Mozambique’s Experience with the Delegated Management of Urban Water Supply Services, 1999 – 2007

CASE STUDY OF FIPAG
Submitted by Thelma Triche,
January 14, 2009
ACKNOWLEDGEMENTS

The author would like to thank Mr. Nelson Beete, President of FIPAG, for his guidance and inputs and Mr. Frederico Martins, Operations Manager of FIPAG, for his support and assistance throughout the study. Many other persons also provided information. The contributions of Mr. Julião Alferes, Director of DNA, Mr. Manuel Alvarinho, President of CRA, Manuel Fernandes Thomaz and Jose Santa Marta of Águas de Moçambique, and Peter van den Horn of Vitens were particularly critical to the success of this study. Chris Ricketson, consultant, and Jane Walker, lead specialist, water supply and sanitation, at the World Bank, reviewed the drafts of this case study and provided invaluable insights, especially regarding the tendering of the original contracts, conditions affecting the bids, experiences in early years of the contracts and lessons learned. Midori Makino, senior financial analyst at the World Bank, supervised the case study.

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<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>AdeM</td>
<td>Aguas de Mozambique (private water supply operator)</td>
</tr>
<tr>
<td>AdeP</td>
<td>Aguas de Portugal (publicly owned private water supply operator)</td>
</tr>
<tr>
<td>AfDB</td>
<td>African Development Bank</td>
</tr>
<tr>
<td>AHC-MMS</td>
<td>Asset Holding Company-Mining and Municipal Services of Zambia</td>
</tr>
<tr>
<td>CFPAS</td>
<td>Center for Professional Training in Water and Sanitation</td>
</tr>
<tr>
<td>CRA</td>
<td>Water Supply Regulatory Council of Mozambique</td>
</tr>
<tr>
<td>DGIS</td>
<td>Netherlands Ministry of Development Cooperation</td>
</tr>
<tr>
<td>DMF</td>
<td>Mozambique’s Delegated Management Framework for Water Supply</td>
</tr>
<tr>
<td>DNA</td>
<td>National Water Directorate of Mozambique</td>
</tr>
<tr>
<td>DWP</td>
<td>Delegated Works Program</td>
</tr>
<tr>
<td>EIB</td>
<td>European Investment Bank</td>
</tr>
<tr>
<td>FIPAG</td>
<td>Fund for Investment and Ownership of Water Supply Assets</td>
</tr>
<tr>
<td>GOM</td>
<td>Government of Mozambique</td>
</tr>
<tr>
<td>GPOBA</td>
<td>Global Program for Out-put Based Aid</td>
</tr>
<tr>
<td>IDA</td>
<td>International Development Association</td>
</tr>
<tr>
<td>MCC</td>
<td>Millennium Challenge Corporation of the U.S.</td>
</tr>
<tr>
<td>MIS</td>
<td>management information system</td>
</tr>
<tr>
<td>MOPH</td>
<td>Ministry of Public Works and Housing of Mozambique</td>
</tr>
<tr>
<td>MOU</td>
<td>memorandum of understanding</td>
</tr>
<tr>
<td>MZN</td>
<td>new meticais (Mozambique’s currency)</td>
</tr>
<tr>
<td>NWDP II</td>
<td>the IDA-funded Second National Water Development Project</td>
</tr>
<tr>
<td>O&amp;M</td>
<td>operation and maintenance</td>
</tr>
<tr>
<td>OLC</td>
<td>original lease contract</td>
</tr>
<tr>
<td>OMC</td>
<td>original management contract</td>
</tr>
<tr>
<td>RLC</td>
<td>revised lease contract</td>
</tr>
<tr>
<td>RMC</td>
<td>revised management contract</td>
</tr>
<tr>
<td>SAUR</td>
<td>the private French water company that was the original lead partner</td>
</tr>
<tr>
<td>SSIP</td>
<td>small-scale independent provider</td>
</tr>
<tr>
<td>SWP</td>
<td>Small Works Program of NWDP II</td>
</tr>
<tr>
<td>UFW</td>
<td>unaccounted for water</td>
</tr>
<tr>
<td>WASIS</td>
<td>Water Services and Institutional Support Project</td>
</tr>
</tbody>
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EXECUTIVE SUMMARY

**Brief Facts about Mozambique**
Mozambique is a large country in southeastern Africa with a coastline on the Indian Ocean, an area of about 786,000 square kilometers, and an estimated population of 21 million people. The country is divided into nine provinces. (See map in Appendix C) Thirty-five percent of the population lives in urban areas. In 2007, the capital city Maputo and its metropolitan area had a population of 1.8 million. After its independence from Portugal in 1975, the country engaged in a long and devastating civil war for nearly three decades.

**The Delegated Management Framework**
When the prolonged civil war in Mozambique ended in 1992, water supply infrastructure was severely deteriorated and few new investments had been made since the mid-1970s. In 1998, the Government of Mozambique (GOM) adopted a comprehensive institutional reform for the development, delivery and regulation of urban water supply services in large cities. The new framework, known as the Delegated Management Framework (DMF), was inaugurated with the creation of two autonomous public bodies – an asset management agency (FIPAG) with the authority to contract operators and an independent regulator (CRA). The National Directorate of Water in the Ministry of Public Works and Housing continues to exercise policy oversight for the services.

**Lease and Management Contracts with Aguas de Mozambique in Five Cities**
In 1999, FIPAG signed a 15-year lease contract with a private company for water supply in the capital city, Maputo, and five-year management contracts for water supply in four provincial capitals in the central and northern parts of the country: Beira, Quelimane, Nampula and Pemba. The decision to award five separate but bundled contracts (one lease contract and four management contracts) was influenced by several factors: the existing market structure inherited from the colonial period when water supply services were managed in a decentralized manner in each city, the government’s policy to promote the development of financially viable decentralized services, and the fact that services in the provincial capitals were not ready for stand-alone lease contracts and would probably not attract qualified operators for management contracts unless bundled.

The private partner, Aguas de Mozambique (AdeM), was created by a consortium of foreign water supply operators and local investors led by the French private operator, SAUR. Selection was based on a combined score for the technical and financial proposals. AdeM's financial bid – including the lease fee for services in Maputo, management fees for services in the provincial capitals, rates to be charged for delegated works and for management of the investment program, preparation of tenders, and supervision of capital works – was substantially lower than that of the closest competitor. These fees ultimately proved to be unrealistically low.

**Renegotiation of the Contracts**
By 2001 AdeM had encountered serious financial difficulties – exacerbated by the floods of 2000 and delays in the implementation of new investments – and in December 2001 SAUR terminated its involvement. Subsequently FIPAG and AdeM’s remaining partners led by Aguas de Portugal signed a Memorandum of Understanding that set out the basis
for continuing the arrangement while the lease and management contracts were renegotiated. The revised contracts introduced higher fees and a number of improvements, especially in the specification of service obligations and procedures. The revised lease contract between FIPAG and AdeM became effective in April 2004, and will terminate on November 30, 2014, fifteen years after the starting date of the original lease contract. The revised three-year management contract for the period April 2004 – March 2007 consolidated the four original management contracts into a single contract and required AdeM to dedicate more resources, including six full-time resident team members, to the management of services in the four provincial capitals. It was subsequently extended for an additional year and terminated in March 2008.

**Management Partnerships with Vitens for Services in Nine Cities**

In 2004, FIPAG entered into a three-year contract with the Dutch company Vitens under which the latter provides management services and training in four small and medium-sized southern cities – Xai-Xai, Chokwe, Inhambane and Maxixe – where the AfDB is financing major investments. A contract between FIPAG and Vitens was signed in 2006 for services in five additional cities in central Mozambique – Chimoio, Gondola, Manica, Tete and Moatize. These contracts were considered transitional arrangements to prepare the services for more conventional delegated management. While Vitens’ obligations were similar to those in AdeM’s revised management contract, its services were provided free of charge and its staffing arrangements were quite different. The team included a full-time resident team leader, several Vitens specialists, who made regular three-week visits, and locally recruited young professionals.

**Donor Support**

The continuous support of donor institutions has been one of the key components of the success of the reform. The World Bank (IDA), the African Development Bank (AfDB), the European Investment Bank, the Government of the Netherlands, the French Development Agency, and several others responded very enthusiastically to the DMF and contributed US$ 450 million for investments, technical assistance and operational support to FIPAG during the period 1999 - 2007. An additional US$ 8 million was provided to CRA to support the development of the regulatory framework. Although FIPAG will reach financial equilibrium in the near future and will be able to start servicing its debt, it will continue to depend on donor financing for additional investments. In 2007, new projects were underway or were being prepared by IDA, the Global Program for Output-Based Aid and the U.S. Millennium Challenge Corporation. These targeted the expansion of networks, improving service for the poor and extending the reforms to smaller cities and towns.

**Performance of the Operators as of 2007**

The field work for this case study was carried out in October 2007. As of that date, AdeM’s performance had been mixed but, despite delays and other challenges, services had improved and the foundations for financial viability and sustainability had been established. Vitens’ performance in management support appeared to be very good. Care must be taken in interpreting differences in the performance of the two companies, since they were operating under different contractual frameworks and during different time periods.

*Capital works:* The contracts with private operators and the associated donor-funded investment programs initially focused on rehabilitation and increases in production
capacity. It provided limited resources for increasing connections and coverage, due to the low capacity and poor performance of existing assets. The operators were responsible for design, preparation of tenders and supervision of capital works projects. Due to AdeM’s lack of experience with donor projects, the floods of 2000 and 2006, and the lack of mechanisms for effective cooperation between FIPAG and AdeM, implementation of works in the five service areas for which AdeM was responsible was delayed. As a result follow-on programs to increase connections were postponed and by 2007, although coverage had increased in all AdeM’s service areas, it remained relatively low. Capital works procurement and implementation problems were resolved in 2006 after mutual responsibilities were clarified, clear procedures were established and tendering responsibilities were assumed by FIPAG. Completion of works in the AdeM areas sped up thereafter. Implementation of works managed by Vitens was completed on schedule. Nevertheless, FIPAG decided not to include the design, preparation of tenders and supervision of capital works programs in future operators’ contracts.

Delegated works: The Delegated Works Program was an innovation of the IDA-funded National Water Development Project (NWDP II) that allowed the operators to undertake rehabilitation and replacement of networks, meters and damaged connections in a flexible manner without having to adhere to donor procurement procedures. It was intended to give the operator control over resources for specified works that would support performance improvements, particularly water loss reductions, but the lack of improvement in water losses (see below) indicates that AdeM did not succeed in using it to this end. Originally scheduled for completion within the first two years of the original contracts, the majority of those in AdeM’s service areas was finally completed in September 2007, three years after the revised contracts became effective.

Service quality and efficiency: Service quality, measured in average number of hours of service per day and time required to respond to customers’ requests for service and complaints, had improved in all the service areas under delegated management. In 2007 testing and monitoring of water samples was well-established, though the percentage of samples failing potable water quality standards was still somewhat high in Maputo. Efficiency improvements were mixed. Reduction of unaccounted-for-water was very disappointing and high levels of UFW remained a problem in all the service areas. Collection ratios range from 0.84 to 0.97. Maputo had a ratio of only 0.87, a key factor in its high level of non-revenue water. Staff productivity in Maputo (measured as the number of staff per 1000 connections) compared very well with efficient large water companies in the Africa region. Staffing ratios were still high in the other FIPAG areas, but were improving as the number of connections increases.

Service for the Poor: Once major works had increased capacity in most areas, expansion of connections and increased coverage of the poor were high priorities. A number of innovative institutional arrangements for the management of services in peri-urban areas were being introduced or piloted by AdeM and FIPAG with the support of donors. FIPAG was considering the legalization of small-scale independent providers in Maputo and CRA was encouraging a reform of the management of standpipes and the licensing of water resellers.

Financial results of the Maputo lease contract: AdeM’s lease contract operations in Maputo were not yet profitable due in part to the lack of adequate capacity to dramatically increase connections and AdeM’s failure to reduce water losses and reach a higher level of collection efficiency. The high cost of the technical assistance contract with AdeP was another financial burden. After eight years of operations all the top executives were still expatriates. Reflecting these financial difficulties, the timeliness of
the payment of variable lease fees to FIPAG was erratic until FIPAG executed the Payment Bond in late 2007. These payments are essential for FIPAG’s financial viability, especially as it begins to repay loans to the World Bank, the African Development Bank and the European Investment Bank in 2010-2012.

Financial results in other service areas: In the four provincial capitals where AdeM provided management services, financial performance improved steadily and it was also generally improving in the service areas supported by Vitens. The O&M recovery rate in almost all these areas was either over 1.0 or was improving rapidly and would in all probability soon reach or exceed 1.0. These results were significant because they indicated that these areas would soon be able to contribute to the repayment of loans.

AdeM’s management teams: The staffing of AdeM’s management teams was problematic and there were numerous turnovers in the top levels. The contracted expatriates were not always effective mentors – after eight years of operations, the top management team in Maputo was still composed entirely of expatriates and FIPAG was concerned about the lag in replacing them with local professionals. An effective model for the composition and deployment of the management team for the four provincial capitals did not evolve and AdeM did not succeed in developing a viable management support strategy. As a result, in 2005 FIPAG centralized the AdeM team in Beira and in 2007 appointed local “delegated directors” in the four provincial capitals. As is typical of private operators, the expatriate teams provided by AdeM were made up of specially contracted staff who had never worked in SAUR’s or AdeP’s operations in France or Portugal. As a result they were not familiar with the corporate culture; nor did they have a network of useful contacts within the companies that they could call upon. Under pressure from FIPAG, this problem was finally addressed and the team in Maputo at the end of 2007 included members who had worked for AdeP.

Vitens’ management teams: Vitens used an innovative staffing model to promote the rapid transfer of skills and responsibilities to FIPAG management staff and local professionals. All Vitens expatriates were regular employees of the company in its home operations who, except for a resident team leader, worked in Mozambique for three weeks at a time three times per year. In addition, Vitens’ practice of hiring Mozambican college students and recent graduates to serve as local team members enabled it to maintain continuity between visits while promoting the development of local expertise. Though it was too early to evaluate its success, this model appeared to be promising as an interim or transitional step prior to more conventional private participation.

Local managers and staff: FIPAG’s delegated directors in the four AdeM management contract service areas assumed responsibility for day-to-day decisions in 2007, though they still relied heavily on FIPAG’s central leadership and contracted experts. In the service areas supported by Vitens FIPAG directors made management decisions with the support of Vitens staff. This was in contrast to the situation in Maputo where, in 2007, the top management team was still comprised entirely of expatriates. All observers reported significant improvements in the technical performance and attitude of staff of the provincial services (under both AdeM and Vitens) over the period of the contracts, but agreed that further improvement was needed, particularly in the areas of client relations and in leadership skills at the middle management level. In 2007, 50 percent of the staff of AdeM in Maputo reported they were very satisfied. None of the transferred staff had been laid off except for disciplinary reasons.
Maturity of the Institutional Framework in 2007

Despite early difficulties with the delegated management contracts, the government of Mozambique remained committed to and supportive of the reform. FIPAG and CRA currently enjoy widespread respect of the government, municipal authorities, private operators and donors; and their autonomy was upheld. FIPAG’s net income in 2007 was near the breakeven point and it expected to be able to begin servicing debt. It had developed a disciplined approach to specifying and monitoring performance targets and was improving the recording and analysis of data and its use for planning. CRA had thus far managed to strike a balance among the competing objectives of protecting consumers, keeping tariff increases within politically acceptable limits, promoting efficiency and enabling FIPAG to gradually achieve financial sustainability. It had been particularly pro-active in monitoring customer satisfaction, promoting improvements in services, particularly for the poor, and promoting alternative institutional arrangements.

Lessons Learned

Baseline data, management of risks, and accountability mechanisms: The difficulties experienced by AdeM and FIPAG early in the original contracts demonstrated how important it is that reliable audited baseline data be available before private operators are asked to accept significant financial risks. Even when relatively good data are available, the potential need for correction should be foreseen. A rule that allows for a critical review and potentially the rejection of bids that are significantly lower than consultant estimates might help avoid the moral hazard associated with unrealistically low bids. Some observers believe that another shortcoming of the contracts was the absence of direct incentives or financial penalties for failure to achieve contractually specified targets and standards.

Bundling of contracts: Bundling of service areas that have large disparities in size, risks and profitability may be justified and can create economies of scale and scope, but safeguards need to be put in place to ensure that the operator will dedicate sufficient resources to smaller service areas. Lower cost management models that provide an adequate professional presence in small service areas need to be developed. FIPAG’s approach – appointing local delegated managers and providing them with professional support – and the Vitens model are promising models that could be tried elsewhere.

Investment strategy: The sequencing of capital works and rehabilitation presents a dilemma in that it should take into account not only technical engineering factors but also financial, political and social priorities – such as expanding coverage. Delays in the implementation of works frequently occur when new institutional arrangements are being created. Adequate time and resources need to be allowed for start-up of such arrangements. Delegated works programs (implemented by a contracted operator) should be explicitly linked to, though not necessarily conditioned on, expected improvements in performance.

Allocation of responsibilities: It should not be assumed that private operators always perform all tasks more efficiently than public entities. If private operators with lease or management contracts are expected to assume design, tender preparation and supervision responsibilities for the implementation of donor-funded capital works, a great deal of care must be given to create effective mechanisms for coordination between the operator and the asset management entity/owner. The private operator should have proven expertise in the implementation of donor projects.
The private operator’s team: To ensure that the high cost of international operators is justified by the effective transfer of scarce management skills, team positions should be filled by professionals who have worked for the operator in its home country or a similar context for a minimum number of years. While technical competence is a prerequisite, professionals provided by the operator must also have experience in managing change, institutional development and mentoring local managers. There should be a clear framework for phasing out international experts and promoting local staff to senior positions as well as to strategic decision-making levels within the corporate structure.

Alternative forms of international private participation and support: The Government of the Netherlands and Vitens have developed an innovative model for supporting the MDGs in the urban water supply sector that other developed countries and operators could be encouraged to copy. Under the Vitens model, shareholders of the Dutch company fund small grants to offset the cost of technical assistance. Alternatively, customers could be asked to make small monthly or quarterly donations when paying their water bills to support outreach activities. Operational support is funded by bilateral donors, and major investments are funded under more conventional donor projects.

Promotion of local private operators: To minimize the cost of delegated management and ensure its sustainability, contracts should be structured so as to promote the emergence and strengthening of local private operators and professionals. Again, FIPAG’s appointment of competitively tendered local delegated managers who work under incentive contracts is a potential model.

Credible and stable institutions: Despite the challenges the reforms in Mozambique faced, they have been sustained and benefits are now being reaped. The conditions that made this possible were the firm commitment of the government to the reform, effective consultation with stakeholders which engendered widespread support for and confidence in the reform, the creation of a strong public asset holding company and a non-political regulator to carry the reform forward, and continuity and excellence of the leadership of the key public institutions.

Innovative solutions for peri-urban areas: The operator and the regulator should be proactive in taking advantage of local knowledge and seeking creative solutions for serving peri-urban areas. Strong coordination with local authorities particularly at the community level, partnerships with local small-scale providers, decentralization within the utility to bring the company closer to the customers, and partnerships between government institutions, operators and other stakeholders can be useful for defining and piloting innovative approaches.
1. **INTRODUCTION**

1.1. **Brief Geography and History**

Mozambique is a large country in southeastern Africa with a long coastline on the Indian Ocean, an area of about 786,000 square kilometers, and an estimated population of 21 million people. Thirty-five percent of the population lives in urban areas. The capital city, Maputo, and its metropolitan area has a population of 1.8 million. The country is divided into nine provinces. (See map in Appendix C) The northern part of the country includes the provinces of Cabo Delgado, Niassa and Nampula. The center includes the provinces of Tete, Zambezia, Manica and Sofala. The south includes the provinces of Inhambane, Gaza and Maputo.

After its independence from Portugal in 1975, the country engaged in a long and devastating civil war for nearly three decades. 1992 saw the signing of a peace accord between rival parties. The constitution of 1990 created a multi-party democracy and in 1994 free elections generated voter turnout of over 80 percent. After some delays, in 1998 the country held its first local elections to provide for local representation and some budgetary authority at the municipal level.

With a per capita GNP of $310, Mozambique is considered one of the poorest countries in the world. Following the civil war, infrastructure was in total ruins and the government has been faced with the challenge of rebuilding the country. The resettlement of civil war refugees, new political stability and continuing economic reforms have led to a high economic growth rate. Between 1994 and 2006, average annual GDP growth was approximately 8 percent, despite the interruption of the floods of 2000. The World Bank predicted average growth of 7 percent in 2007 – 2008. Exports include aluminum, cashews, prawns, cotton, sugar, citrus, timber, bulk electricity and natural gas.

1.2. **The Urban Water Supply and Sanitation Sector**

Mozambique’s urban water supply reform was initiated in 1998. It encountered serious problems in its early years when the lead private partner in Aguas de Mozambique withdrew because of financial losses. The Government’s commitment to reform, the perseverance of sector leaders in key public institutions and the continued participation of the remaining private partners enabled the reform to survive a difficult period. The benefits of the reform are now being reaped in the form of credible institutions and significant improvements in services.

When the prolonged civil war in Mozambique ended in 1992, water supply infrastructure was severely deteriorated and few new investments had been made since the mid-1970s. In 1998, the Government of Mozambique (GOM) adopted a comprehensive institutional reform for the development, delivery and regulation of urban water supply services in large cities. The new framework, known as the Delegated Management Framework (DMF), was inaugurated with the creation of two autonomous public bodies. An asset management agency, *Fundo de Investimento e Patrimônio do Abastecimento de Água* (FIPAG), was charged with financing and implementing investments in the water supply services that were entrusted to it and with contracting third parties to

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manage and operate those services. An independent regulator, *Conselho de Regulação do Abastecimento de Água* (CRA), was given the authority to provide economic regulation of the water supply services placed under the DMF.

In 1999, FIPAG signed a 15-year lease contract with a private company for water supply in the capital city, Maputo, and five-year management contracts for water supply in four provincial capitals. The private partner, Aguas de Mozambique (AdeM), was created by a consortium of foreign water supply operators and local investors.

Extensive flooding in 2000 further destroyed infrastructure, delayed the implementation of new investments, and strained the financial performance of the services. By 2001, AdeM had encountered serious financial difficulties and, in December 2001, the lead private foreign operator, SAUR International, terminated its involvement. In spite of these setbacks, GOM’s strong political commitment to the reform, the dedication of key sector leaders, the growing credibility of the new sector institutions and the continued support of donors ensured that the reforms were sustained.

In 2003 and 2004, FIPAG signed revised contracts with a restructured AdeM in which Aguas de Portugal, which had been a minority partner in the initial company, became the major shareholder. Recovering from a very shaky start and facing a number of challenges, FIPAG and CRA, with strong support from the Minister of Public Works and Housing, National Water Directorate (DNA) and other stakeholders, have persevered in carrying the reform forward. However, the arrangement has not been trouble-free. AdeM’s performance was hindered by the difficulty of attracting effective management team members, frequent turnover of management team members, internal management issues, and AdeM’s lack of influence over corporate decisions made in Europe. FIPAG and CRA had to contend with the usual capacity-building challenges of new institutions. Due to the combined effects of all these factors, the achievement of efficiency and financial objectives has taken far longer than expected. In spite of these delays, service quality has improved in most service areas and, as key capital investments are completed, coverage is expected to increase rapidly beginning in 2008. FIPAG is well on the way to achieving full financial viability and is expected to begin repaying its debts to the Ministry of Finance in 2010 – 2012. These are associated with credits from the World Bank/International Development Association (IDA), the African Development Bank (AfDB) and the European Investment Bank (EIB).

With eight years of institutional experience behind them, FIPAG and CRA have matured to become strong public sector entities that could serve as models for other countries in the region. FIPAG has further consolidated sector reforms by introducing an alternative and highly successful form of delegated management in nine additional cities with the support of the Government of the Netherlands and Vitens, a Dutch water supply company. Drawing on the lessons of its early experiences, FIPAG is now tendering the next phase of delegated management contracts for services in the four provincial capitals where AdeM’s management contract terminated in March 2008.

It is no wonder that the DMF and the contracts with AdeM, fraught as they were with a succession of problems, risked being labeled as failures. In fact, if the experience cannot be rated a glowing success, significant progress has nevertheless been made and a strong foundation for future success has been laid. Given the challenges the DMF faced in its early years and its emergence from these, it is a particularly rich subject for study. The objectives of this case study are to document the history of the DMF and extract its lessons, so that policy makers and sector professionals in Mozambique and other developing countries, and their international partners can benefit from them.
2. HISTORY AND DESCRIPTION OF THE CONTRACTS

2.1. Sector Reform

2.1.1. The Delegated Management Framework

In 1998, GOM adopted a sector reform that introduced the principles of autonomy, financial viability and accountability in urban water supply services. At the time of independence in 1975, most urban water supply services were operated by semi-autonomous municipal operators. The main exception was a 50-year concession to a private operator for water supply services in Beira that formally ended in 1999. With independence most of the skilled Portuguese staff returned to Portugal and the urban water utilities deteriorated badly. As a result the central Government took over, setting up state companies that depended on central government for investments. Following the long civil war that ended in 1992, water supply infrastructure was in severely dilapidated condition and the service providers lacked the basic resources necessary to function effectively. Due to the uncontrolled growth of the urban population after independence, a phenomenon that was aggravated by the war, service was available to only a small portion of the urban population.

The reform of the water sector in Mozambique dates back to 1991 when the Water Law was enacted. In 1995 the Government (GOM) adopted the National Water Policy. Collectively, these two documents endorse the following principles and objectives (among others):

- Increasing the access of the population, especially the poor and rural population, to water supply and sanitation services;
- Improving cost-recovery to create financially viable services,
- Limiting the role of the State to setting priorities and standards, promoting the development of services, regulating services and investing in infrastructure.
- The delivery of services by autonomous service companies or private operators that strive for managerial, financial and operational excellence

In 1998 GOM introduced the Delegated Management Framework (DMF) for urban water supply services. DMF espouses the separation of asset management from operations – the former to be the responsibility of an autonomous public entity (FIPAG) and the latter to be contracted out to private companies whenever feasible. It also endorses full cost recovery tariffs for water supply services in urban areas. While the DMF centralizes responsibility for asset management and the award of contracts for operations, it foresees the eventual decentralization of these responsibilities to municipalities. It is GOM’s strategy that, before decentralization takes place, (i) the central government should develop the infrastructure; (ii) service operations should become viable; and (iii) the municipalities should be able to assume responsibility for planning and financing assets and contracting operators. It is expected that the operations will be contracted out to autonomous entities, preferably private operators. In the meantime, municipalities participate in the planning and oversight of the services through the Stakeholders’ Forum (see below).

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3 Resolution n° 7/95 of August 8, 1995.
The Fund for Investment and Patrimony of Water Supply / Fundo de Investimento e Património do Abastecimento de Água (FIPAG) was created in 1998 and started operating in 1999 with the mandate to:

- Act as the representative of the State and the guardian of water supply assets in designated towns and cities;
- Manage the financing of investment in those systems;
- Award and supervise contracts with private service providers for the operation of water supply services in the designated towns and cities; and
- Operate services not yet transferred to private operators on a temporary basis.

A three-year contract-program between the Ministry of Public Works and Housing (MOPH) and FIPAG’s Board of Directors defines FIPAG’s strategic and financial objectives.

Another feature of the sector reform is that the National Directorate of Water / Direcção Nacional de Águas (DNA) now focuses on policy and strategic guidance while decentralizing and deconcentrating the operation of urban water supply and sanitation services. DNA negotiates and monitors FIPAG’s contract-program on behalf of MOPH. It remains responsible for investments in urban water supply services that are not within FIPAG’s program and for services in the country’s rural areas, and can award contracts for the operation of those services.

The Water Supply Regulatory Council / Conselho de Regulação do Abastecimento de Água (CRA) was created in 1998 and began to function in 2000. It is charged with regulating tariffs, protecting consumers and ensuring the economic sustainability of water supply services that are operated under delegated management contracts. CRA also has a mandate to promote the effectiveness and the improvement of delegated management arrangements, and to mediate disputes between the contracting entity and the operator when requested by both parties. For each of the service areas, CRA and FIPAG negotiate a performance program that includes targets for service quality and financial performance. CRA’s delegates in each of the cities monitor the performance of the service providers and assist customers to resolve problems.

Municipal authorities participate in the oversight of water supply services through a Stakeholders’ Forum which advises the Minister of Public Works and Housing on the implementation of the DMF and plays a role in the selection of FIPAG’s Board of Directors. Municipal authorities are also involved in the planning and oversight of capital works programs carried out by FIPAG in their respective jurisdictions.

Figure 2.1 presents an institutional diagram of the DMF.

2.1.2. Donor Support

The continuous support of donor institutions has been a key component of the success of the reform. The World Bank (IDA), the African Development Bank (AfDB), the European Investment Bank (EIB), the Government of the Netherlands, the French Development Agency, and several others responded very enthusiastically to the DMF and contributed US$ 450 million for investments, technical assistance and operational

support to FIPAG during the period 1999 - 2007. An additional US$ 8 million was provided to CRA to support the development of the regulatory framework. Although FIPAG will reach financial equilibrium in the near future and will be able to start servicing its debt, it will continue to depend on donor financing for additional investments. In 2007, new donor-funded projects were underway or were being prepared for FIPAG service areas. Among these was the US$ 30 million WASIS project (funded by IDA and the Africa Catalytic Growth Fund) that will expand networks in four provincial capitals, support institutional strengthening that will enable DNA to extend the DMF to smaller towns, and provide institutional support for CRA. The Global Program for Output-Based Aid (GPOBA) will provide US$ 6 million to subsidize connections for low-income households in peri-urban areas. In collaboration with FIPAG and DNA, the United States Millennium Challenge Corporation (MCC) will support supporting further investments worth US$ 35 million in FIPAG’s service areas and US$ 160 million to extend reforms to smaller cities and towns through an adaptation of the DMF that is suitable to their context.

2.2. The Original Contracts with Aguas de Mozambique

2.2.1. Tendering Process for the Original Contracts

The GOM introduced the DMF initially in five service areas that included the capital city Maputo in the south, and four provincial capitals in the central and northern parts of the country.

The tendering of the contracts followed World Bank procurement rules. In October 1998 invitations to participate in a competitive international bidding process were sent to three pre-qualified consortia of companies. Each bidder was required to submit a single bid to undertake a 15-year lease contract for water supply services in Maputo and four five-year management contracts for services in Beira, capital of Sofala Province; Nampula, capital of Nampula Province; Pemba, capital of Cabo Delgado Province; and Quelimane, capital of Zambezia Province. (See Table 3.2 for the population of these and other cities of relevance to this study.)

Three consortia submitted proposals that included two parts, financial (worth 75 percent) and technical (worth 25 percent). Each bidder’s financial score was based on the net present value of:

- The operator’s nominal revenue (the operator’s bid lease rate times a nominal volume of water) during the first five years in Maputo;
- The operator’s total fixed fee for the five years of the management contracts;
- The cost of delegated works;
- The cost of investment program management, tender preparation and site supervision services during the first five years.

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5 Other donors include the European Commission’s Water Facility, UNDP, CIDA (Canada), Denmark, Italy, Portugal, SIDA (Sweden) and Switzerland.
6 Donors to CRA include IDA, AfDB, UN-Habitat, Swiss Cooperation and Water Aid.
7 Maputo’s neighbor city, Matola, is part of the Maputo service area, and Beira’s neighbor, Dondo, is part of its service area.
Since the revenue for water sales in Maputo was by far the largest component of the total (representing about 70 percent of the net present value of the estimated operator’s revenues during the first five years), the lease rate was the most important component of the bid.\textsuperscript{8} The technical score was based on the quality of the bidder’s technical proposals for services in Maputo and the four provincial capitals.

In April 1999 Aguas de Mozambique (AdeM), a consortium of SAUR International as majority partner, IPE Aguas de Portugal International (a company owned by the government of Portugal) and a group of five local investors, was declared the successful bidder with the best combined technical and financial score. At US$ 0.38/cubic meter, its lease rate was 35 percent lower than the US$ 0.58/cubic meter proposed by the closest competitor. On September 27, 1999, the lease contract for Maputo and the four management contracts were signed. The official date of takeover of the services was December 1, 1999.

\subsection*{2.2.2. Structure and Bundling of the Five Contracts}

\textit{The decision to award two different types of contracts and to bundle all five was influenced by several factors, particularly the existing decentralized market structure inherited from the colonial period when water supply services were managed by the municipalities or, in the case of Beira, a local company. Building on this structure, the government’s policy was to lay a foundation for decentralization of responsibility for water supply services by maintaining separate services, each of which would be expected to achieve financial viability and have its own differentiated tariff. Under these conditions, a single central lease contract, which would have treated the five systems as a single business with a single operator’s rate, was not an acceptable option.}

However, the services in the four provincial capitals were not yet ready for stand-alone lease contracts. As in Gabon, Mali and Ghana where management contracts were used as a transitional arrangement prior to introducing lease contracts or concessions, it was expected that the management contracts would lead to future lease contracts.

There were several reasons for bundling the contracts, i.e., awarding all to a single operator. One was to avoid overwhelming FIPAG (which would be a new institution facing the usual start-up challenges) with the supervision of contracts with multiple operators. In addition, bundling would overcome a lack of bidder interest in the contracts for the smaller cities and enable the operator to capture economies of scope and scale.

It was understood from the start that the operator might focus on Maputo at the expense of the four provincial capitals. For this reason, the original lease contract included a cross default clause whereby a default of a management contract would result in a default of the lease.

The situation in Mozambique was thus quite different from that of Senegal where a single lease contract was awarded in 1995 for services in most of the country’s larger urban areas. In Senegal, a single water utility had been created during the colonial period and, following independence in 1960, a national water supply utility had operated services in Dakar and 41 secondary towns for more than 30 years.

\begin{footnotesize}
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\item 8 Lower proposed rates resulted in a higher calculated financial score
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2.2.3. AdeM’s Bid
Because AdeM’s bid ultimately proved unrealistically low, it is worth reviewing the projections of costs and revenues on which it was based.

**Projected revenues:** AdeM’s lead partner, SAUR, enjoyed the advantage of having provided technical assistance to improve billing and commercial practices in Matola, Maputo’s neighboring city served by Águas de Maputo, prior to the procurement. On the basis of its familiarity with conditions there, it decided to ignore the independent consultant’s estimates of potential revenues in the Maputo service area, and calculated its financial rates on the basis of its own much higher revenue forecasts. Its relatively low lease rate was thus based on high projected revenues, which however proved to be overly optimistic.

**Projected operating costs:** All the bidders submitted broadly similar cost projections that were based on Aguas de Maputo’s historic costs.

**Construction costs associated with delegated works:** There was very little knowledge about market rates for water supply works, as there had been little construction activity in the sector in Mozambique over the previous 25 years. AdeM’s rates, which were lower than those of the next lowest bidder by a large margin, proved to be insufficient.

**Investment program management, procurement and site supervision fees:** AdeM’s proposals for these fees were underestimated as a result of an error. AdeM admitted this during negotiations of the original contract and asked for the fees to be revised upwards. However, their request was not granted at the time. However, during the renegotiation of the contract, these fees were increased to levels equal to those bid by the second lowest bidder. (See 2.3.1)

2.2.4. The Original Lease Contract
The original lease contract (OLC) could be considered an enhanced lease contract, similar to the affermage contracts used in Western and Central Africa. In addition to managing FIPAG’s investment program for the Maputo service area and carrying out a delegated works program for which it would be reimbursed, AdeM assumed responsibility for replacing operating equipment, certain small assets and meters at its own expense. Unlike classic affermage contracts, this contract required the operator to pay a fixed monthly rental fee as well as a portion of collected revenues. Its salient terms were:

- FIPAG transferred the water supply assets in Maputo and Matola to AdeM for use and care during the term of the contract.
- Existing staff were transferred to AdeM which assumed responsibility for all staff-related costs going forward. Transferred personnel could not be terminated during the first year of the contract except for disciplinary reasons.
- AdeM assumed responsibility for water supply operations, routine maintenance, commercial and financial management and administration.

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AdeM was responsible for replacement of operating equipment, small assets such as small pumps and, after the first five years of the contract, for meters – all at its own expense.

At FIPAG’s expense, AdeM would carry out delegated works aimed at reducing unaccounted-for-water. These works included replacement of meters and damaged connections during the first five years, and renewal of distribution mains and public standpipes and construction of new connections for the duration of the contract.

AdeM was compensated at a fixed “operator’s tariff” per cubic meter of water for which bills were collected regardless of the type of consumer. This provision gave the operator similar incentives to service standpipes and collect tariffs in low-income areas as to serve customers who pay higher tariffs.

AdeM was required to pay or remit:
- to FIPAG a fixed monthly rental fee of US$35,000 and a variable monthly rental fee equal to the difference between total collected revenues and the “operator’s tariff revenues”;
- to FIPAG fees paid by customers for new connections, and
- to CRA a “regulation levy” of US$20,000 per month.

AdeM prepared the annual investment program and related studies and was compensated at 1.21% of the value of the program. This was subsequently revised to 2.5% under the revised lease contract (RLC).

FIPAG remained responsible for approving the investment program and financing capital investments.

AdeM planned, procured and supervised implementation of major capital works on behalf of FIPAG and was compensated at 0.94% of the value of works managed. This rate was subsequently increased to 4% (2% for procurement and 2% for site supervision) under the RLC.

The contract allowed for periodic reviews of the operator’s tariff and the indexation formula every five years, and interim reviews under exceptional circumstances.

A more complete summary of the terms of the OLC alongside those of the revised lease contract (RLC) is presented in Appendix A, Part 2.

2.2.5. The Original Management Contracts for Four Provincial Capitals

In addition to typical management duties, AdeM was also required to manage FIPAG’s investment program in the four service areas. The salient terms of the four management contracts were:

- All local employees continued to be employed by FIPAG and AdeM was given management control and direction of employees.
- FIPAG was responsible for the cost of personnel, infrastructure, equipment and inputs.
- AdeM provided management services, including: preparation of a Strategic Business Plan, Annual Business Plans, a number of other plans, codes of practice, operating manuals, market surveys, etc.
AdeM was responsible for operation and maintenance; abstraction, treatment and distribution of water; procurement of inputs; leakage control; commercial operations and financial management.

AdeM was required to prepare and complete an agreed training program.

AdeM would plan, procure and provide site supervision for capital works on behalf of FIPAG.

At FIPAG’s expense AdeM carried out delegated works including renewal and replacement of the existing network and connections, and installation of new connections.

Despite the importance attached to creating viable decentralized services, the original management contracts did not require the operator to assign dedicated staff for the management of services in the four provincial capitals.

AdeM’s remuneration included:
- A lump sum fee linked to completion of the training program, submission of reports, and continuity of supply,
- Incentive payments for achieving performance targets,
- Payment for delegated works at specified rates,
- Fees for procurement and investment management services at specified rates.

A more complete summary of the terms of the original management contracts (OMC) alongside those of the revised management contract (RMC) is presented in Appendix B, Part 2.

2.3. Transition to a New Contractual Framework

After the lead private partner in AdeM, SAUR, withdrew FIPAG negotiated revised contracts with the remaining shareholders led by Aguas de Portugal International (AdeP). Soon after start-up, AdeM experienced financial problems in its Maputo operations as it found operating conditions to be less favorable than it had estimated. Its losses were exacerbated by extensive flooding in February 2000 which damaged infrastructure and delayed the rehabilitation and investment programs. On February 21, 2001, fifteen months after taking over, AdeM submitted a request for an Interim Review of the lessee/operator’s rate and the indexing formula in the lease contract. An independent auditor appointed by FIPAG, and agreed to by AdeM, concluded that the criteria for a material change of circumstance had not been met as many of the changes in circumstances cited by AdeM were not outside its control. However, the contract allowed CRA to instruct the parties to undertake an Interim Review and, judging that the restoration of financial equilibrium was in the interest of the customers, CRA did so. Negotiations over these and other rate increases under the lease continued until an agreement was reached in August 2001.

However, in the meantime, SAUR International’s parent company, Bouygues, under pressure from its shareholders, had decided to sell SAUR and eliminate loss-making projects. As of the end of December 2001, SAUR terminated its participation in AdeM.
2.3.1. The Memorandum of Understanding and Renegotiation of Contracts

*AdeM continued to operate services under a Memorandum of Understanding (MOU) while contract revisions were negotiated.* On December 15, 2001, FIPAG and the remaining shareholders, signed an Amending Agreement whereby SAUR ceased to be a shareholder in AdeM and ceded the value of its shares. Subsequently FIPAG and AdeM signed an MOU that set out the basis on which AdeM would continue to operate and principles governing the revisions to be negotiated in both the lease and management contracts.\(^\text{10}\)

These developments caused some consternation among the donors who were supporting the arrangements. The possibility of launching a new tender for the contracts was discussed with FIPAG. It was concluded, however, that a new tender was unlikely to attract a satisfactory level of competition. Under the circumstances, in order to avoid further delays in achieving the desired outcomes, it was concluded that the best available option was to renegotiate the contract with the reconstituted consortium led by AdeP, provided the reconstituted consortium fulfilled the qualification requirements to ensure satisfactory performance under the contracts.

During the implementation of the MOU, several fee increases were negotiated between FIPAG and AdeM. These included the operator’s rate under the lease contract in Maputo; the unit rates for delegated works; fees for program management, procurement, and site supervision; and the management fees for the four cities contracts. With the exception of the operator’s rate in Maputo, which applied only to the future, the revised rates and fees were retroactive to January 2001.

As consumer tariffs were not immediately adjusted to reflect the higher operator’s rate, the variable rental fee paid to FIPAG by AdeM in Maputo was reduced. Throughout the 23-month period of the MOU, GOM covered the shortfall. IDA funding of operational support for services in the four provincial capitals and for delegated works continued at the rates specified in the original contracts. The difference between the original and renegotiated rates also had to be covered by GOM until the revised contracts were approved by IDA in 2004. However, during the first two years of the contracts (2000 – 2002) and the MOU period (2002 – 2004), implementation of capital works funded by IDA and other donors was delayed. This seems to have been due to AdeM’s lack of familiarity with donor procedures and start-up problems within both AdeM and FIPAG. As a result, disbursements for works were minimal.

The MOU period provided an opportunity to strengthen other aspects of the contracts as well. The organization and drafting of the contracts was improved. FIPAG’s and AdeM’s obligations and a number of procedural matters were specified in greater detail. The supervision and governance structure was improved. FIPAG and CRA had been new institutions at the time of the original contracts and a clear understanding of the distinction between their roles with regard to oversight of the lease contract and AdeM had evolved. The redrafting of the contracts provided an opportunity for that distinction to be clearly articulated. For example, the role of CRA in approving customer contracts and making determinations in periodic and interim reviews of the lease contract became more explicit.

\(^{10}\) The decision by SAUR’s corporate owners to withdraw from Mozambique was not the only occasion when decisions made in Europe, that were unrelated to the situation in Mozambique, had a negative impact on AdeM’s ability to fulfill its contracts. The final approval of the negotiated MOU was complicated by a change of government in Portugal and subsequent appointment of a new Chairman of AdeP.
Once the revised lease and management contracts were signed in 2003 and 2004, the World Bank awarded a supplemental credit of US$ 15 million to cover the increased management fees and unit rates, both retroactively and going forward, and to continue operational support for services in the four provincial capitals.\(^\text{11}^\) The closing date of the IDA credit was extended by two years in 2004 to allow for the completion of works and the execution of the new contracts. In 2006, it was extended for another year due to extraordinary events, mainly flooding, which had caused further delays.

### 2.3.2. The Revised Lease Contract for Maputo Water Supply

The revised lease contract (RLC) between FIPAG and AdeM became effective in April 2004, and will terminate on November 30, 2014, fifteen years after the starting date of the Original Lease Contract. The RLC included several new features. In particular:

- It was refocused to specify operational requirements in greater detail. All required services were specified in the Services Appendix.
- A condition survey to be conducted every two years became the basis for distinguishing AdeM’s responsibility for maintenance and repair of large equipment, revenue meters and the network from FIPAG’s responsibility for replacement of worn out assets.
- AdeM assumed responsibility for renewing and replacing the network at its expense following the completion of the DWP.
- Following the completion of the DWP, AdeM became responsible for new connections and customers were to pay AdeM (rather than FIPAG as before).
- The circumstances under which AdeM would qualify for a subsidy were clearly specified.
- The frequency of the periodic reviews of the operator’s tariff and the indexation formula was changed from five to four years.

Key terms of the RLC with comments on improvements and other noteworthy issues are presented in Appendix A, Part 1.

### 2.4. The Consolidated Management Contract for Four Provincial Capitals

The revised three-year management contract (RMC) signed on January 28, 2004, consolidated the four original contracts into a single contract and required AdeM to dedicate more resources to the management of services in the four provincial capitals. Throughout the period of the original contract and the MOU, in hopes of capturing economies of scope and scale, AdeM had centralized senior management for all cities in Maputo and, despite its separate contracts, operated as a single business. When operational costs in Maputo proved higher than expected, resources for the other areas were squeezed. This resulted in the deterioration of commercial performance in the provincial capitals. The RMC addressed this problem and incorporated several other noteworthy changes. The new features included:

- AdeM’s resident staff for the four provincial capitals was increased to a total of six and it was required to assign dedicated staff to the four service areas under the management contract.

\(^{11}\) IDA did not fund any part of the lease rate for Maputo at any time.
A Special Account to facilitate the procurement of essential operational inputs was created.

The arrangements for remuneration were significantly changed: the base fee was increased and two forms of output-related fee were added.

The use of an independent auditor for evaluating operator performance and updating targets was introduced.

The management contract was separated from the lease contract (with separate accounts, separate personnel and a requirement that the manager would not depend on Maputo operations and could liaise directly with FIPAG and other authorities).

The RMC was to terminate at the end of March 2007, three years after start-up. FIPAG took advantage of the option to extend the contract for a fourth year through March 2008 to allow for completion of capital works and the preparation of follow-on delegated management contracts for the four provincial capitals. When AdeM departed in March 2008, FIPAG took over management of the systems on a temporary basis and selectively engaged short-term technical experts to complement its expertise until the transition to a new arrangement could be completed.

Key terms of the RMC with comments on improvements and other issues are summarized in Appendix B, Part 1. A more complete summary of the terms of the RMC is presented in Appendix B, Part 2 alongside those of the original management contract (OMC).

2.5. Management Partnerships for Services in Nine Additional Cities

In 2004, FIPAG and the Dutch water company Vitens N.V. introduced an innovative contract for management support for services in four small to medium-sized southern cities. In 2004, FIPAG was asked by the Government to assume responsibility for the water supply services in four southern cities where the AfDB is financing major investments – Xai-Xai (capital of Gaza Province), the neighboring town of Chokwe, Inhambane (capital of Inhambane Province) and the neighboring town of Maxixe. Vitens and FIPAG signed a three-year contract under which the Dutch company agreed to provide staff and resources to strengthen management, improve services and train staff.12 This arrangement was conceived as a transitional step that would help prepare the four services for conventional delegated management contracts with private operators.

Vitens bore the cost of its inputs, primarily human resources and related costs. In addition the Netherlands’ Ministry for Development Co-operation (DGIS) provided support for operation and maintenance costs. By 2007, Vitens had also made a contribution of about € 0.5 million from its Water for Life Fund, for small projects and additional training not included in its contract.

12 Vitens is a private holding company with operating subsidiaries owned by more than 100 municipalities in the Netherlands where it operates water supply services. Vitens and its municipal shareholders in the Netherlands have adopted the objective of helping poor countries achieve the Millennium Development Goals (MDGs). In some cases, Vitens provides technical assistance services free of charge; in others it provides services under contracts funded by donors. In the latter cases, the company does not retain any profits from its activities in developing countries, but rather uses them to fund development projects and training programs to promote the achievement of the MDGs. Vitens finds that its interventions in developing countries provide valuable experience for its staff.
The Vitens arrangement was governed by a detailed contract with obligations, conditions and performance requirements that mirror those of the management contract with AdeM – except that Vitens did not receive any management or performance fees.\(^\text{13}\) The contract was neither a conventional management contract nor a conventional technical assistance contract, but it is more formal and intensive than a twinning arrangement. It can best be understood as a management partnership. Vitens was responsible for developing management systems, carrying out delegated works, producing strategic business plans and operating manuals, and training staff.

The first contract in the four southern cities terminated in December 2007 and was renewed for five more years. Under the new arrangement about 80% of the cost of technical assistance was to be funded by the Dutch Government rather than by Vitens.

In 2006, Vitens and FIPAG agreed on similar arrangements (also with a substantial part of the technical assistance funded by the Dutch Government) in five additional cities in central Mozambique: Chimoio (capital of Manica Province), the nearby town of Gondola, Manica, Tete (capital of Tete Province) and nearby Moatize. Only the first five-year term of the first contract was examined for this case study.

Despite similarities in the responsibilities and obligations, Vitens' contracts are quite different from those with AdeM because of the absence of the expectation of profits. In addition, the Vitens arrangements benefitted significantly from the experience FIPAG had gained in the oversight of AdeM. For these reasons, care must be taken in interpreting differences in the performance of the two companies. The significance of the Vitens contracts is that they demonstrate an innovative attitude on the part of both FIPAG and Vitens and offer a potentially replicable preparatory or alternative model that is appropriate in situations that are not ready for more conventional private participation models, or where there are other barriers to conventional private contracts.

2.6. **Arrangements for Serving the Poor and Peri-urban Areas**

The contracts with private operators and the associated investment programs initially focused on rehabilitation to reduce water losses and increases in production capacity, rather than increasing connections and coverage of the poor. Under the RLC, AdeM is not explicitly required to improve services to the poor in Maputo but, because the cement city is already covered with water services, most new connections were to be made in expansion areas as well as in peri-urban areas where low-income people live. Both AdeM and Vitens are required to prepare a Low-Income Groups Services Plan for the service areas covered by their respective management contracts. These plans include an evaluation of the existing standpipe services, alternative options for the management of standpipes, and an action plan for providing CRA-approved services to low-income groups.

\(^\text{13}\) As in the case of the RMC, parameters are specific to each service area.
Figure 2.1 – Institutional Diagram of the Delegated Management Framework in Mozambique
3. RESULTS

This analysis of results is based on data and information obtained during field work carried out in October 2007, FIPAG’s final performance data for 2007 that were obtained subsequently, as well as additional information obtained in 2008.

3.1. Capital Works Projects

The objectives of the Second National Water Development Project (NWDP II) were to improve the reliability of service, reduce unaccounted-for-water and lay the ground for future expansions in networks and connections. Capital works included the rehabilitation of existing networks and expansion of production and transmission capacity. The expansion of networks necessary to increase coverage significantly was to be achieved by subsequent projects.\(^\text{14}\) Implementation of capital works projects managed by AdeM in its service areas was delayed. IDA-funded capital works that had been scheduled for completion in 2004 were eventually completed in 2007, and AfDB-funded works, including a reservoir that is critical to securing water reliability in Maputo, were commissioned in early 2008.

When the lease and management contracts were first conceived, the delegation of responsibility for tendering and supervising capital works to the operator was an appealing idea. While the RLC and the RMC more clearly specified and distinguished the roles of FIPAG as asset owner and AdeM as operator, they retained the delegation to AdeM of these responsibilities. It was assumed that the operator would be highly motivated to complete investments that would improve its profitability, and that the arrangement would promote the selection and implementation of works that were suited to the needs of the systems, facilitate project implementation and reduce the risk of delays. These assumptions did not prove to be entirely valid. Due in part to a lack of experience and in part to unfortunate circumstances and events, implementation of capital works was delayed; capital costs increased and operational improvements were not achieved as targeted. Because of the disappointing experience with this arrangement and the need for operators to focus on operational matters, FIPAG decided not to include the design, preparation of tenders and supervision of capital works programs in future delegated management contracts (i.e., lease and management contracts).

Responsibility for the delays must be shared by FIPAG and AdeM. FIPAG had the primary relationship with donors and legal responsibility for approving contracts and requesting disbursements, but AdeM, as FIPAG’s agent, was supposed to carry out preparation, procurement, implementation and supervision. The arrangement required close communication and coordination between FIPAG and AdeM, but that collaboration did not develop. Some of the initial problems may be attributed to FIPAG’s newness and inexperience. Another reason is that AdeM was unable to bring on board team members with a high degree of experience in planning and implementing capital investments, particularly with respect to procurement procedures of donor agencies.

Another factor that both resulted from and contributed to implementation delays was that the design and specification of some of the works (which were prepared prior to the delegated management contracts) was inappropriate and/or deemed technically too

complex for the local context. In some cases projects had been identified as long as
eight years before implementation and in the meantime conditions had changed. As a
result several projects had to be redesigned, resulting in further delays and cost
overruns.

These problems were finally resolved in 2006 after FIPAG and AdeM participated in a
week-long workshop to clarify responsibilities and establish clear procedures. At that
time, it was agreed that AdeM would no longer be responsible for preparing tender
documents. Although implementation sped up thereafter, the capital works funded by
NWDP II could not be completed by the revised project completion date of March 2007,
in large part because of extensive flooding in Beira in the spring of 2006 and in
Quelimane in 2007. To accommodate this situation, the closing date of the IDA credit
was further extended to March 30, 2008.

The same responsibilities for managing capital works were delegated to Vitens with
respect to the service areas where it started providing technical assistance in 2004.
Implementation of works in those areas has benefited from the early lessons learned by
FIPAG and AdeM, and Vitens' ability to call on experienced personnel as needed. The
first phase of investments funded by the AfDB under a separate project in the four
southern cities where Vitens was providing management services (about US $5.5
million) was completed in 2007 and the second phase (about US $6.2 million) was
expected to be implemented in 2008.

**Box 1. Is Delegation of Responsibility for Major Capital Investments a Bad Idea?**

Despite the more favorable recent performance, FIPAG concluded that including the
tendering and supervision of the capital works programs under management and lease
contracts was ill-advised. Its reasoning was that the management of capital works
requires different competencies from operations and the additional responsibility for
managing capital works prevented AdeM from focusing its full attention on operational
issues – which in themselves were very challenging. In the future FIPAG will probably
contract separately for these tasks.

It is worth examining experience elsewhere to determine whether this is always true. In
fact, the recently completed management contract in Johannesburg offers a contrasting
experience. In that case, the private operator, JOWAM, was responsible for identifying
and managing capital investments and the results were very positive: the arrangement
resulted in significant improvements in the speed and efficiency of procurement, the
elimination of cost overruns, and related improvements in service quality. Important
differences in that case were: there was no asset holding entity,* and there were no
donor rules to comply with as the investments were funded by the city.

* JOWAM was contracted by the Johannesburg Municipal Government which owns the assets. The preparation,
negotiation and monitoring of contracts is entrusted to a Contract Management Unit in the municipal administration.

Source: Philippe Marin, Jean-Pierre Mas, and Ian Palmer, Using a Private Operator to Establish and Strengthen a

**3.2. Rehabilitation and Replacement of Networks and Connections**

The Delegated Works Program was an innovation that would allow the operator to
undertake rehabilitation and replacement of networks, meters and damaged connections
in a flexible manner without having to adhere to donor procurement procedures.
Because the rates for these works were included in the operator’s financial bid, donor and government procurement rules did not apply. It was assumed that the operator would have an incentive to target delegated works expenditures where they were most needed and would result in increased billings and lower unaccounted for water. Unfortunately, like the capital works program, implementation of DWP in the AdeM service areas was delayed. Originally scheduled for completion within two years of the effectiveness of the original contracts, the majority was finally completed in September 2007. Despite the delays, the DWP is considered a potentially efficient and flexible way of promoting improvements in the network. In many ways, DWP anticipated the Output-Based Aid model that is now popular with donors.

3.3. Service Quality

Service quality in AdeM’s service areas improved, but the improvements were not achieved within the projected schedule. It was expected that the investment and rehabilitation programs and the improvements in management and operations as a result of the DMF would lead to significant improvements in service quality, measured in average number of hours of service per day, time required to respond to customers’ requests for service and complaints, and the percentage of samples meeting potable water quality standards.

Table 3.1 presents selected service quality data in 1998, 2002 or 2004, and 2007 for each of the service areas. Data are not consistently available for 1998 and those that are available are not directly comparable to those currently used. Nevertheless, it is evident that service quality improved in all the service areas under delegated management. The most disappointing parameters are the number of hours service was available in Maputo.

Virtually none of the customers in the first five service areas that were placed under FIPAG’s oversight received service 24 hours per day in 1998. By the end of 2007, water was available 24 hours per day to all customers in Beira and Quelimane, 22 hours per day in Nampula and Pemba, but for only an average of 14 hours per day in Maputo.

In 2007 the average number of days between application for a connection and commissioning of a connection was 15 days in AdeM’s service areas. The average number of days between submission of a complaint and resolution was 32 days in AdeM areas and 15 in Vitens areas. Response times were not monitored in 1998. In 2007, the billing system in Maputo was not yet satisfactory. There were numerous customer complaints about bills due to the large percentage of bills that were based on estimates and other billing problems that occurred as a result of inadequate commercial software.

By August 2007, Chokwe and Inhambane both had 24-hour service. Maxixe had service for 16 hours per day, and Xai-Xai for 14. (Comparative data are not available for earlier years.) In the four Vitens service areas the average number of days between application and commissioning of a connection was seven. However, a public official in one of the four southern cities stated that some utility staff needed to adopt a more “client-oriented attitude.”

In 1998, water quality was not tested and recorded regularly and evidence suggests that few samples would have met the standards. By 2007 water quality monitoring and control was well-established in all the service areas. In Maputo, the percentage of samples failing potable water quality standards was somewhat high at 5 percent. In Chokwe it was 12 percent. Elsewhere it was zero or within the acceptable range.
In 2001, the Zambian Asset Holding Company – Mining and Municipal Services (AHC-MMS) awarded a performance-based management contract to SAUR International for the rehabilitation and management of water supply, sewerage and solid waste services in five mine townships. AHC-MMS was a new legal entity created to operate services previously operated the Zambia Consolidated Copper Mines’ municipal services division. Under the terms of the contract, SAUR was to identify the rehabilitation requirements for a badly documented and poorly maintained network and assist AHC-MMS to procure and supervise implementation of the works. Funding for the management contract, institutional strengthening of AHC-MMS, and rehabilitation works was provided by a credit from the World Bank. (The project did not include any major new capital works.) Implementation of the rehabilitation program was delayed due to higher than anticipated time requirements for concluding the management contract, establishing a joint SAUR/AHC-MMS operation, and determining suitable technical solutions for the network. Nevertheless, after initial delays, rehabilitation ramped up quickly, lost time was recovered and the contract successfully completed. Even during the initial period, the introduction of operational changes resulted in significant operational improvements despite the delayed start of rehabilitation works. During a five-year period, coverage of operations and maintenance cost increased from 55 percent to 91 percent.

Why was this contract, with the same private operator initially engaged in Mozambique and in a country that lacked a good regulatory framework, so much more successful than the Mozambique experience? Potential reasons are that: (i) it involved a single management contract in which the operator assumed no commercial risk; (ii) the arrangement was far less ambitious, and focused on a very limited system that served five townships with a total population of about 300,000; (iii) the existing production plant and network, though in poor condition, were sufficient to meet demand and there were no major capital works to procure under donor procurement rules; (iv) though the area was economically depressed, it had not been ravaged by war and there were no major natural disasters; and (v) the management staff was provided by a single international operator. In Mozambique at the time of the crisis there were top managers from both SAUR and AdeP, and they received instructions from both Paris and Lisbon, adding another complication to the decision-making process.

There is no doubt that the successful implementation of a project and public-private partnership is in itself valuable for establishing the attitudes and conditions for long-term sustainability. The long-term sustainability of the effort is nevertheless subject to some uncertainty because a comprehensive institutional reform, including a regulatory framework, was not completed, and tariff decisions were unpredictable. This is in stark contrast to Mozambique which enjoys a credible and stable regulatory framework. Only time will tell whether one or the other set of conditions and experiences will prove to be more valuable in the long-term.


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15 The contract did not include any commercial risk and SAUR completed it in 2004.
3.4. Coverage

Only modest increases in coverage were foreseen and performance in that regard was consistent with expectations. Because of delays in the completion of production works and consequent postponement of expansion of the networks, overall coverage by FIPAG-owned systems remained low, particularly in peri-urban areas. Table 3.2 presents data on the number of connections and coverage.

In Maputo, AdeM served 36 percent of the metropolitan population. More than 400 small-scale independent providers (SSIPs) had emerged to meet the needs of unserved neighborhoods in and outside AdeM’s service area in Maputo. With 38,000 connections and 300 standpipes, the SSIPs were serving more than 300,000 persons, or about 18 percent of the population of the metropolitan area. Average coverage in the four provincial capitals where services were managed by AdeM was 31 percent; and for the four southern cities where management was supported by Vitens, it was 48 percent.

In the five AdeM service areas, the number of persons served increased by 35 percent over the five-year period 2002 – 2007, an average of more than 6 percent per year. During this period, total population in the areas increased by 12.5 percent, an average of about 2.4 percent per year. Thus, the number of persons served grew at 2.6 times the rate of population growth. These gains were made despite the delays in completion of the capital works and the disconnection of large numbers of illegal connections in the early years of the period. Over the two-year period 2005 – 2007, the figures for population served in the Vitens contract areas increased by 115 percent, due primarily to a significant increase in the number of functioning standpipes.

3.5. Service for the Poor

Improvements in service quality benefited existing customers, including the poor, and the foundation was laid for expansion of connections and better coverage of the poor. Except in Maputo, 50 percent or more of the population with access to water service from the main utility in 2007 got that service from a standpipe. Table 3.3 shows that in seven of the nine service areas, the number of active standpipes increased significantly over the period 2002 or 2003 to 2007. In Maputo and Pemba, the number of persons served by standpipes fell as the number of house connections increased. The 2006 Beneficiary Assessment for Maputo (2006) concluded that many of the poor were not willing to pay for standpipe service because it was so poorly managed. Instead they had turned to buying from neighbors with connections or using other alternative sources.

Once major capital works funded by NWDP II had increased capacity in most areas, the rehabilitation and expansion of networks and increases in coverage became high priorities for follow-on projects such as the Water Services and Institutional Support Project (WASIS). The GPOBA-funded project focused specifically on the poor and included subsidized connections for poor households in peri-urban areas. It was also recognized that institutional adaptations would be needed, as formal utilities were not the best placed to manage services in poor peri-urban neighborhoods. In Maputo, FIPAG, CRA, AdeM and the Municipalities had discussed standpipe management arrangements with NGOs, but the piloting of this management model had not yet materialized. AdeM

16 The lease area is somewhat smaller than the metropolitan area, so coverage within the service area is slightly higher.

17 The US$ 30 million WASIS project is funded by IDA and the Africa Catalytic Growth Fund, which is administered by the World Bank.
was addressing this and other challenges by building partnerships with peri-urban communities for the management of standpipe services. FIPAG was considering the legalization of about 400 SSIPs in Maputo. Using its powers to set tariffs and revise customer contracts, CRA was encouraging a reform in the management of standpipes and the licensing of water resellers. It was expected that licensing would be done by AdeM and FIPAG. In addition, coverage of peri-urban areas in Maputo was being improved through the construction of a number of small systems based on available groundwater resources and the delegation of management to small-scale providers.

3.6. Efficiency and Financial Performance

Table 3.4 shows selected performance indicators for the nine service areas in 2006 and 2007.

3.6.1. Efficiency Indicators

Reduction of UFW was disappointing and UFW remained a serious problem in all the service areas. High levels of UFW (for example, 57 percent in Maputo, 71 percent in Beira, 57 percent in Xai-Xai) were a problem throughout FIPAG's service areas, and had not improved in recent years in spite of network upgrading under the DWP.\(^\text{18}\) Funding for DWP under NWDP II had been exhausted but, according to AdeM, more than 70 percent of the Maputo network remained to be rehabilitated. However the donors that were funding further rehabilitation (EIB, the European Union, the French Development Agency and the Dutch) pointed out that it is not necessary to replace the whole network to reduce water losses and their rehabilitation programs would be carefully targeted to reduce losses. AdeM also pointed out that the investment program had not targeted Maputo's main transmission lines which had become the most important sources of technical and commercial water losses. In Maputo especially, many illegal connections were sourced directly into the trunk lines. Others pointed out that in the Philippines the private operator, Manila Water, succeeded in reducing non-revenue water by over 10% by reducing illegal connections even before major rehabilitation projects started. Perhaps AdeM's failure to reduce losses was an indication that it had not made optimal use of the Delegated Works Program.

Vandalism of meters also hindered progress in controlling technical and commercial losses. In 2007, AdeM began piloting a community outreach program with local authorities in a district of Matola. Any increases in collections as a result of improved monitoring of meters, identifying and controlling illegal connections, and control of vandalism was shared with the community. Initial results were promising.

Collection ratios improved but further improvements were needed in five of the nine areas. Collection of bills (the collection ratio) improved steadily throughout the FIPAG areas. Prior to introduction of DMF in 1998, it ranged from 45 to 71 percent in the five AdeM service areas – whereas a ratio of 0.95 is considered good. In 2007, the collection ratio ranged from 0.84 in Quelimane to 0.97 in Maxixe and Xai-Xai. In Maputo it was 0.87 – a key factor in Maputo’s high level of UFW.

The number of staff per 1000 connections was quite favorable in Maputo but remained high elsewhere. In Maputo, as a result of the increase in connections and outsourcing of non-core support functions, the ratio fell from 10/1000 to 5.4/1000, a level that compares

\[\text{UFW} = \frac{\text{volume produced} - \text{volume billed}}{\text{volume produced}}.\]
favorably with the best large water utilities in the Africa region. In Beira, Nampula, Quelimane and Pemba the average staff ratio was 15/1000, and in the four southern cities it was about 19/1000, figures which were high even allowing for the fact that higher ratios are inevitable in smaller utilities. FIPAG’s approach to this problem was similar to the strategy used elsewhere: the ratios had fallen and would continue to do so as the number of connections increases.

3.6.2. Financial Performance of AdeM in Maputo

AdeM’s lease contract operations in Maputo were not yet profitable and the timeliness of the payment of variable lease fees to FIPAG had been erratic. AdeM’s losses amounted to € 6 million in 2006. AdeM’s chief executive officer in Maputo believed that the benefits from new investments that were being implemented would not be realized until 2012 – 2013, too late for AdeM to make up its losses before the lease contract ends in 2014. However following the Periodic Review that ended in mid-2008, both the Independent Assessor and CRA were of the opinion that, with a reasonable level of performance, AdeM would be able to meet its shareholders’ expectations by 2014.

AdeM was remitting the quarterly regulatory levy to CRA and the fixed monthly rental fee to FIPAG as scheduled, but had fallen behind in its variable monthly rental payments to FIPAG. In 2007, accumulated arrears in payments to FIPAG had reached about US$ 1.5 million. Since the Maputo lease fees are the major source of income to support FIPAG’s operation, this created a serious financial burden. As a result, at the end of 2007, the Payment Security was called to pay these arrears. The creation of an escrow account to eliminate this problem was being considered. Such mechanisms would help solve FIPAG’s cash flow problem but would obviously not address the underlying problem of AdeM’s unprofitable operations which were due in part to its failure to reduce non-revenue water and increase collections and the lack of adequate production capacity to dramatically increase connections. It is worth pointing out that the success of affermages in Côte d’Ivoire, Senegal and Niger was linked to dramatic increases in connections that were achieved in the early years of the contracts.

The high cost of the technical assistance contract with AdeP was another burden that constrained AdeM’s financial viability. After eight years of operations all AdeM’s top executives were still expatriates and their employment was not conditioned on performance targets.

3.6.3. FIPAG’s Financial Performance in Four Cities Managed by AdeM

Financial performance had improved steadily in the four provincial capitals. The financial performance data presented in Table 3.4 shows that, as of October 2007, the O&M recovery rate in Beira, Pemba and Quelimane ranged from 0.79 to 0.88 and in Nampula it was 1.11. In the three service areas that had a negative Operating Income (i.e., O&M

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19 This ratio does not include the labor content of outsourced services. Efficiently managed large water supply companies in Western and Central Africa employ 3 - 6 staff per 1000 connections (Reforming Water Utilities in Western and Central Africa: A Quarter Century of Experiences with Public-Private Partnerships, The World Bank, draft, Jan.2008.) In Uganda the very efficient public water utility, NWSC, employs 6.5 staff per 1000 (NWSC Annual Report 2007). These standards apply to large utilities with 25,000 connections or more. Efficient smaller utilities can be expected to have higher ratios.


21 The O&M Recovery Rate is the ratio of revenues to operating costs (including depreciation). Thus a ratio of 1.0 indicates that revenues are equal to operating costs. Less than 1.0 indicates that costs exceed revenues, and greater than 1.0 indicates that revenues exceed costs.
recovery rate less than 1.0) in 2007, revenues were growing faster than costs and the rate of improvement in the O&M recovery rate had been very strong in recent years. These results were significant because they indicated that these service areas had reached or were approaching the point at which they would be able to contribute to the repayment of loans to the World Bank, the AfDB and the EIB. Most important for FIPAG as a whole, the largest service areas were performing well. Nampula had had positive results for two years, and Beira and Quelimane were projected to have positive results by 2009.

3.6.4. FIPAG's Financial Performance in Service Areas Supported by Vitens
The financial performance of the services supported by Vitens was also generally improving. Data presented in Table 3.4 shows that, in Chokwe, Maxixe and Xai-Xai, the O&M Recovery Rate as of October 2007 was above 1.0. But, while Inhambane had achieved a rate of 1.01 in 2006, its performance fell to 0.88 as of October, 2007.

3.7. Composition of the Private Operators' Teams

3.7.1. AdeM’s Teams
The staffing of AdeM’s management teams was problematic at times. In 2007, AdeM had six expatriate staff in management positions in Maputo: chief executive officer, director of commercial operations, director of technical operations, chief financial officer, a manager of the delegated works program, and a specialist in client relations. The cost of maintaining such a large expatriate presence was very high and FIPAG was concerned about the lack of progress in developing and promoting local staff into top management positions.

As mentioned earlier, the RMC required AdeM to provide six resident experts for services in the four provincial capitals. It was also required to bring in personnel as necessary to provide all the areas of expertise specified in the Management Staff Appendix. The RMC specified that the resident experts must reside in the Service Area (meaning the service areas in the four provincial capitals collectively), but did not specify that an expert or experts must be resident in each of the four cities. Initially, AdeM assigned an expert to reside in each of the four provincial cities and work in the FIPAG office in that city. Each of these experts also traveled to the FIPAG offices in the other cities to provide advice in their respective areas of specialization. The expert in general management and the remaining technical expert resided in Beira, and provided advice to the FIPAG offices in all four cities. This arrangement did not work well, in part because expertise in general management was needed but the resident experts assigned to the FIPAG offices were technical specialists, not managers. Their presence in each of the cities did not improve management and, at the same time, tended to undermine the assumption of responsibility by local directors. FIPAG and AdeM agreed in 2005 to base all expatriate staff for the four provincial cities in Beira (in separate offices from the FIPAG offices in Beira) from which they carried out their management assistance functions, making regular visits to the four service areas to provide technical support for implementation. Regardless of how the management team was deployed, AdeM did not succeed in developing a viable management support strategy and FIPAG ultimately had to take over the strategic planning for these utilities.

Under the original lease and management contracts as well as under the revised contracts, the expatriate teams provided by AdeM were typically made up of specially contracted staff rather than staff who had worked in SAUR's operations in France or in
AdeP’s operations in Portugal. In fact, this is a common practice for these types of contracts. While experience working in developing countries and foreign language skills are often as valuable as experience working in the home country context, this practice has some serious drawbacks. The contracted staff may not be familiar with the culture of the lead water company. Thus the strengths that served as the basis for the selection of the winning bidder do not come to bear during contract implementation. More importantly, team members do not have an extensive network of contacts within the company that they can call on for help, or any direct access to top management. This proved to be a significant disadvantage when difficulties were encountered in AdeM’s contracts. It appeared that decisions were made in Europe without optimal input from AdeM managers in the field. The Chairman of the Board of AdeM lived in Portugal and thus did not have consistent first-hand knowledge of conditions in the field.

Lack of stability in AdeM’s management staff has also been a problem. There have been seven General Managers in Maputo over the period December 1999 to 2008, and under the RMC from 2004 to 2008, the position of Leader of the Management Team for the four provincial cities was held by three individuals. (One of the replacements was made at FIPAG’s request because the incumbent was not performing satisfactorily.)

This problem was finally addressed and in 2007 the team in Maputo included members who had worked for AdeP. To their credit, AdeM and AdeP stuck it out through some difficult times and all evidence indicates they were committed to seeing the Maputo lease contract through to a successful completion.

### 3.7.2. Vitens’ Team

*Vitens used an innovative staffing model that promoted the rapid transfer of skills and responsibilities to FIPAG management staff and local professionals.*

The Vitens team included one resident full-time project manager, six expatriate specialists, each of whom works in the four southern service areas for nine weeks each year, and a team of locally hired college students or recent graduates (two in Inhambane/Maxixe and four in Chokwe/Xai-Xai) who were mentored by the Vitens expatriate staff. All Vitens expatriates were experienced full-time employees of Vitens and thus shared a common appreciation of Vitens’ methods and corporate culture. The Vitens team as a whole supported the local FIPAG directors for Inhambane/Maxixe and Chokwe/Xai-Xai. Management decisions were collaborative, with the Vitens staff assuming a pro-active and supportive role. This arrangement was designed to develop local talent and promote professional responsibility among the FIPAG managers.

Unlike many companies that are active internationally, Vitens routinely sends its regular staff to developing countries to provide technical assistance. Staff are encouraged and rewarded for taking up such assignments. Indeed, such assignments are considered essential for advancement within the company. The Team Leader for the four southern cities worked for 18 years in the Netherlands before taking up his current three-year resident assignment Mozambique. Vitens’ practice of hiring college students and recent graduates to serve as local team members enabled it to maintain continuity between visits while promoting the development of local expertise. The Dutch team members maintained regular contact with the local team members.

### 3.8. Capacity Building and Impacts on Local Staff

*Most observers agreed that the performance of water service staff had improved steadily since the DMF was introduced, though further improvement was needed, particularly in*
the areas of client relations and in leadership skills at the middle management level. One of the long-term objectives of the DMF is to develop capacity and to transfer responsibility for water supply asset management and oversight of operators to municipalities as part of the GOM’s decentralization policy. The conditions of transfer are that (i) adequate infrastructure should exist; (ii) viable autonomous water companies must be institutionalized; and (iii) municipal authorities and staff should have the capacity to manage the assets in a financially viable manner and administer contracts with operators. As mentioned earlier, prior to the transfer of the services to FIPAG, operating conditions were dismal, management was handicapped by a lack of skills and resources, and oversight was ineffective. Staff received only sporadic training and had no concept of what it meant to work for a financially viable, client-oriented service provider. It was expected that the new private operators hired under the DMF would provide classroom and on-the-job training and develop a new service-oriented culture that would enable local managers and staff to function effectively.

When the lease contract became effective, all local water supply staff in Maputo was transferred to AdeM which became their legal employer. When the lease contract terminates, it is foreseen that staff will be transferred to the successor operator. In all the other cities, most of the employees of the pre-existing state water companies who were transferred to FIPAG continued to be employed by FIPAG, but the private partners were given wide latitude to recruit and manage staff on behalf of FIPAG and, when necessary, recommend disciplinary action or termination. At the end of 2007 FIPAG and the operators were collaborating to introduce annual performance evaluations with advancement and pay increases based on merit.

AdeM, Vitens and FIPAG managers and municipal stakeholders had observed significant improvements in the technical performance and attitude of staff over the period of the contracts, but acknowledged that much remained to be achieved. A more customer-oriented culture needed to be developed and local managers required further training and mentoring in leadership and management skills. AdeM, whose training programs got off to a slow start, stepped up its training programs in 2007 and Vitens declared 2007 as the “Human Resources Development Year” in all its contract areas.

3.8.1. Maputo

Staff fared well overall, but by 2007, no local managers had been promoted into senior management positions. When AdeM when took over operations it had the option to return non-performing or excess staff to FIPAG during the first year. None were sent back at that time and none were laid off since then except for disciplinary reasons. Non-core functions were contracted out where appropriate (vehicle maintenance, security, information technology support, cleaning, etc.) and to the extent that the labor union agreed. In 2007, a survey of staff showed that 50 percent of staff in Maputo was very happy and only 7.1 percent was dissatisfied. Most employees had participated in the in-house training program; a few have taken outsourced training in English, driving, etc. and two had traveled to Portugal for a five-day course in water loss reduction at Aguas de Portugal. AdeM reported that the performance of some of the local middle-level managers was satisfactory, though lack of education was still a challenge. An incentive system that focused on results had been introduced and was having a positive impact.
However in 2007, six years after the revised contract was agreed, all the top management positions were still occupied by expatriates.22

3.8.2. Beira, Nampula, Pemba and Quelimane

Adem’s training and mentoring of local staff and managers fell short of expectations and FIPAG developed its own model for developing local directors. Local staff of the former water service providers was transferred to FIPAG when it assumed responsibility for the services in 1999. Following the award of the management contracts to Adem, the private operator assumed responsibility for day-to-day management oversight as well as the training and development of staff. After Adem’s management team was reorganized and centralized in Beira, FIPAG organized a public tender to hire local directors. Candidates were required to have university degrees but, as those selected had no experience in the water supply sector, they participated in training and a study trip to Portugal. They became “delegated directors” in 2007, positions which they continued to occupy after the Adem contract expired. The delegated directors operated with significant autonomy, if not always expertly. They sought the advice of Adem experts on an ad hoc basis at their own initiative. FIPAG’s central management, which had little confidence in Adem’s day-to-day management oversight, maintained frequent contact with the delegated directors, provided strategic guidance and intervened to make decisions occasionally. FIPAG introduced a benchmarking incentive system which was contributing to healthy competition among the delegated directors and, overall, was quite satisfied with their performance.

FIPAG was not entirely satisfied with the training offered by Adem to staff in the four provincial capitals and there were disagreements over whether the private operator had fulfilled its obligations. The main issue seems to have been one of delays in the delivery of training. By the end of Adem’s contract it was catching up. In 2005 – 2007, Adem offered 127 practical short courses lasting from one day to four weeks – mostly on-site in the service areas. Thirteen local employees went to Portugal for a week of training in water loss reduction at Aguas de Portugal.

3.8.3. Chokwe, Xai-Xai, Inhambane and Maxixe

Local staff and managers appeared to benefit from Viten’s training and mentoring program and FIPAG’s work-study program for former directors. As in the other cases, existing staff of the former service providers was transferred to FIPAG. The former directors were transferred to FIPAG’s head office in Maputo where they were given the opportunity to work while attending evening university programs in civil engineering and business management. This work/study arrangement ensured that they kept pace with new cultural environment and gain practical experience that would enable them to assume supervisory and professional positions after they complete their studies. They were replaced in the four service areas by university-educated managers from FIPAG’s head office.

Vitens assumed primary responsibility for coordinating training of the staff of the four southern service areas. During 2005 – 2007, eight short courses were organized – some on site, some at the Center for Professional Training in Water and Sanitation (CFPAS) in Maputo. Ten managers and technical employees traveled to the Netherlands for five training programs (covering a variety of technical and managerial skills) lasting 21 to 60

22 By early 2009, the number of expatriate staff had been reduced to four and one local manager was promoted to the director level.
days with funding from Vitens, Water for Life and AfDB. Twelve employees were sent to study in full-time three or four-year Mozambian secondary or university degree programs with funding from the Dutch Government, Vitens or the Swiss Agency for Development and Cooperation. Most of the latter had held management positions in the utilities before the services were transferred to FIPAG.

In addition to training in practical skills, Vitens emphasized the need to introduce a new work culture and constructive attitudes. This was especially difficult during the first year of the contract when several dishonest employees had to be terminated in one of the service areas. The Vitens project manager acknowledged that changing attitudes and culture would take time. In light of this, new employees were engaged on a temporary contract and only after they exhibited good attitudes and performance were they confirmed in a regular position.

3.9. **Maturity of the Institutional Framework**

3.9.1. **Credibility and Stability of GOM’s Policies and Regulatory Framework**

*Despite the early difficulties with the delegated management contracts, GOM remained committed and supportive to the reform.* The leaders of FIPAG and CRA enjoyed widespread respect within government and with the private operators and donors, and their autonomy was consistently upheld. This created an environment of credibility and predictability that enabled FIPAG and its private partners to recover from the collapse of the original contracts and go forward on a strong foundation.

FIPAG and CRA’s credibility resulted from:

- The transparency and clear accountability afforded by the separation of operations from asset management in the DMF framework,
- A commitment to long term financial sustainability which reassured donors that their loans would be repaid, and that the GOM’s ultimate objective was to end dependence on donor aid,
- The existence of a non-political regulator that made a steady effort to bring tariffs in line with costs, and applied pressure on FIPAG and the operators to improve the quality of services and overall sector performance,
- The development of constructive working relationships with international financial institutions and private partners,
- The maintaining of a constructive dialog with local and national government officials, especially in light of the turnover of local authorities every four years,
- The fact that FIPAG and CRA were able to develop a cadre of good quality professionals,
- A track record of good leadership and sound decision making, and
- Management continuity made possible by having the same leaders in their positions since the inception of the DMF framework.
- a regulatory policy that recognized the link between service quality and cost and balanced the objective of attaining financial viability with the need to protect consumers.
Widespread support for the DMF eventually led DNA to adapt it to smaller towns and cities and to promote the emergence of local private operators. This effort is being supported by the Millennium Challenge Corporation and the World Bank.

3.9.2. FIPAG’s Financial Viability and Effectiveness

During the period 2002 – 2007, FIPAG recuperated from a situation in which operating costs in the service areas outside Maputo had to be subsidized by GOM and donors to the point at the end of 2007 when its net income was close to the breakeven point. That this was achieved in a context where water losses remained high and connections were increasing at a moderate pace is remarkable. It was due in large part to tariff policies that support financial viability, cost control measures and improvements in collection performance. Given the potential for reducing water losses and increasing connections, FIPAG’s prospects for continued improvement in its financial performance were good. Investments aimed at reducing water losses and increasing connections were given high priority.

One of FIPAG’s major objectives during this period was to achieve the point where it would generate sufficient income to begin servicing its debt to the Ministry of Finance under subsidiary loan agreements associated with donors’ credits. The schedule for repayment of debts to AfDB (starting in 2008), IDA (starting in 2009) and EIB (starting in 2012) was originally projected to coincide with increased revenues from new customers. However, given the delays in completion of capital investments, significant increases in new connections were delayed and the original debt repayment schedule no longer coincided with projected dramatic increases in revenues. Servicing the debt as originally scheduled, while feasible, would have strained FIPAG’s finances and undermined its ability to use its own funds and incur additional debt for much-needed further investments. As a result repayments to AfDB and IDA were rescheduled and will be begin in 2010 and 2011 respectively. There is no change in the repayment schedule for the EIB loan. It was expected that the new repayment schedule will enable FIPAG to consolidate its improved financial performance.

3.9.3. FIPAG’s Management and Strategic Direction

FIPAG’s top managers have demonstrated strong professionalism and an innovative spirit. They have created a competent organization that is widely respected. In the early years, the managers of FIPAG focused primarily on building fundamental capacity, ensuring that basic planning and monitoring functions were carried out and resolving crises. The challenge facing FIPAG’s leadership in 2007 was to ensure the transition from a reactive mode to a more pro-active one. With that goal in mind, in 2007 FIPAG initiated a Strategic Planning and Direction Program aimed at creating a more coherent approach to management and ensuring that resources stay focused on the achievement of key objectives. While FIPAG had a well-developed capacity for collecting and analyzing key performance data, its managers recognized that opportunities for synergies might be missed unless the links among its many functions were explicitly systemized. Management and supervisory staff were contributing to the development of the program and were being trained in its use. Once it was operational, they would use it for planning, implementing and reporting on their activities. Managers would be able to easily monitor staff performance and identify problems and bottlenecks in a timely manner. Procedures, data and background documents would be linked to relevant activities and available on line.
As the DMF matured, FIPAG demonstrated a willingness to innovate with new management models. The management partnership with Vitens was an example. It was also seeking ways to make lease contracts attractive to bidders in the four service areas where AdeM’s management contract was terminating. (See below)

3.9.4. Contract Enforcement and Performance Monitoring

FIPAG’s travails with the initial contracts led it to adopt a more disciplined approach to monitoring performance targets in the revised AdeM contracts and subsequent contracts with Vitens. Key performance targets were set annually and results were reported by service area directors on a monthly basis – though at the end of 2007 these were not always accurate and were not yet consistently submitted on time. Due to resource constraints, obvious errors contained in monthly reports were not always subject to immediate follow-up and rectification, and sometimes persisted in FIPAG’s own records. Independent auditors appointed by FIPAG have verified both operators’ performance annually since the contracts took effect. These were useful for determining AdeM’s incentive pay, evaluating the operators’ overall performance and setting future targets, but until recently FIPAG might have missed the opportunity to intervene and correct problems when they first appeared.

FIPAG’s financial and operational departments consolidated monthly reports to produce up-to-date assessments of overall progress toward financial viability. The implementation of the Strategic Planning and Direction Program was expected to promote a more coherent and strategically directed approach to monitoring and analysis of all FIPAG’s data.

3.9.5. Regulation

CRA played an invaluable role in balancing the interests of the operators and consumers and in promoting improvements in services, especially for the poor. CRA has full regulatory authority over the services placed under delegated management. For these, it evaluates and approves consumer tariffs proposed by FIPAG, periodically reviews and approves the tariff structure, and reviews and approves the operator’s tariff (Maputo only) and the formula for indexation and adjustment of the operator’s tariff (Maputo only).

In the case of services for which FIPAG has assumed responsibility but has not contracted a private operator (i.e., the services supported by Vitens), CRA and FIPAG have signed a regulatory agreement which specifies consumer tariffs and the rights and responsibilities of each of the parties.

In carrying out its duties, CRA had thus far managed to strike a balance among the competing objectives of protecting consumers, keeping tariff increases within politically acceptable limits and enabling FIPAG to gradually achieve financial sustainability. Despite annual inflation rates of 8% to 13% over the period 2002 – 2006, average tariffs increased in real terms in all the AdeM service areas during this period.23

In addition to regular tariff reviews, CRA carried out beneficiary assessment studies aimed at assessing the quality and cost of service, gauging customer satisfaction and ability to pay, understanding the urban water market, particularly alternative sources and providers of water service, and projecting future needs. These beneficiary assessments had found that when service from the main service provider (whether through private

connection or standpipe) is unavailable, unreliable or poorly managed, residents turn to a variety of alternative sources, including SSIP networks, kiosks, and wells; neighbors who have connections; and household wells. Using this information, the regulator had assumed a leadership role in promoting improvements in services for the poor through the use of alternative technical, institutional and regulatory arrangements, such as the licensing of SSIPs and creating resident committees to monitor standpipe and other services.

CRA’s agents in each of the service areas monitored water quality regularly and help to resolve customer complaints that are not immediately resolved by the operator. However, its ability to enforce service quality and efficiency standards was somewhat constrained because the delegated contracts did not specify financial penalties when the operator fails to achieve contractually specified targets and standards.

A recent review of CRA’s tariff methods found that it carried out its regulatory functions in a transparent, informed and participatory manner and that its “Strategic Plan 2007-2009” was an example of its commitment to transparency and good governance. The Strategic Plan described the status of services, the challenges it would face in carrying out its regulatory role, its strategic priorities and objectives, and the actions it planned to take to achieve these.

3.9.6. Quality of Relationships (FIPAG, CRA, DNA, Operators, Staff, Municipalities, Consumers)

Good relations were fostered among all the key actors. The two lead actors, FIPAG and CRA, enjoyed a constructive relationship that respected the role and authority of each and promoted the development of the DMF. In the early years of the DMF, it was necessary to clarify and distinguish between their roles, particularly as to whether the lease contractor in Maputo should report directly to CRA or only to FIPAG – which in turn would report performance results for the Maputo water supply services to CRA. These issues were resolved by establishing reporting protocols whereby certain regulated performance indicators are reported directly to CRA and FIPAG while other non-regulated contractually required outputs are reported only to FIPAG.

When first proposed, the DMF met with resistance from municipal authorities who opposed privatization and wanted to operate services themselves. The creation of FIPAG as the asset holding company helped to reassure them that the services were not being privatized. Both FIPAG and CRA demonstrated sensitivity to municipal concerns and nurtured good relationships with municipal authorities and the public. Both entities provided seminars for local authorities aimed at creating an appreciation of the financial and technical challenges that affect water services. Since municipal elections are held every four years, FIPAG and CRA have already dealt with one turnover in officials and the process of building new relationships, a process that will be repeated again in 2009. FIPAG very wisely refrained from promising unrealistic improvements in services in the short-term. It thus promoted a partnership with the municipalities that was very constructive.

AdeM’s failure to achieve service improvement targets and to deliver contractually required reports on time inevitably affected the attitude of FIPAG staff and managers toward the private operator. Despite this, FIPAG maintained constructive relationship

with AdeM and all disagreements had thus far been resolved through direct negotiation. The relationship with Vitens had been consistently positive and collaborative.

3.10. Follow-on Contracts

_Lease contracts for services in the four provincial capitals are expected to become effective in 2009._ These will be subsidized in the initial years. Key objectives of the follow-on strategy were to attract local and regional bidders and increase competition in the sector.

Eight years after AdeM was created, its ownership was still primarily held by a foreign company, AdeP. In contrast, the private operators in Côte d’Ivoire and Senegal were initially established with the majority ownership and active participation of foreign operators but ownership and management were rapidly transferred to local investors and local managers. Such a transfer has important benefits: the operator is perceived to be a local company that is committed to the long-term development of the services and understands the local context; profits are likely to remain in the local economy; and the cost of management is lower. Competition is another matter. In Côte d’Ivoire and Senegal, and many African countries, there is a sole major water utility (whether private or public) and little competition for the large urban markets. In a few countries, such as Uganda and Mauritania, a number of small local operators have competed for management contracts in small towns. In Mozambique, DNA has also begun to promote the contracting of small operators for services in small towns. Now FIPAG hopes to introduce local ownership/management and competition in the context of medium-sized cities.

To promote competition and encourage the participation of local and regional operators, FIPAG planned to award separate contracts for each of the four service areas. Prequalified bidders would be allowed to bid (separately) for all four. FIPAG would also procure the services of an experienced water company to act as a special performance auditor that not only be responsible for monitoring the performance of the operators against contracted performance targets, but also would also act as “mentor” and make recommendations on how to correct any deficiencies.
Table 3.1 – Quality of Service in Areas under Delegated Management and Management Support Contracts

<table>
<thead>
<tr>
<th></th>
<th>AdeM Contract Areas</th>
<th>Vitens Supported Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Maputo</td>
<td>Beira</td>
</tr>
<tr>
<td><strong>Water Availability</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1998: Percent of customers with &lt; 24 hours service/day</td>
<td>80</td>
<td>95</td>
</tr>
<tr>
<td>1998: Percent of customers with &lt; 4 hours service/day</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>2002: Average number of hours/day service available</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>2007: Average number of hours/day service available</td>
<td>14</td>
<td>24</td>
</tr>
<tr>
<td><strong>Water Quality</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2007: Percent samples failing coliform standards</td>
<td>5</td>
<td>2</td>
</tr>
</tbody>
</table>

n.a.: Data not available.

Table 3.2 – Total Connections and Increase in Connections since 2002 (in AdeM Contract Areas) or since 2005 (in Vitens-Supported Areas), and Coverage in Areas under Delegated Management and Management Support Contracts at the end of 2007

<table>
<thead>
<tr>
<th></th>
<th>AdeM Contract Areas</th>
<th>Vitens-Supported Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Maputo</td>
<td>Beira</td>
</tr>
<tr>
<td>Connections: total active at end of 2007</td>
<td>97,978</td>
<td>15,235</td>
</tr>
<tr>
<td>Connections: nominal and percent increase/decrease since 2002 in AdeM areas, and since 2005 in Vitens areas</td>
<td>18,590 (23%)</td>
<td>2,670 (21%)</td>
</tr>
<tr>
<td>Coverage: percent of population in 2002 (AdeM areas), in 2005 (Vitens areas)</td>
<td>33</td>
<td>22</td>
</tr>
<tr>
<td>Coverage: percent of population in 2007</td>
<td>36</td>
<td>32</td>
</tr>
<tr>
<td>Coverage: percent of population served by household connection in 2007</td>
<td>27</td>
<td>13</td>
</tr>
<tr>
<td>Coverage: percent of population served by standpipes in 2007</td>
<td>9</td>
<td>19</td>
</tr>
<tr>
<td>Total population of service area in 2007 (000s)</td>
<td>1,800*</td>
<td>576</td>
</tr>
</tbody>
</table>

* Figure shown is population of entire metropolitan area. The lease service area is somewhat smaller.

Table 3.3 – Number of Standpipes and Estimated Population Served by Standpipes in Each Service Area, 2002 – 2007

<table>
<thead>
<tr>
<th>Year</th>
<th>Maputo</th>
<th>Beira</th>
<th>Nampula</th>
<th>Pemba</th>
<th>Quelimane</th>
<th>Chokwe</th>
<th>Xai-Xai</th>
<th>Inhambane</th>
<th>Maxixe</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>No. Standpipes</td>
<td>313</td>
<td>114</td>
<td>87</td>
<td>92</td>
<td>21</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td></td>
<td>Population served by standpipes</td>
<td>156,500</td>
<td>57,000</td>
<td>43,500</td>
<td>46,000</td>
<td>10,500</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>2003</td>
<td>No. Standpipes</td>
<td>438</td>
<td>125</td>
<td>86</td>
<td>125</td>
<td>23</td>
<td>35</td>
<td>43</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Population served by standpipes</td>
<td>219,000</td>
<td>62,500</td>
<td>43,000</td>
<td>62,500</td>
<td>11,500</td>
<td>17,500</td>
<td>21,500</td>
<td>9,000</td>
</tr>
<tr>
<td>2004</td>
<td>No. Standpipes</td>
<td>429</td>
<td>107</td>
<td>72</td>
<td>86</td>
<td>23</td>
<td>33</td>
<td>43</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Population served by standpipes</td>
<td>214,500</td>
<td>53,500</td>
<td>36,000</td>
<td>43,000</td>
<td>11,500</td>
<td>16,500</td>
<td>21,500</td>
<td>10,000</td>
</tr>
<tr>
<td>2005</td>
<td>No. Standpipes</td>
<td>430</td>
<td>137</td>
<td>84</td>
<td>85</td>
<td>27</td>
<td>35</td>
<td>43</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Population served by standpipes</td>
<td>215,000</td>
<td>68,500</td>
<td>42,000</td>
<td>42,500</td>
<td>13,500</td>
<td>17,625</td>
<td>21,500</td>
<td>10,000</td>
</tr>
<tr>
<td>2006</td>
<td>No. Standpipes</td>
<td>319</td>
<td>143</td>
<td>112</td>
<td>88</td>
<td>35</td>
<td>33</td>
<td>25</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>Population served by standpipes</td>
<td>159,500</td>
<td>71,500</td>
<td>56,000</td>
<td>44,000</td>
<td>17,500</td>
<td>16,500</td>
<td>12,500</td>
<td>13,000</td>
</tr>
<tr>
<td>2007</td>
<td>No. Standpipes</td>
<td>314</td>
<td>219</td>
<td>199</td>
<td>85</td>
<td>72</td>
<td>64</td>
<td>64</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>Population served by standpipes</td>
<td>157,000</td>
<td>109,500</td>
<td>99,500</td>
<td>42,500</td>
<td>36,000</td>
<td>32,000</td>
<td>32,000</td>
<td>17,500</td>
</tr>
<tr>
<td>Trend 2003 - 2007</td>
<td>-29%</td>
<td>+75%</td>
<td>+131%</td>
<td>-32%</td>
<td>+213%</td>
<td>+83%</td>
<td>+49%</td>
<td>+94%</td>
<td>+285%</td>
</tr>
</tbody>
</table>

n.a.: Data not available.

Source: FIPAG, Performance Indicators, 2002 – 2007
Table 3.4 – Efficiency and Financial Performance of FIPAG Service Areas under Delegated Management and Management Support Contracts in 2007

(Monetary values in thousands of MZN)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Maputo</th>
<th>Beira</th>
<th>Nampula</th>
<th>Pemba</th>
<th>Quelimane</th>
<th>Chokwe</th>
<th>Inhambane</th>
<th>Maxixe</th>
<th>Xai-Xai</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Efficiency</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unaccounted for Water</td>
<td>.57</td>
<td>.71</td>
<td>.44</td>
<td>.51</td>
<td>.65</td>
<td>.58</td>
<td>.37</td>
<td>.44</td>
<td>.57</td>
</tr>
<tr>
<td>Collection Ratio - Total</td>
<td>.87</td>
<td>.96</td>
<td>.89</td>
<td>.95</td>
<td>.84</td>
<td>.90</td>
<td>.66</td>
<td>.97</td>
<td>.97</td>
</tr>
<tr>
<td>- Residential</td>
<td>.74</td>
<td>.93</td>
<td>.82</td>
<td>.91</td>
<td>.86</td>
<td>.95</td>
<td>.91</td>
<td>.96</td>
<td>.95</td>
</tr>
<tr>
<td>- Non-residential</td>
<td>.99</td>
<td>.99</td>
<td>.95</td>
<td>.98</td>
<td>.82</td>
<td>.84</td>
<td>.80</td>
<td>.98</td>
<td>.98</td>
</tr>
<tr>
<td>- Standpipes</td>
<td>.35</td>
<td>.15</td>
<td>.87</td>
<td>.38</td>
<td>.50</td>
<td>.35</td>
<td>.43</td>
<td>.98</td>
<td>.61</td>
</tr>
<tr>
<td>Staff per 1000 Connections 1998</td>
<td>10</td>
<td>16.5</td>
<td>20</td>
<td>31.5</td>
<td>28</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Staff per 1000 Connections 2007</td>
<td>5.4</td>
<td>15.5</td>
<td>14.4</td>
<td>17.7</td>
<td>17.1</td>
<td>19.5</td>
<td>20.4</td>
<td>16.2</td>
<td>17.9</td>
</tr>
<tr>
<td><strong>Financial Performance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenue</td>
<td>n.a.</td>
<td>73,036</td>
<td>52,949</td>
<td>29,849</td>
<td>21,410</td>
<td>14,312</td>
<td>12,599</td>
<td>6,453</td>
<td>17,209</td>
</tr>
<tr>
<td>Operating Costs (incl. depreciation)</td>
<td>n.a.</td>
<td>92,706</td>
<td>47,535</td>
<td>36,629</td>
<td>24,347</td>
<td>11,477</td>
<td>14,305</td>
<td>5,979</td>
<td>16,289</td>
</tr>
<tr>
<td>Operating Income</td>
<td>n.a.</td>
<td>(19,670)</td>
<td>5,414</td>
<td>(6,780)</td>
<td>(2,937)</td>
<td>2,835</td>
<td>(1,706)</td>
<td>474</td>
<td>920</td>
</tr>
<tr>
<td>O&amp;M Recovery Rate</td>
<td>n.a.</td>
<td>0.79</td>
<td>1.11</td>
<td>0.82</td>
<td>0.88</td>
<td>1.25</td>
<td>0.88</td>
<td>1.08</td>
<td>1.06</td>
</tr>
<tr>
<td>- rate of change re. 2006</td>
<td>n.a.</td>
<td>+18%</td>
<td>+10%</td>
<td>+55%</td>
<td>+19%</td>
<td>+26%</td>
<td>-13%</td>
<td>-16%</td>
<td>+2%</td>
</tr>
<tr>
<td>Positive income projected for:</td>
<td>n.a.</td>
<td>2009</td>
<td>*</td>
<td>2010</td>
<td>2009</td>
<td>*</td>
<td>2010</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

n.a. : Data not available.
* Positive operating income already achieved.

4. LESSONS LEARNED AND POTENTIAL APPLICATIONS

4.1. Baseline Data, Management of Risks and Accountability Mechanisms

The baseline data used by the bidders for the Maputo original lease contract (OLC) and the management contracts (OMCs) in Beira, Nampula, Pemba and Quelimane were incomplete and unreliable. To compensate, the OLC allowed for an “interim review” of the operator’s tariff in the event of a material change of circumstances. This provision made it possible to renegotiate fees, but the process could have been easier for both parties had the conditions and procedures for the review been specified in more detail. This shortcoming was corrected in the RLC. In the case of the management contracts, because the operator did not assume significant risks associated with the reliability of baseline data, neither the OMCs nor the RMC provided for a revision of fees, except in the case of a change in law that increased the operator’s costs.

There is also the possibility that bidders took advantage of the data gap to submit lower than realistic bids in the hope that reality on the ground would force a favorable revision. The subsequent prolonged renegotiation of fees and revision of the contracts resulted in delays in investments, rehabilitation works, and the management improvements the contracts were expected to usher in, and substantial financial losses for both the lead private operator and GOM.

Another shortcoming of the contracts was the absence of direct incentives or financial penalties for failure to achieve contractually specified targets and standards. The “incentive payments” included in the contracts were not tied to service quality, \textit{per se}. The periodic reviews of the operator’s fees were supposed to provide a mechanism for accountability but CRA did not consider that the periodic reviews provided for adequate enforcement of service quality standards. Some observers believe that more directly linked incentive payments or penalties would have been more effective.

Lessons:

1. **Reliable audited baseline data should be available before private operators are asked to accept significant financial risks.** If adequate data are not available, it might be preferable to adopt a less risky initial arrangement to prepare the way for a riskier one.

2. **Even when fairly reliable baseline data are available, the potential need for correction should be acknowledged and procedures for updating data, initiating a review, conducting a review, and revising contractual obligations should be clearly specified in the contract.**

3. A rule that allows for a critical review and potentially the rejection of bids that are significantly lower than consultant’s estimates of realistic bids would help to avoid the moral hazard associated with low bids.

4. **After an initial start-up phase and once reliable data are available, the operator should be held accountable for achieving contractually specified targets and standards through financial incentives or penalties.**

4.2. Bundling of Contracts/Small Service Areas

As discussed earlier, in 1999 there were several reasons for bundling the Maputo service area with the service areas in four provincial capitals and requiring the winning
bidder to assume all five contracts. A cross default provision was included in the contracts to prevent the operator from abandoning the smaller service areas. However, the operator was allowed to structure and deploy its management team as it saw fit. In the early years, AdeM did not assign dedicated staff to the management contracts and attempted to coordinate all five contracts from Maputo. In addition, when AdeM encountered financial difficulties, it gave higher priority to Maputo. This resulted in a lack of adequate attention to the problems of water supply operations in the latter. Even after the revision of the management contract and the deployment of six resident experts to the four service areas, AdeM did not succeed in providing sufficient management support to all four areas. On the other hand, while a larger number of dedicated expatriate staff might have produced better results, it would have been prohibitively expensive. The Vitens model seemed to address this problem by providing a single resident team leader, deploying specialized expatriate staff for short visits, and hiring local young professionals (who were mentored by the expatriates) to provide a permanent presence.

Lessons:

1. **Bundling of contracts that have large disparities in size, risks and profitability may be justified and may create economies of scale and scope, but safeguards in the contracts should ensure that the operator will dedicate appropriate resources to each service area.**

2. **The experience with other similar contracts as well as different contract models, such as a single lease contract for a number of urban areas as in Senegal, should be evaluated and compared to the Mozambique experience to determine which factors, if any, promote both good performance in secondary cities and the objective of eventually decentralizing services.**

3. **Contracts should specify how much centralization is appropriate and acceptable and/or the minimum resources to be deployed to the weaker areas.**

4. **In addition to cross default provisions, careful and selective use of incentives or penalties could be used to ensure that minimum standards are maintained in all service areas.**

5. **Lower cost management models that allow an adequate professional presence in the small service areas, such as the Vitens model, need to be developed. FIPAG's competitive tendering of local delegated directors who have access to professional support, and the Vitens model are potentially promising approaches.**

### 4.3. Investment and Rehabilitation Strategy

The sequencing of capital works and rehabilitation presents a dilemma in that it should take into account not only technical engineering factors but also financial, political and social priorities – such as expanding coverage. Even under the best of conditions, the time from preparation to implementation of major donor projects can be very long. In Mozambique this was exacerbated by the delay in implementation of capital works projects. As a result, some of the investments identified during the appraisal of donor-financed projects were no longer optimal by the time they were implemented. In addition AdeM suggested that the NWDP II investment strategy did not give adequate priority to increases in connections that would have improved coverage and financial performance earlier in the process. The Delegated Works Program (DWP) was intended to give the operator flexible control over resources for specified works that would support
performance improvements, particularly water loss reductions, but AdeM did not succeed in using it to this end.

Lessons:

1. Greater flexibility may need to be built into the design of donor-financed capital works so that changes can be made in response to current circumstances and priorities.

2. Capital works and rehabilitation should be sequenced in a way that not only takes into account technical engineering factors but also financial, political and social priorities. Among the factors to consider are (i) the desirability of expanding coverage as quickly as possible so as to maintain the support of political and civic leaders and (ii) the need to improve financial performance.

3. The delays encountered in the initial years of Mozambique’s DMF were caused by an unfortunate combination of circumstances and incidents, many outside the control of the implementers, and they were more severe than is typical. However, delays in the implementation of rehabilitation and capital works are frequent, even in relatively simple projects, and particularly when new institutional arrangements are being created. Adequate time and resources need to be allowed for the start-up of such arrangements.

4. Delegated works programs should be explicitly linked to (though not necessarily conditioned on) expected improvements in performance.

4.4. Allocation of Responsibilities

In hopes of expediting the execution of investment projects and based on the assumption (and the ideology that was popular in the 1990s) that private operators would be more effective than a public entity in performing these tasks, donors encouraged FIPAG to include the tendering and supervision of capital works in the lease and management contracts with compensation of the operator based on a fixed percentage of the value of the works.

In practice, this arrangement proved counterproductive. It distracted AdeM from its primary operational obligations and complicated an already complex relationship between FIPAG and AdeM. Most importantly, it did not result in expeditious implementation of capital works. Delays in the completion of investments had negative impacts on AdeM’s operational performance and incentive payments, but it was difficult to hold either party responsible since both were implicated in the management of the investment program.

Lessons:

1. The design of private sector participation should not be based on glib assumptions that all sorts of tasks are more efficiently managed by the private sector under all conditions. The promoters of such arrangements should be more realistic in estimating the potential benefits, the conditions necessary for realizing expected benefits and the risks of not realizing them.

2. There are good arguments in favor of separating asset management from operations, and it is necessary to do so in the case of a lease contract. However, the separation creates a need for close collaboration between the asset management entity and the operator and this may be problematic unless there are strong incentives for collaboration.
3. When an asset management entity such as FIPAG exists, it should normally retain responsibility for procuring and implementing capital works. This will enhance the separation of responsibility for operations from responsibility for investments, making it easier to hold each party responsible.

4. When donor funding is involved, it is essential to build in-house expertise and hire specialists with extensive experience in the procurement and implementation of donor-funded projects. Not every private operator has this expertise or the motivation to develop it.

4.5. The Private Operator’s Team
The high cost of private operators from the highly developed countries is justified only if it transfers skills and expertise that cannot be obtained within the host country or nearby countries. The practice whereby international water operators contract external professionals to assume resident positions in developing countries results in a situation where the international operator's managerial and technical strengths are not transferred to the host country. In addition, resident managers may not have adequate access to key decision makers in the company’s headquarters and have little influence on major corporate decisions that affect the contract. Vitens’ practice of sending regular Vitens staff on long- and short-term assignments, and at no cost to the host country, has produced very good results, but this model is unfortunately not typical.

Lessons:

1. International operators could be required to fill certain positions with staff who have worked for the operator in its home country or similar context for a minimum number of years. Team members should also have experience in managing change and strong mentoring skills.

2. Arrangements whereby regular employees of the international operator are sent for repeated short-term assignments over several years should also be considered.

3. The international operator should be encouraged to decentralize responsibility for most decisions to its team in the field and to limit headquarters’ role to providing support, planning and monitoring. Water supply is a local business and social considerations, culture and local politics are part of the business.

4. There should be a clear plan for phasing out expatriate staff and promoting local staff to senior positions as well as to strategic decision-making levels within the corporate structure.

5. The contracts of international staff (resident and non-resident) should link their continued employment to specific performance targets.

6. In the absence of conditions that promote a level of skills transfer that is commensurate with the cost, it might be preferable to seek less costly operators and technical assistance from operators in neighboring countries, assuming they can provide a satisfactory level of service.

4.6. An Alternative Form of International Private Participation
The Vitens model represents a less costly form of international private participation and a promising transitional or alternative arrangement. While exact replicas of this arrangement are not common, similar arrangements have been used in other sectors
and subsectors and through professional associations rather than private companies. For example, the U.S. Rural Water Association has long provided fairly intensive and regular support to rural water systems in Central America with support from its own members and the U.S. Department of Agriculture. Governments of developed countries that have demonstrated a strong commitment to supporting the achievement of the Millennium Development Goals, might be receptive to this relatively low-cost, high-value model.

Potential application: The Government of the Netherlands and Vitens have developed an innovative model for supporting the MDGs in the urban water supply sector that other countries could be encouraged to copy. International donors and NGOs could lobby governments as well as public and private water companies to participate in such interventions. Following the Vitens model, water companies would ask their shareholders to fund a small grant to offset the cost of technical assistance. Alternatively, users could be asked to make small monthly or quarterly donations when paying their water bills. These interventions would need to be complemented by operational support funded by bilateral donors, and donor funding for major investments. Such arrangements would give citizens of the developed countries an opportunity to support the MDGs and could have beneficial impacts on the water companies by affording their staff opportunities to work creatively in challenging environments. Given the extensive need for management support, particularly in small and medium-sized cities of the poor countries, a special program could be set up to promote such arrangements. Care would need to be taken to ensure that participating companies are aware of the challenges, able to dedicate sufficient resources and sincere in their commitment to promote development through a non-profit intervention.

4.7. Promoting the Emergence of Local Private Operators

While international companies may have much-needed technical expertise and experience, there are several risks and disadvantages inherent in hiring international companies to operate services. Local private operators, once they acquire the technical expertise, offer many advantages. The most obvious disadvantage of international operators is that they are very costly, but there are others. The resident management team often does not include permanent employees of the lead partner who can bring to bear the full benefits of its corporate experience. Though many expatriate professionals have extensive experience working in similar contexts and adapt well to new environments, they do not have the same degree of connection to the local context as local managers would. The corporate management of foreign operators may not give high priority to a contract in a far-off country. In contrast, local operators are likely to be more affordable, have a greater understanding of local conditions and are more invested in the economic development of their country. On the negative side, they usually lack appropriate expertise and experience, at least initially.

Lessons:

1. A contract with an international operator inevitably includes the risk that distant changes in corporate strategy and leadership will have negative effects on the arrangement. The difficulty of controlling such risks reinforces the desirability of engaging a local or regional private operator whose viability is closely linked to the success of the contract and who have a greater interest in maintaining their presence in the host country.
2. Initially, it is unlikely that local private companies could qualify for complex operational contracts. For this reason, it is important to structure contracts in a way that promotes the emergence and strengthening of local private operators. In structuring DMF contracts to replace AdeM in the four northern capitals, FIPAG was attempting to target local and regional companies which would be supported by an expert independent auditor/advisor.

3. Vitens’ practice of hiring recent college graduates and giving them intensive support as they assume management responsibilities seems to be effective for developing competent and experienced local water sector professionals who will be able to assume management positions in private companies or provide consulting services to operators.

4.8. Strengthening Local Staff and Suppliers of Support Services

AdeM and Vitens implemented comprehensive training programs in their respective service areas – either because they had a built-in incentive (the lease contract) or because they were required to do so (the management contract and technical assistance contracts). All observers agreed that the performance of staff had improved significantly but that further capacity building was needed.

As for the development of local management capacity, by 2007 AdeM had not replaced any of its top management team in Maputo with locally hired professionals and, given its less than stellar performance, it might have been controversial to do so. On the other hand, FIPAG had developed a promising approach to developing local capacity. When AdeM failed to provide satisfactory management support in the four provincial service areas, FIPAG decided to centralize AdeM’s management team in Beira and in 2007 it appointed competitively hired local delegated directors with responsibility for day-to-day management in Beira, Nampula, Pemba and Quelimane. The delegated directors’ contracts were incentive-based and they were supervised directly by FIPAG’s central leadership team. In Inhambane, Maxixe, Chokwe and Xai-Xai, FIPAG directors were also responsible for day-to-day operations with on-site support provided by Vitens. In addition, with the aim of creating local consulting capacity, Vitens hired local young professionals to work as counterpart members of the Vitens team alongside expatriate staff, enabling them to gain valuable on-the-job training and experience.

The DMF in Mozambique created other opportunities for strengthening local capacity and the local private sector. In Maputo, local companies benefited from AdeM’s practice of outsourcing non-core support functions. CRA was examining the possibility of legalizing the numerous SSIPs that provided water services to a substantial portion of the population who lived in areas that AdeM was not able to serve.

Lessons:

1. Private sector participation can be designed to provide opportunities for the development of local capacity and the local private sector, but, particularly in the case of management contracts, capacity building outcomes must be clearly specified and incentives provided for achieving them.

2. Other mechanisms that complement formal training, such as performance incentives and mentoring arrangements are useful for developing local management capacity. FIPAG introduced a model that incorporated these concepts when it hired local delegated directors in the four northern capitals and
gave them access to support from the AdeM expatriate team and other professionals.

3. Outsourcing support functions gives local private firms opportunities to grow and spreads the benefits of private participation in water supply to other segments of the economy.

4.9. Managing Expectations
The reform of the water supply services sector in Mozambique enjoyed the continued support of both the GOM and the public. This was due at least in part to the ability of sector leaders to manage expectations and avoid unrealistic promises that could not be kept. In addition, all the stakeholders at the national and municipal levels as well as consumers were consulted and educated about the financial and technical challenges and were kept informed about progress as well as set-backs. The Stakeholders’ Forum that reviews and comments on FIPAG’s programs proved to be an effective way to keep stakeholders involved.

Lessons:

1. Projecting realistic results and educating stakeholders (particularly municipal authorities and consumers) about the financial and technical challenges helps to create a collaborative environment and avoid disappointment.

2. Formal mechanisms for consultation such as a stakeholders’ forum help to maintain involvement throughout the reform process.

4.10. The Importance of Credible and Stable Institutions
In spite of the difficulties encountered in the early years of the DMF, GOM’s strong political commitment to the reform, the dedication of key sector leaders, the growing credibility of the new sector institutions and the continued support of donors ensured that the reforms were sustained. One of the positive characteristics of the water sector in Mozambique was the stability and professionalism of its top leadership: in 2007 the heads of the key institutions had all been in their positions for practically the entire history of the reform process and they were dedicated to its success.

Lesson: The value of a good legal and regulatory framework for attracting international private operators and promoting long-term sustainability of water supply services has long been recognized. However a legal document or a set of official policies is not very useful unless conditions that promote credibility, stability, transparency and effectiveness exist. These same conditions help ensure that, if difficulties are encountered, the reform will not collapse. The conditions that have enabled the reforms in Mozambique to succeed were:

1. Widespread support for and confidence in the reform,

2. Competent professionals and strong institutional capacity to carry the reform forward, and

3. Continuity and excellence in leadership.

4.11. Innovative Solutions
As in most developing countries the major cities in Mozambique are surrounded by peri-urban areas that have emerged from informal settlements and developed without
adequate urban planning. The majority of the urban population that is poorly served, or not served at all, lives in these areas and conventional solutions may in most cases not be suitable.

In the initial stages of the reform, a contract with a private operator was expected to solve (or at least was presented as the solution for) most if not all problems in the urban water supply sector. Experience has shown that parallel initiatives and pilot projects organized by other actors may lead to the evolution of more effective models than the conventional large-scale solutions.

Lesson: To better serve low-income peri-urban areas, the operator and the regulator should be proactive in taking advantage of local knowledge and seeking creative solutions for serving peri-urban areas. Regular beneficiary surveys are a very useful tool for assessing existing market characteristics and the needs of the poor, and provide a basis for designing solutions. Effective strategies may include:

1. **Strong coordination with local authorities, particularly at the community level,**
2. **Partnerships with local small-scale providers,**
3. **Decentralization within the utility to bring the company closer to the customers,**
4. **Partnerships between government institutions, operators (both conventional and informal) and other stakeholders (such as NGOs, bi- and multi-lateral agencies, etc.) for defining and piloting innovative approaches in peri-urban areas.**