique & coastal ports.

A fast-growing city of 1 million inhabitants in 2020, it is forecast to reach 1.2m by 2035. It is also an attractive destination for rural to urban regional migration, with significant growth in peri-urban settlement and satellite towns.

Current water supply situation (2020)

- Over 40,000 active domestic connections & 500 stand-posts serving approx. 360,000 people
- More than 380,000 inhabitants without access to potable water
- 50% coverage (@90l/cap/day) and 12 hrs/day of water supply
- Existing source at Nampula Dam on Monapo River fully exploited (@40,000m³/day)
- Approx. 3 months of raw water reserves, with seasonal variations in resources and climate change risks
- Very limited groundwater reserves locally
- Significant risk of water supply collapse due to increased frequency and intensity of droughts



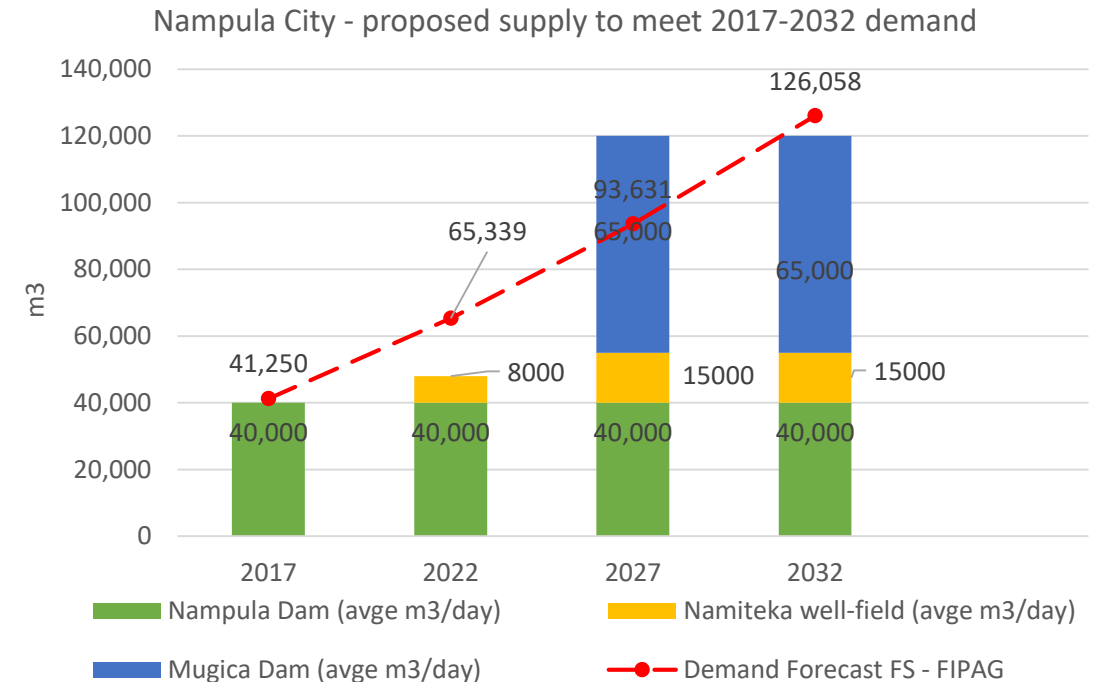
02 Project purpose & actions

Rationale

- Improve water supply resilience and increase water availability to main northern city
- Provide safe and healthy water and continuous supply to all customers
- Promote equitable and sustainable supply to all residents and social groups
- Manage the impact of climate change on water supply
- Induce and accelerate sound social wellbeing and economic development
- Increase coverage from 50% to 80% by 2035
- Improve water utility economic sustainability

Actions

- Increase water production through alternative sustainable source supplies by using water from existing Mugica Reservoir (14x size of Nampula), 110km NE of Nampula on the Mugica River.
- Build water treatment plant, aqueduct(s) and storage facilities for additional supply to City and for settlements en route.



02 Project purpose & actions

Solution outline and strategic sustainability

Present constraints

The current source for the Nampula Water supply is the **Monapo dam** located about 7 kms from the city. Extraction here is at capacity and recurrent drought episodes limit its ability to supply water all year. An emergency project is underway to reinforce the water source by using groundwater at Namiteca. This wellfield will provide an **additional 8,000 m³/d** during the first phase and **15,000 m³/d** during the second phase, which is not enough to meet the city water demand.

Technical solution

The proposed reinforcement of Nampula Water Supply System is based on the existing Mugica Dam, located 120 km from Nampula. This will increase water supply capacity and add operational resilience. Using both surface water and ground water will reduce the risks and impacts of extreme event such as droughts.

The environmental impact of the proposed project is low given that Mugica dam is already built. The new pipeline route will run in an existing development corridor, through areas of lower environmental interest and low population density.

Social and economic sustainability

With the automatic tariff adjustment mechanism approved by the Government in 2021, the tariff revenues are expected to cover all operational, maintenance and debt service costs by the year 2024. Nampula City, located at the heart of the Nacala corridor, is the second major economic center in Mozambique with significant commercial and industrial customers. The water utility in Nampula has approx. 43,000 consumers, industries and businesses who can afford the tariff to cover costs and thus contributing to the sustainability of the services

Upon completion the Mugica water project will also supply potable water to 5 small towns along the pipeline route.

Negotiations with the dam owner have been undertaken and a minimum abstraction amount of 15 million m³/year is now secured. Negotiations are currently underway to secure a further 10 million m³/year of water for abstraction.

03 Project details

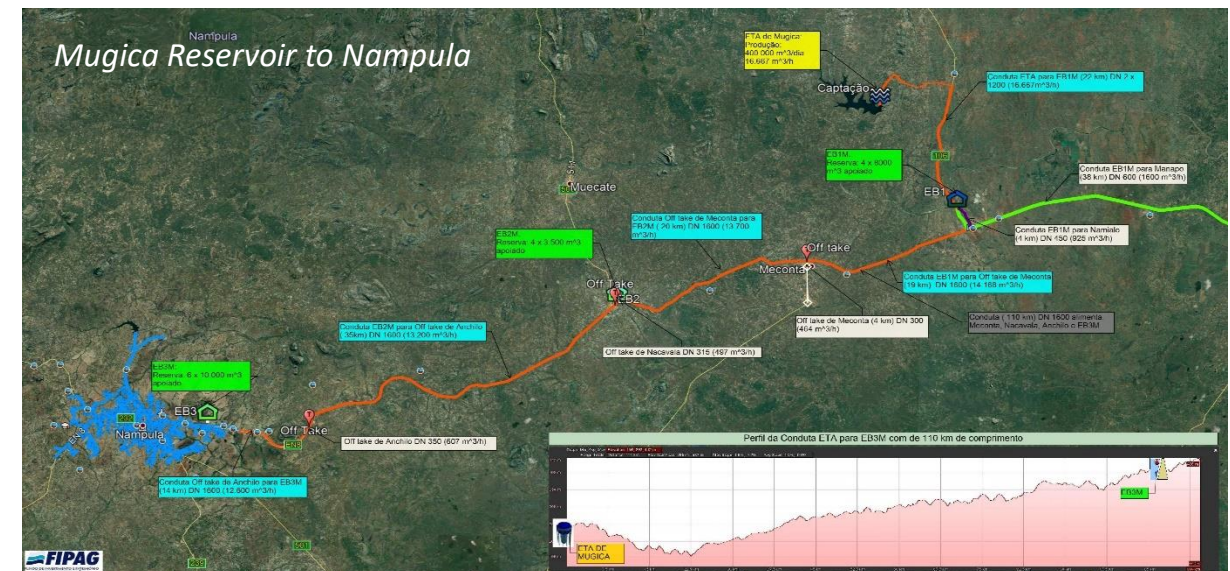
Mugica Project Components

- Agreement with dam/reservoir owners to extract 25m m³ of water per year
- Construction of the water intake at Mugica Reservoir and 65,000 m³/day water treatment plant
- Construction of 120km of DN900 transmission pipe from WTP to new service reservoir EB3
- Construction of new service reservoirs and water networks in Nampula urban area
- Off-takes for small towns (max. 20,000 pop) on the line of aqueduct

Estimated costs (2024)	US\$m
Water intake and WTP	24.7
Transmission pipe	86.64
Technical studies, design, supervision, etc	5.86
Total	117.2

Other Project Components

- Immediate construction of 8 boreholes (Namiteka)
- Implementation of the NRW program
- Automation and remote-management systems
- Implementation of the Energy Efficiency program
- System inter-connectivity between surface and groundwater sources to mitigate water stress during severe droughts



04 Outputs & Outcomes

The **Nampula Climate Resilient Water Supply Program** is a priority project for a region where the effects of climate change and regional migrations are putting high pressure on water supply. This water stressed situation is structural, and its magnitude increases rapidly during frequent droughts. The main outcome of the project will be improved water supply resilience, in a framework of improvements on operational performance and in economic and financial management.

Outputs

- 65,000m³/day additional water produced with ability to expand
- Coverage increased to 80% @100l/cap/day
- Increased hours of supply and system pressures
- Increased annual revenues (US\$10m)

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 approx. 1.5m in peri-urban areas through network extensions and new stand-posts
- Approx. 375,000 more customers receiving clean and affordable water in Nampula urban area
- 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

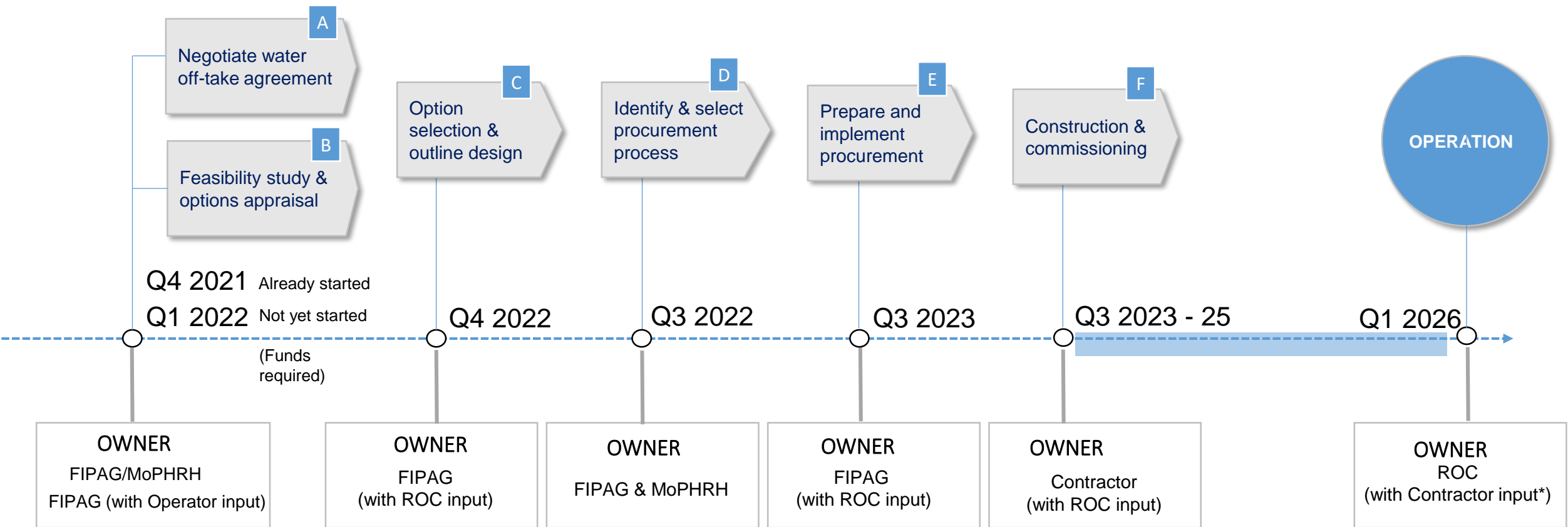
Main benefits

- 375,000 inhabitants benefit from receiving clean and affordable water
- 65,000 new household connections in Nampula urban areas
- 65,000 m³/day additional water with ability to expand supply into peri-urban areas
- Significant improvement in water service resilience even during extreme events
- US\$10m p.a. additional revenues for water company

05 Main tasks and timeframe

The current plan is for implement of the **Mugica Water Project** from the end of 2021 with system operation in 2025.

The pressure on the Nampula water supply is linked with rapid urban growth and the intensity of extreme meteorological events, so the project will be implemented on a phased approach. The construction of groundwater small systems will occur in parallel with the Mugica Water Project development.



* Depends on procurement route

06 Risks & Mitigations

As part of developing the **Mugica 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 	Delay to project development High likelihood	<ul style="list-style-type: none"> Identify constraints Provide support as needed Streamline procurement to remove risks
Contractor failure	Commissioning delayed Low likelihood	Select appropriate procurement route and suitable contractor
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 High likelihood	<ul style="list-style-type: none"> Identify scale needed Secure adequate resources Streamline procurement to remove or transfer constraints
Operational		
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
Failure to deliver expected operational and customer outcomes	Major impact on service levels and financial outcomes Medium likelihood	<ul style="list-style-type: none"> Strong technical review Fully-integrated project Appropriate contracts

7. Project Summary

NEED FOR THE PROJECT

- With a fast-growing population of 1m in 2020, it is foreseen Nampula will reach 1.2m by 2035. It is an attractive centre for rural to urban regional migration, with significant growth in peri-urban settlement and satellite towns.
- Presently, there is a structural imbalance between water demand and water supply, due not only to the population growth but also to the severe impacts of climate change. Intense droughts are becoming more frequent with strong impact on the provision of safe water to the population and economic sectors.

PURPOSE

- Improve water supply resilience and increase water availability to main northern city
- Provide safe and healthy water and continuous supply to all customers
- Promote equitable and sustainable supply to all residents and social groups
- Manage the impact of climate change on water supply
- Induce and accelerate sound social wellbeing and economic development
- Increase coverage from 50% to 80% by 2035
- Improve water utility economic sustainability

DETAILS

- Overall investment: US\$120m (2024 values)
- Emergency construction of 8 boreholds (Namiteka)
- Construction of the water intake at existing Mugica Reservoir and 65,000m³/day water treatment plant
- Construction of 120km of DN900 transmission pipe from WTP to new service reservoir EB3
- Construction of new service reservoirs and water networks in Nampula urban area
- Off-takes for small towns (max. 20,000 pop) on the line of aqueduct
- Implementation of efficiency improvement programs

OUTCOMES

- **Overall outcome:** A safe and continuous climate resilient water supply for up to 1m people.
- Approx. 375,000 more customers receiving clean and affordable water in Nampula urban area
- Improved access to water for approx. 1.5m in peri-urban areas
- Reduction in water scarcity as a barrier to economic development and poverty reduction
- Increased asset and social resilience to weather events
- A more financially and economically viable utility

TIMEFRAME

- The overall duration of the Project will be 4,5 years, from feasibility studies till the operational commissioning.
- Emergency measures: boreholes to quick increase the production capacity on peri-urban areas (finalized by the Q2 2022)
- Mugica Water Project to be completed and fully operational by Q1 2026.

MANAGEMENT & ECONOMICS

- Asset owner: FIPAG (responsible for investment)
- System operator: North Water Utility (Operator)
- Operator's revenue covers O&M with limited capital contribution
- Possible funding options: 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 20, 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 D-G. 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.**