Case Study— Chimoio, Manica, and Gondola, Mozambique

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Key Characteristics of Aggregation Case Study

	Chimoio, Manica, and Gondola, Mozambique
Context	<ul style="list-style-type: none"> • Low-income country • Aggregation covering urban areas • Low level of water performance
Purpose	Performance, professionalization, economic efficiency
Scope	Water functions and services
Scale	<ul style="list-style-type: none"> • Administrative boundaries • Localities covered: 3 for water • Population covered: 263,101 inhabitants for water • Coverage: 64% for water • Connections: 42,458 for water • Network length: 1,358 km for water
Process	Voluntary and incentivized
Governance	<ul style="list-style-type: none"> • Merger • Public administration • Decision making: almost all decisions are vested in FIPAG, which is under guardianship of the Ministry of Public Services, Housing, and Water Resources • Asset transfer: assets are the property of FIPAG • Liability: liabilities and debts from previous operators are not taken over by aggregated utility • Staff transfer: all staff was transferred • No clear entry and exit rules
Outcome	Negative: very little improvement
Findings	Investment projects supported by external funding, technical assistance provided by donors, performance-based monitoring, limited improvement

In 2009, the water supply systems of Chimoio, Manica, and Gondola were physically connected and aggregated under the Fund for Investment Ownership and Water Supply Assets (Fundo de Investimento e Patrimônio do Abastecimento de Água; FIPAG), a national public agency set up to own and manage urban water assets throughout Mozambique. FIPAG also took over operation and maintenance of those three utilities, which are located in the center of Mozambique. External funds incentivized the aggregation, creating a Big Push to develop water infrastructure and expand coverage. However, aggregation benefits take time to materialize, and despite the Big Push, improvements in economic efficiency and service quality have not been achieved yet.

A Water Sector Reform That Tried to Unbundle Investment and Operation Functions

In the mid-1990s, the government of Mozambique initiated a series of political, economic, and social reforms. Those reforms included measures to restructure the

water supply and sanitation sectors, which were in dire straits. The transformation of the water supply subsector in particular was fueled by the National Water Policy¹ and the Water Tariff Policy,² which enabled the growth of water coverage. In addition, to have a more controlled rollout of this new strategy, the government instituted the *delegated management framework*³ (DMF). (See figure 1.) This framework defined the separation of powers and functions among key sector players—namely, the Fund for Investment Ownership and Water Supply Assets (Fundo de Investimento e Patrimônio do Abastecimento de Água; FIPAG) and the Water Regulatory Council (Conselho de Regulação do Abastecimento de Água; CRA). The government's initial plan was to aggregate the investment function of urban water services under FIPAG, which owns and manages urban water assets and is responsible for associated investment programs. The operation and maintenance of these urban systems were to be handed out to private operators through calls for tenders. Water utilities regionalization was supposed to create an appealing market for the private sector. FIPAG started

on a pilot basis, focusing only on the five largest water supply systems in the country. Its investment portfolio was progressively extended to cover 21 main urban areas. (See map 1.) However, despite several attempts to attract private operators and because of unsuccessful calls for tender, FIPAG had to take over operation in 18 additional cities in the central, northern, and southern regions of the country.

An Aggregation Supported by Large Investments

The cities of Chimoio, Gondola, and Manica are in central Mozambique and have a

FIGURE 1. Institutional Delegated Management Framework of Water Utilities in Mozambique

MAP 1. Evolution of the Delegated Management Framework in Mozambique

combined population of 308,000. In 2009, the three cities' water services were formally integrated into FIPAG, and their water supply systems were physically connected to create a larger customer-base service area. This integration was done using a single water source and setting up a transfer scheme of the treated water between cities. Chimoio, the largest of the three cities, is the operator of the water treatment works, and each city manages its own distribution network and all the associated operational functions. The Dutch government funded the investments to improve the water intake, production, and transfer. That funding was also used to create water distribution systems in Gondola and Manica; in addition, some investments were made in the Chimoio network. Those external funds created a Big Push that helped develop the network and expand the service coverage. As a

result, the infrastructure was in very good condition when the aggregation happened. Moreover, the government also contracted with Vitens, the public water company in the Netherlands, to provide technical assistance to support local capacity building and ensure that personnel had adequate management skills to aggregate the water services. As stated in the DMF, the central government's initial plan was to outsource the operation and maintenance of water systems to private operators. However, the central government was unsuccessful in attracting private sector participation, so FIPAG had to take over the operation and maintenance functions for the three cities' water supply systems. The aggregation, which followed administrative boundaries, aimed to increase performance, professionalization, coverage, and economic efficiency.

Benefits That Have Not Materialized Yet

In 2013, CRA introduced a composite index to monitor the evolution of the water utilities' performance throughout the country. The index, known as IDER (Índice de Desempenho das Entidades Reguladas), is made up of 12 performance indicators (see table 1) and uses an aggregation formula that sums the results of three groups of indicators: the ISEF (Indicador de Sustentabilidade Econômica e Financeira, or Sustainability and Financial Index), the ISO (Indicador de Sustentabilidade Operacional, or Operational Sustainability Index), and the IQS (Indicador de Qualidade de Serviço, or Quality of Service Index) (see figure 2).

The IDER is used to monitor and assess the outcomes of aggregation in terms of both performance enhancement and economic efficiency. Despite some important efforts, the benefits of aggregation have not yet materialized in the water services for Chimoio, Manica, and Gondola. Operating cost coverage for the FIPAG central region's water services shows that the operation of the water systems for Chimoio, Manica, and

FIGURE 2. Quality of Service (IQS)

TABLE 1. IDER Performance Indicators

Criterion (Level 1)	Criterion (Level 2)	Performance indicator	Unit
Economic and financial sustainability (ISEF)		1. Collection rate	%
		2. Operational costs coverage	%
Operational sustainability (ISO)		3. Employees	per 1,000 connections
		4. Nonrevenue water (total loss)	%
Quality of service (IQS)	Customer service	5. Total coverage	%
		6. Invoicing based on household meter readings	%
		7. Availability average period	hours/day
	Water quality	8. Percentage of the controlled parameters	%
		9. Percentage of compliance with standards	%
	Customer care	10. Average response time for complaints	day
		11. Complaints per connection	no. of complaints/1,000 connections
		12. Complaints addressed vs. total complaints received	%

Gondola is still subsidized. Moreover, the level of the operating cost coverage ratio has fluctuated quite a bit since aggregation took place in 2009 (see figure 3).

To some extent, this outcome can be explained by the fact that the expansion of coverage (see table 2) has not yet translated into an increase in revenues collected by the utilities. Because of the creation of

new infrastructure, operating expenses have increased in a higher proportion than water services incomes have.

In addition, it should be noted that average water tariffs in Chimoio, Manica, and Gondola have increased by 50 percent in four years, most likely further lowering the collection ratio (figure 4).

FIGURE 3. Cost Coverage Ratio in the Central Region

TABLE 2. Water Coverage, 2010-2014

Water coverage	2010	2014
Chimoio, Gondola, and Manica	21%	64%

FIGURE 4. Average Tariffs in the Central Region

Note: MZN = Mozambican metical.

The prevailing arrangement for tariff adjustment in Mozambique foresees annual adjustments, under the terms of the regulation agreement and regulatory framework that FIPAG, the regulated entities, and CRA agreed on for a regulatory cycle of five years. The process itself is quite complex and relies on the analysis of many variables associated with economic and social issues that influence the cost of service provision, including operation and capital costs as well as macroeconomics indicators, among others. The operator has to provide audited accounting reports of the previous fiscal year for consideration during the discussions on annual tariff adjustment.

Although an important increase in water coverage has been achieved, the continuity of service has decreased, probably because the water production could not follow the development pace of the network. However, the metering level is very high, at 95 percent. Nonrevenue water is a major concern in water supply operation in Mozambique, with an average

FIGURE 5. Evolution of IQS in the Central Region

TABLE 3. System Performance Concerning Drinking Water Quality Indicators

	2009	2010	2011	2012	2013	2014
Tested parameters (%)	—	—	18	100	41	80
Compliance with tested parameters (%)	—	100	70	100	11	59

FIGURE 6. Complaints Addressed in the Central Region

value of 42 percent across FIPAG-operated systems. Water losses in the water supply systems of Chimoio, Manica, and Gondola have fallen from more than 30 m³/km/day in 2009 to a negligible level. That result, however, should be nuanced by the decrease in service continuity and the fact that water production is lagging the rapid expansion of the network.

The variation of the IQS in the FIPAG central region shows a homogeneous evolution among water utilities (figure 5). The main challenge is related to the quality of the water, which needs to be improved.

Water quality is not yet systematically monitored, and it varies widely from year to year. Hence, consistency in collection and analysis in water samples still needs to be improved. Table 3 shows the data gathered.

The proportion of complaints answered and resolved by the water utilities is one of the performance indicators reflecting the quality of customer service. This indicator shows an important and steady increase for the water services of Chimoio, Manica, and Gondola, with 100 percent of complaints answered since 2011 (figure 6).

CRA set a turnaround time of 14 days as a reference value for customers to obtain a first response from the water operator about their complaint. All the water services from the FIPAG central region have results well below this 14-day threshold (figure 7).

As a whole, although the aggregation of the water services of Chimoio, Manica, and Gondola was supported by some external funding, which acted as a Big Push and allowed the expansion of the network, the benefits of the aggregation have not materialized yet. Customer service has improved somewhat, but economic

FIGURE 7. Average Response Time Following a Complaint

efficiency and performance of utilities are still low. However the gradual improvement of the aggregated service overall can be monitored using the existing index, IDER. Such monitoring facilitates accountability toward customers because improvement can be steadily demonstrated over time. It can also be used to set improvement targets.

Aggregation Case Study at a Glance

Key Lessons Learned from the Aggregation Case Study

Lesson 1: Financial Support and Incentives (A Big Push) are Important to Help Services Escape the Low-Level Equilibrium Trap

To boost the success of an aggregation reform, national and external stakeholders can provide financial support to aggregating utilities to help them achieve the reform's goal. In most cases, those subsidies are used to fund investment programs, thus acting as a Big Push, which helps water supply and sanitation services escape the low-level equilibrium. FIPAG received funding from the Dutch government to improve the water intake, production, transfers, and distribution systems in Manica, Gondola, and Chimoio. In particular, the infrastructure of Manica and Gondola's utilities was completely renewed and financed as part of the cities' integration process.

Lesson 2: Cherry-Picking Practices Can Undermine the Outcome of an Aggregation Whose Purpose Involves Externalities Such as Cross-Subsidies or Capacity Transfers

During aggregation design and implementation, cherry-picking practices can occur. Service providers will naturally prefer to extend services to wealthy populations for cost-recovery reasons and to easy-to-reach areas where

infrastructure already exist. In doing so, service providers select solvent customers for good revenue collection and seek to avoid sunk investment costs and associated increases in operating expenses. This situation happened in Mozambique, where cherry-picking practices have been observed because of the low commercial attractiveness of urban water services. The initial plan of the Mozambique government, launched in 1998 and called the delegated management framework, was to differentiate investment and operation functions for urban water services. The investment function for all urban water services was to be aggregated into an autonomous public entity, FIPAG, whereas the operation function would be delegated to private operators through bidding processes. The first call for tenders was issued in 1999 and concluded in 2004 for Maputo and four other major cities. But the contract was prematurely terminated in 2010 for commercial reasons. FIPAG launched several other bids, which were unsuccessful because urban water services suffer from low revenue collection and significant political interference in the form of tariff policy. The lack of private sector interest in managing urban water services prompted FIPAG to become the operator of urban utilities across the country.

Lesson 3: Aggregation Takes Time to Show Results; Gradual Improvement Strategies are Particularly Successful

Both the design and implementation of aggregation take time; in particular, implementation is a continuous process that can spread over decades. As a result, aggregation benefits also take time to materialize. A gradual improvement strategy with regard to the main purpose of the aggregation has proved successful in many cases because such a strategy spreads over time the efforts and changes to be made. Such strategies often use performance-based targets. Regular monitoring also facilitates accountability toward shareholders and customers because improvement can be steadily demonstrated

over time. All utilities operated by FIPAG report on a number of performance indicators yearly. The IQS is an index based on eight indicators: coverage, continuity of service, percentage of invoicing based on actual readings, number of complaints per connection, average response in time, total percentage of complaints answered, number of water quality parameters controlled, and compliance with standards.

Notes

1. Government of Mozambique, Resolution No. 7/95, August 8, 1995.
2. Government of Mozambique, Resolution No. 60/98 of December 23, 1998.
3. Government of Mozambique, Decree No. 72/98 of December 23, 1998.