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

FIPAG
FUNDO DE INVESTIMENTO E PATRIMÓNIO
DO ABASTECIMENTO DE ÁGUA

Priority Project Summary

Lichinga Water Supply Improvement

Building operational and social resilience

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Conferência de Financiadores
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FIPAG · THE WORLD BANK IBRD • IDA | WORLD BANK GROUP · Kingdom of the Netherlands · ÁGUAS DE PORTUGAL · VEI Dutch Water Operators

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01 Need for the Project

Quick economic and demographic outlook

Lichinga city is the commercial centre of north-western Mozambique and the major urban centre in Niassa Province.

A fast-growing city of 166,000 inhabitants in 2020, it is forecast to reach 245,000 by 2030. It is also an attractive destination for rural to urban regional migration in Niassa Province, with significant growth in peri-urban settlements.

Current water supply situation (2020)

- Over 8,700 active domestic connections & 37 stand-posts serving approx. 60,000 people
- More than 100,000 inhabitants without access to potable water
- Approx. 25% coverage (@90l/cap/day) and between 9 and 12 hrs/day of water supply
- Existing source at Locumué Dam on Lucheringo River currently provides 4,000m^3/day
- Limited raw water reserve, with seasonal variations in resources and climate change risks
- No local groundwater potential and few hallow wells only to 35m max
- NRW approx 47% (2020)
- Significant risk of water supply collapse due to increased frequency and intensity of droughts

02 Project purpose & actions

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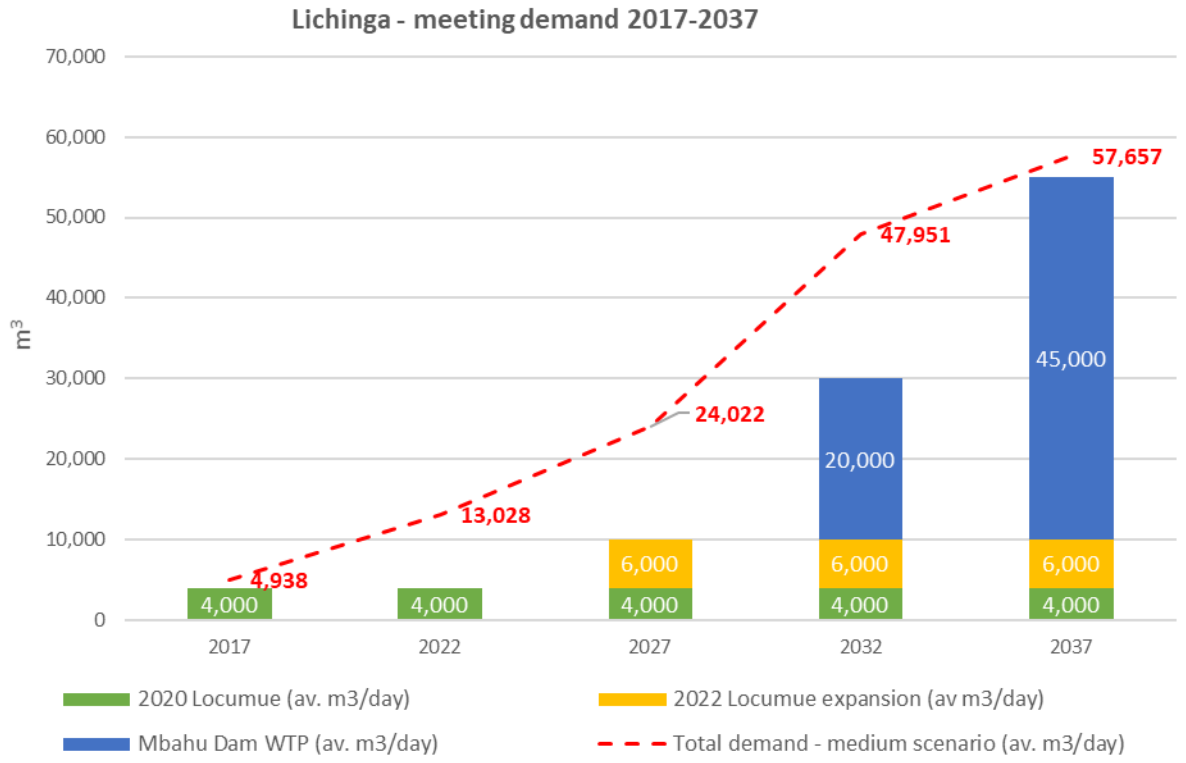
Rationale

- Improve water supply resilience and increase water availability to main provincial 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 25% to 80% by 2035
- Improve water utility economic sustainability



Actions

Increase water production through 2 phase project:

PHASE 1: Increase capacity of Locumué Dam via rehabilitation and raising dam wall. Expansion of water treatment plant to 10,000m^3/day, new pumping stations, storage and distribution network

PHASE II: Develop alternative sustainable source & supplies by phased development using water from new dam at Mbahu, 30km NE of Lichinga on the Lucheringo River. New water treatment plant (up to 45,000m^3/day), with 30km of transmission main, additional storage and distribution network.

02 Project purpose & actions

Solution outline and strategic sustainability

Present constraints

The current source for the Lichinga Water supply is the **Locumué earth dam** located about 3 kms from the city. Extraction here is currently limited and recurrent drought episodes have an impact on its ability to supply water all year. The dam itself is prone to infiltration and the reservoir is heavily silted. With little groundwater potential, this provides an upper limit on supply coverage in Lichinga and meeting water demand.

Technical solution

The proposed improvement of the Lichinga Water Supply System is in two phases: the first phase is based on the rehabilitating the existing Locumué Dam and increasing its capacity. This phase also includes a supplementary treatment plant, pumping station and associated network. The second phase involves a new dam at Mbahu, located 30 km NE from Lichinga. This would be developed in phases to 2035 with staged expansion of water treatment and transmission capacity. New storage capacity and networks in the city would be added as required.

Social and economic sustainability

This project will increase water supply capacity and add operational resilience. Using two different surface water sources will reduce the risks and impacts of extreme event such as droughts. Better water treatment will also reduce health risks.

The environmental impact of Phase 1 of the proposed project is low given that Locumué dam is already built. The Phase 2 Mbahu dam, plant and new pipeline route would run in an existing development corridor, through areas of lower environmental interest and low population density. A major environmental issue with the Phase 2 scheme is that the Mbahu Dam site is 300m lower than Lichinga requiring significant pumping.

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. The water utility in Lichinga currently has approx. 8,700 consumers and removing the supply constraint will at least double this number. This increase in revenues will thus contribute significantly to the sustainability of the services.

03 Project details

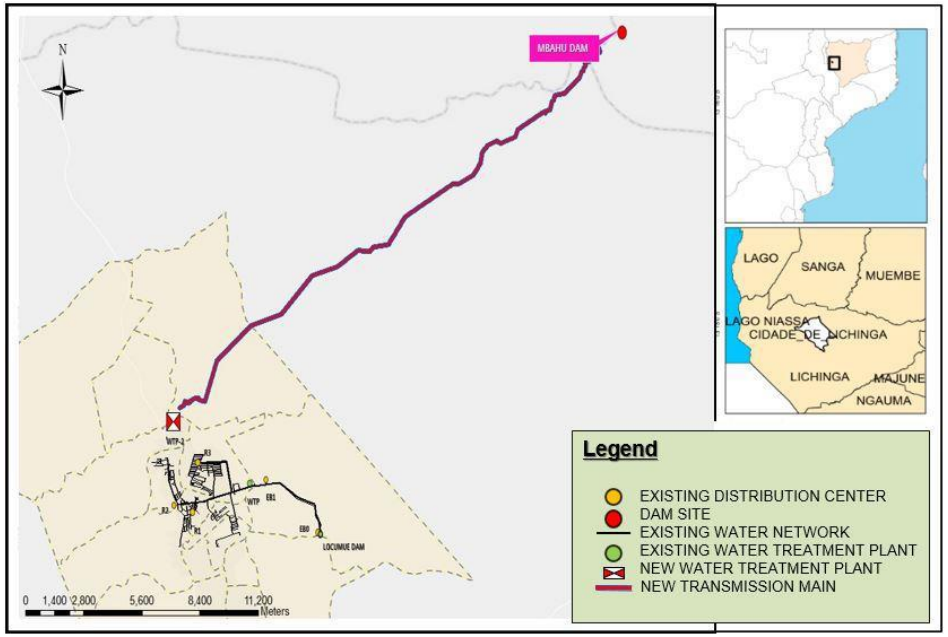
Lichinga Project Components

Phase 1:

- Rehabilitation of Locumué Dam with expansion of reservoir
- Expansion of WTP to 10,000m^{3}day with new pumping station
- Construction of new service reservoirs (6,000m^3 DC) and water networks in Lichinga

Phase 2:

- Construction of new Mbahu dam (reservoir capacity = 286M m^3)
- Modular development of water treatment plant up to 45,000m^3/day
- 30km transmission main and pumping station
- New storage (6,000m^3 DC) and distribution network in Lichinga



Phase 1 (est. costs 2018)	**US$m**	**Phase 2** (est. costs 2018)	**US$m**
Dam rehabilitation & expansion	**10.0**	Dam construction	**20.6**
WTP & pumping station	**5.0**	WTP (all modules)	**40.5**
Pumping station, storage & networks	**12..4**	Transmission pipeline (30km)	**5.0**
		Pumping station, storage & networks	**9.7**
Totals	**27.4**		**75.8**

Other Project Components

- Implementation of the NRW program
- Implementation of the Energy Efficiency program

04 Outputs & Outcomes

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The **Lichinga Water Supply Improvement Program** is a priority project for a region where water resources already significantly constrain supply. The effects of climate change and regional migrations will put further 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

- 50,000m^3/day additional water produced with ability to further expand
- Coverage increased to 80 @100l/cap/day
- Increased hours of supply and system pressures
- Increased annual revenues (US$6m)

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/m^3 for water production and supply
- Improved operational processes

Outcomes – Social, Development & Environment

Social, Development & Environment

- Improved access to water for approx. 50,000 in peri-urban areas through network extensions and new stand-posts
- Approx. 100,000 more customers receiving clean and affordable water in Lichinga 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

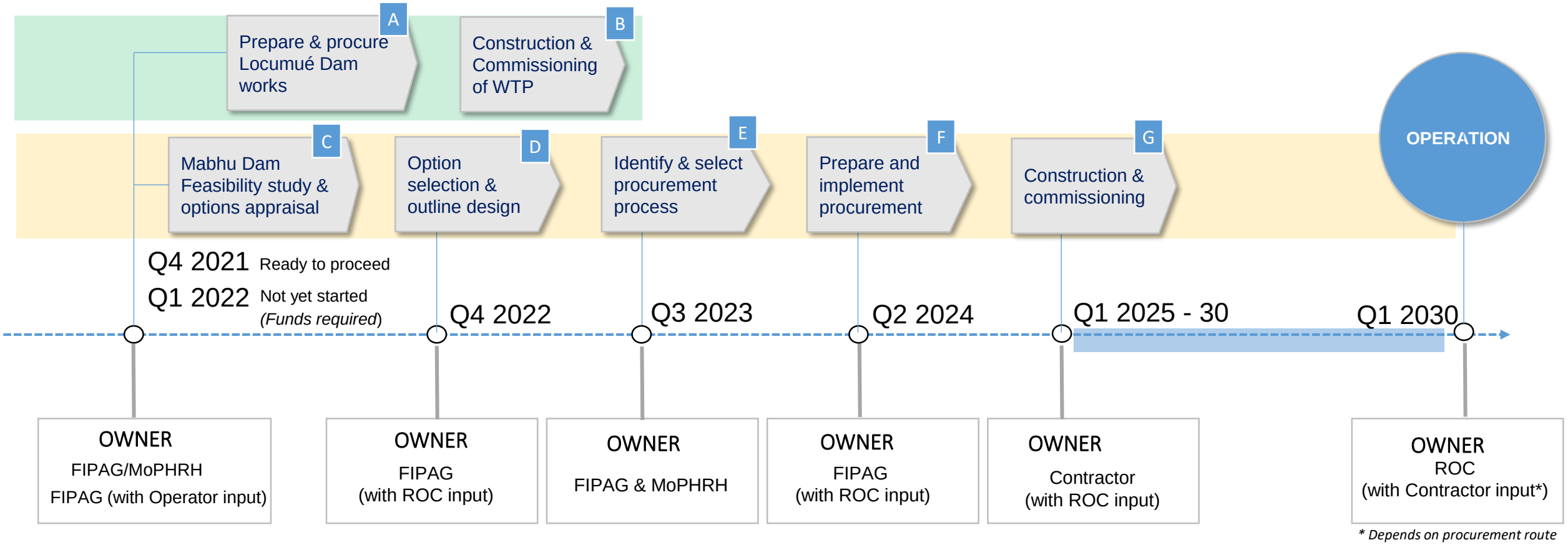
Main benefits

- 100,000+ inhabitants benefit from receiving clean and affordable water
- 10,000 new household connections in Lichinga urban areas
- 50,000 m^3/day additional water with ability to expand supply into peri-urban areas
- Significant improvement in water service resilience even during extreme events
- US$6m p.a. additional revenues for water company

05 Main tasks and timeframe

The current plan is to implement Phase 1 of the **Lichinga Water Project** from the end of 2021 with system operation in 2023. Phase 2 would be developed in parallel with dam construction planned to start in 2025, with opening of the first module of the WTP by 2030.

The pressure on the Lichinga water supply is linked with increasing coverage, urban growth and the intensity of extreme weather events, so the project will be implemented on a phased approach. The construction of associated distribution networks will occur in parallel with the overall project.



** Depends on procurement route*

06 Risks & Mitigations

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

A risk management committee will be set up in the North Water Utiity 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 • technical tasks • Identify operational issues & constraints	Delay to project development High likelihood	• 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 • Project development phase • Project procurement phase • Project delivery	Delay to project development and delivery High likelihood	• 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	• 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	• Strong technical review • Fully-integrated project • Appropriate contracts

07 Project Summary

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NEED FOR THE PROJECT

- With a fast-growing population of 160,000 in 2020, it is foreseen Lichinga will reach 245,000 by 2035. It is an attractive centre for rural to urban regional migration, with significant growth in peri-urban areas and small satellite settlements.
- Presently, there is a severe resource constraint on water supply. There is also an imbalance between demand and 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

- Increase water availability to main provincial city and improve water supply resilience
- 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 25% to 80% by 2035
- Improve water utility economic sustainability

DETAILS

- Overall investment: US$103m (2020 values)
- Construction of the expanded dam at existing Locumue Reservoir and 10,000m^3/day water treatment plant
- Construction of new Mbahu Dam and 45,000m^3/day WTP (in three modules)
- Construction of 30km of DN900 transmission pipe from new Mbahu Dam WTP to new service reservoir
- Construction of new service reservoirs (12,000m^3) and water networks in Lichinga urban area
- Implementation of NRW and energy efficiency improvement programs

OUTCOMES

- **Overall outcome:** A safe and continuous climate resilient water supply for up to 250,000 people.
- Approx. 100,000 more customers receiving clean and affordable water in Lichinga urban area
- Improved access to water for approx. 50,000 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 9 years, from feasibility studies till the operational commissioning.
- Phase 1: dam expansion to increase the production capacity to 10,000m^3/day (in service by Q3 2023)
- Phase 2: new Mbahu Dam WTP first module in service by 2030. Completed and fully operational by Q1 2035.

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), Lichinga (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 the North Region, most received water via a household connection. Outside these areas around 40% 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

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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 Metropolitan area, South, Central and North. These cover all 29 major urban areas, and in 2019, served around 4m of the 7m population through 530,000 connections.

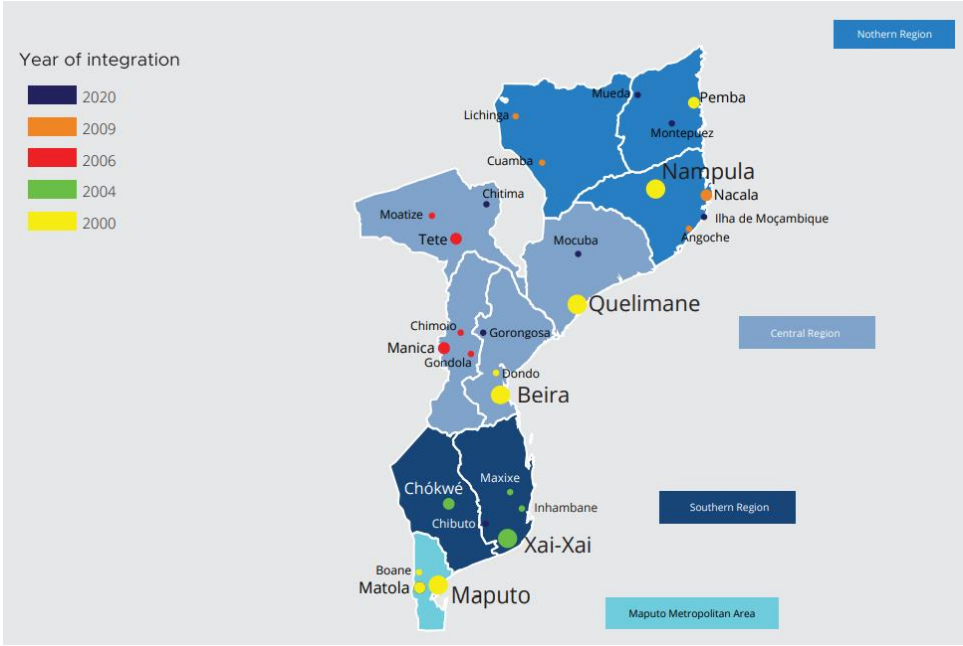
In 2009 AIAS was established to provide rural and small town water supply and sanitation services.

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.**