RETROSPECTIVE REPORT
2009-2014

REPUBLIC OF MOZAMBIQUE
Water and Sanitation Regulatory Council

CRA

15 years
Regulating for a
Better Service

Vision

A Universal Water

and Sanitation Service

that is sustainable, equitable and accessible to all,

focused on satisfaction of consumer interests

and based on adequate legal and regulatory environment!

REPÚBLICA DE MOÇAMBIQUE
CONSELHO DE REGULAÇÃO DO ABASTECIMENTO DE ÁGUA

RELATÓRIO RETROSPECTIVO 2000 – 2008

A Evolução do Serviço ao Consumidor na Óptica do Regulador

12 de Março de 2009

República de Moçambique
Conselho de Regulação do Abastecimento de Água

RELATÓRIO AO GOVERNO 2009

Setembro de 2010

República de Moçambique
Conselho de Regulação de Águas

RELATÓRIO AO GOVERNO 2010

Outubro de 2011

REPÚBLICA DE MOÇAMBIQUE
CONSELHO DE REGULAÇÃO DE ÁGUAS

RELATÓRIO AO GOVERNO 2011

Outubro de 2012

REPÚBLICA DE MOÇAMBIQUE
CONSELHO DE REGULAÇÃO DE ÁGUAS

RELATÓRIO AO GOVERNO 2012

JULHO 2013

Conselho de Regulação de Águas

Relatório ao Governo 2013

Junho de 2014

CRA

15 Anos
Regulando por um Serviço Melhor!

Manuel Carrilho Alvarinho

President of the CRA

FOREWORD
ACKNOWLEDGING SUCCESSES AND CHALLENGES IN THE PAST SIX YEARS

Each year, CRA reports to the Government on performance of the regulated services. This introduction illustrates the development of the current context over the past six years (2009 to 2014):

Unfinished Task! (2009)

2009 is the year that we made a review of about ten years… large number of important cities had substantial improvements in water supply services. The government took additional steps…. to extend the experience on delegated management to the smaller urban centres systems. However, we were unable to do much… particularly on involvement of the national private sector.

Preparing for new phase! (2010)

We have reached to the point that… stability, efficiency and cost effective of the services is essential to explore any system that we may wish… to raise water sector to a new level of development… We should pay special attention to our district headquarters…Recently, the government approved the Decree 23/2011 and series of measures for a more viable and effective performance of the CRA.

The Regulation, Barometer of the development! (2011)

The Water Policy of 2007 reinforced the principle of separation of functions namely the autonomous and delegated services provision,… and the extension of regulation to all water supply and sanitation systems. In fact, regulation becomes more or less an effective instrument as long as the environment of transparency, accountability and respect for consumers is affirmed by itself…

On-site public sanitation service (2012)
Latrines and septic tanks

Sectorial policies are not lacking. For more than 10 years, we talked about the establishmen of Municipal autonomous sanitation services… however, little progress was made. The problem… (is also related on), assuming that the majority of population depend on a full cycle of solutions to assist them in latrines and septic tanks.

15 Years of lessons learnt and challenges: The value of principles! (2013)

Regulation of the water sector is a reflection of principles of its reform… Whenever we deviate these principles, major threats may occur into the system and symptoms are visible that cause erosion to accountability… Successful development of water supply services to major cities is undeniable. We speak about… how to transfer these lessons learnt to sanitation and water supply systems of the district headquarters.

The sector has reached to a very asymmetrical point in its development. Water supply to the provincial capital cities has developed a lot, but some systems still present some concerning weaknesses in the management and availability of water sources. Little has been done in the district headquarters due to absence of a significant and structured investment program. The sanitation in large cities requires meaningful institutional reform to attract investments. Services are better now than in the past six years, however, new effort is required so that we can provide.

<div align="center">

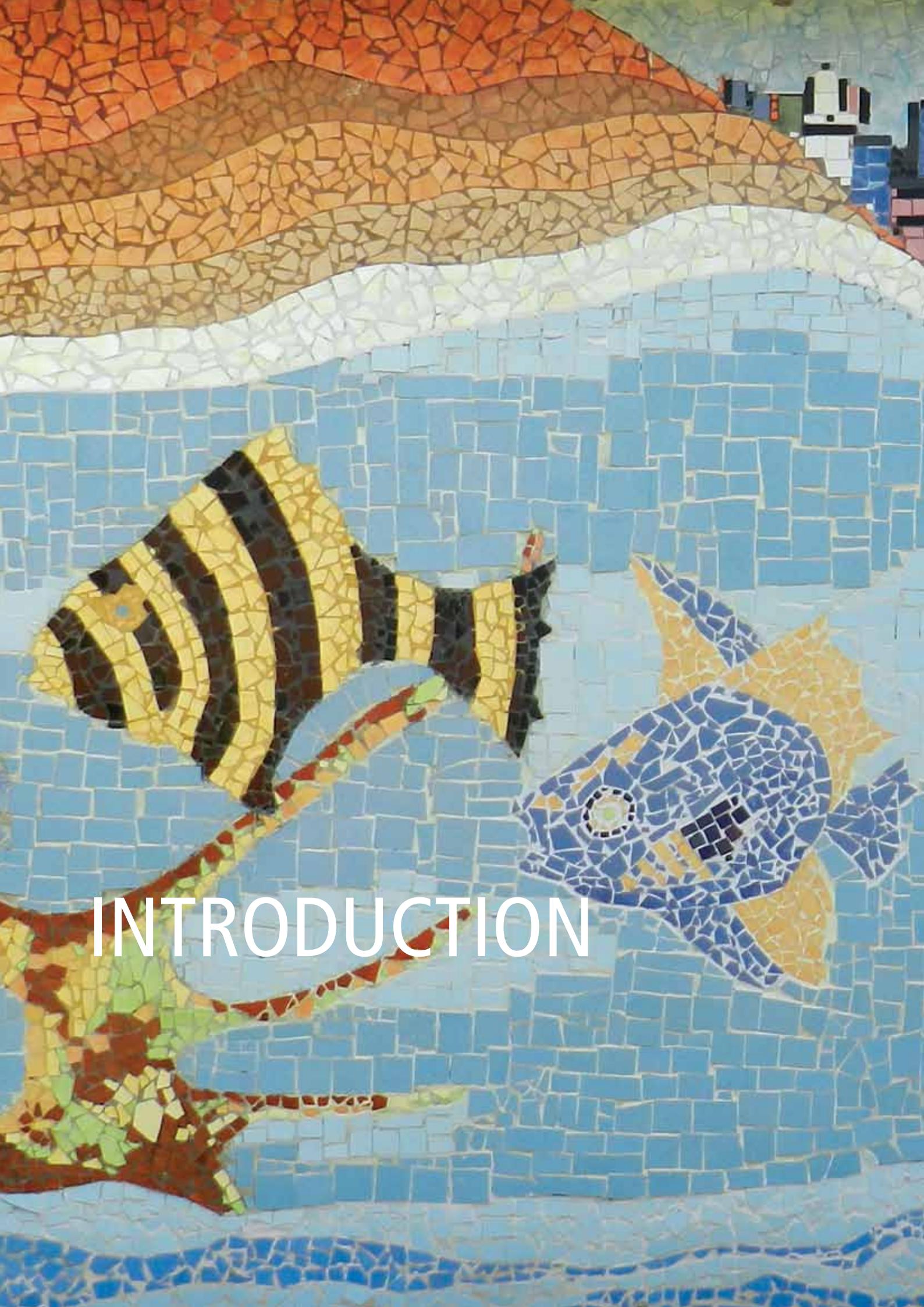**"Water and sanitation for all!"**

Manuel Carrilho Alvarinho

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Cadmiel Filiane Mutemba

**Minister of Public Works and Housing,
2010 to 2014**

(Excerpts of the speech delivered at the First Awards Ceremony of the Water Supply Management Entities, August 2013)

"First of all, I wish to express my appreciation and pleasure of having the honour to witness and participate in this first Awards Ceremony of the Water Supply Managing Entities, held by CRA as an end of the evaluation of the effort undertaken by each of the managing entitie… and that contribute to meet government's objectives to achieve urban water supply coverage of 70% by 2015, and consequent improvement of life quality of the Mozambican population.

… My presence at this ceremony is a witness on importance of this evaluation, whose ultimate goal is to improve management and performance of the managing entities in the provision of service in which final beneficiaries are consumers. I consider the Regulator action extremely crucial to promote and improve management and consumers service quality, sustainable, cost efficient and profitable, that is to say, provision of good service at a fair price for everyone!"

INTRODUCTION

This report begins with a brief summary of the water and sanitation sector in the period prior to 2000, as historical overview of a very difficult period to the sector. The summary includes information on regulation, supervision and other activities of the Water Regulatory Council (CRA) within the scope of its powers vested by Decree No. 74/98 of 23 December that aims to provide information to the Government, Regulated Entities and to the consumers apart from managing entities performance and series of activities related to Regulation.

This reports aims to summarise the most relevant information of the period under review from 2009 to 2014, and to share on outcomes of the performance evaluation of the Regulated Entities in 2014 and comparing them with previous years and allowing the assessment for the development of the situation.

The report starts with an Executive Summary that highlights most relevant issues in the period under review.

Chapter One describes an institutional framework of water supply and sanitation and it summarizes the existing situation by 2000.

Chapter Two focuses on the development of the regulatory framework and the work of CRA within institutional and governance framework.

Chapter three focuses on the nature of regulation, including instruments by which regulation is exercised and its decentralized organization model, as a way of ensuring adequate regulation for each system in a specific reality where it operates and by being simultaneously, economically sustainable in order to avoid the extension of regulation to more number of systems that are not in a position to support the regulation rate and may create risk to the standards of independence and separation of functions contained in the regulation.

Chapter Four addresses issues related to the economic and financial sustainability of the systems, namely tariffs development and problematic issues thereof.

Chapter Five focusses on results of the evaluation of ER, based on a set of aggregated indicators for the period 2009 to 2014; performance evaluation of ER shown in annex 2, compares the results obtained in 2014 in relation to the previous year and it assesses its progress.

Finally, Chapter Six presents new challenges and outlook with particular emphasis on sanitation services and the vision of the CRA for the period 2015 to 2025.

EXECUTIVE SUMMARY

I. INSTITUTIONAL FRAMEWORK AND REGULATION DEVELOPMENT

In mid 1990s, the Government of Mozambique initiated series of political, economic and social reforms, including measures to restructure the water supply and sanitation sectors that were in a severe degradation. In this context, the National Water Policy (PNA)[1] and Water Tariff Policy (PTA)[2] are the pillars for the definition of the policies and objectives to be achieved based on series of principles that include the economic value of water, by which revenue is generated to ensure investments funding and increase interest of the private sector to obtain efficient management of the water supply and sanitation systems.

The Implementation of these policies is through Delegated Management Framework[3] (QGD), which defines and regulates the separation of powers and functions. The QGD created two autonomous public entities: *"Fundo de Investimento do Patrimônio da Água"* [Fund for investment Ownership and Water Supply Assets] (FIPAG) and Water Regulatory Council (CRA). FIPAG is responsible for investments management in five major cities and progressively has been extended to the remaining cities as they were getting good results. FIPAG is also responsible in transferring powers of the management of the water supply systems to private companies. CRA was created to safeguard and guarantee the rights of the consumers and interests of the different stakeholders and for the economic regulation.

[1] Resolution No. 7/95 of 8 August
[2] Resolution No. 60/98 of 23 December
[3] Decree No. 72/98 of 23 December

The increase of coverage rates and quality of water supply services required expansion of QGD to the district headquarters and surrounding small towns[4]. With this extension, CRA's mandate was also broadened[5] to include regulation of secondary systems and public services of waste-water drainage systems. This broad mandate forced CRA to restructure itself in order to create a model of regulation that could minimize constraints arising from the impossibility of the secondary systems to bear the cost of regulation, which is the CRA's main source of revenue. Figure 1 show regulatory regimes adapted to each of the water supply system and corresponding model of regulation. The decentralized regulation through creation of local regulatory commissions (CORAL) was the mechanism found by the CRA to adapt regulation to local realities and optimize costs.

Performance evaluation of ERs is based on a set of indicators defined in its regulatory agreement, which defines goals and targets to be achieved by the water supply systems and is done by regulatory frameworks and delegated management contracts.

Regulatory Regimes

Direct Centralised Regulation
15 MAIN SYSTEMS

General standards issued by CRA, and locally enforced by Local Regulatory Commissons

Indirect Regulation
130 SECONDARY SYSTEMS
(Gradually incorporated)

Standards issued and locally enforced with prior consultation of the CRA

Consultative Regulation
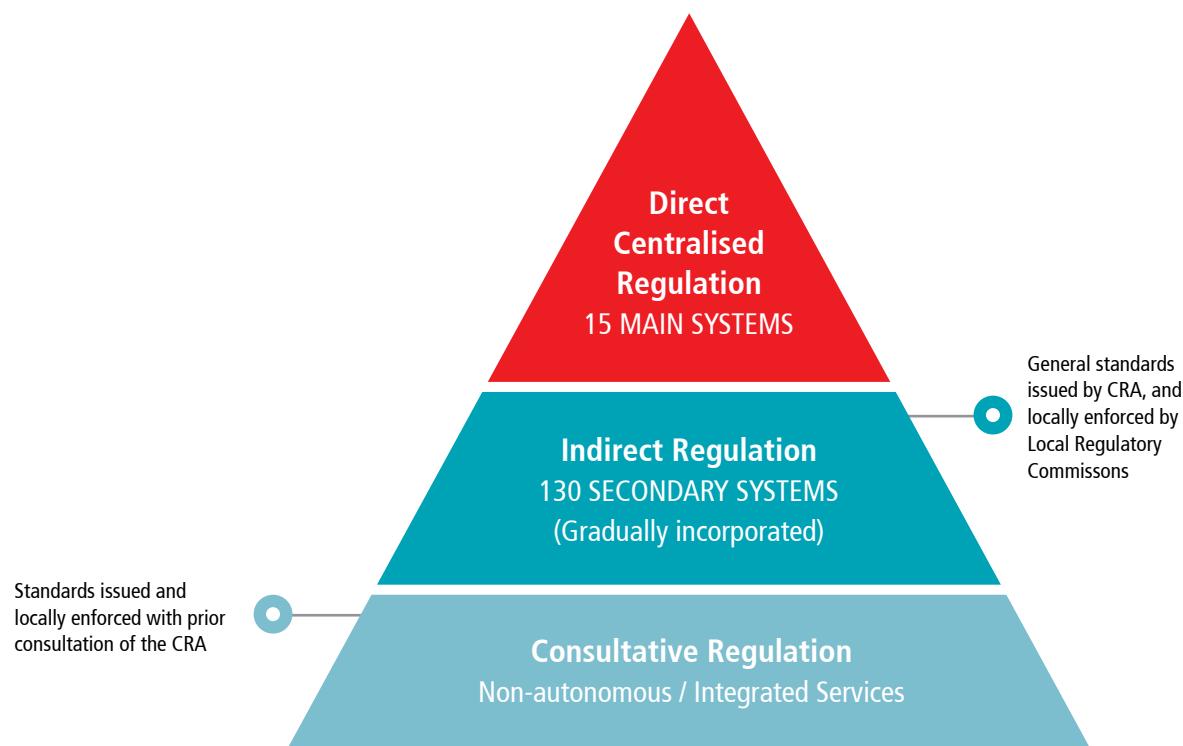Non-autonomous / Integrated Services

Figure 1 - Regulatory Regimes

[4] Decree No. 19/2009 of May 13
[5] Decree No. 18/2009 of May 13
[6] Decree No. 23/2011 of June 8

II. THE SUSTAINABILITY OF THE SYSTEMS

The water tariff structure in force in Mozambique presents a tiered pricing structure with increasing rates according to the volume of consumption and different tariffs for household and general consumption (trade, industry and public services). This tiered pricing structure aims to ensure access to safe drinking water to low-income and other vulnerable households through the "tap in the yard" for the first tier, referred to as the "social tier", of 5m³/month, designed to provide the minimum consumption need of 20 litres per person per day (20 l/person/day).

Figure 2 shows the deviation between the Average Reference Tariff (TMR) and Real Revenue Unit in relation to the target tariffs of 2014 which confirms that TMR is still lower than total costs, a trend that will continue to require government subsidies, at least temporarily, in order to cover investment costs.

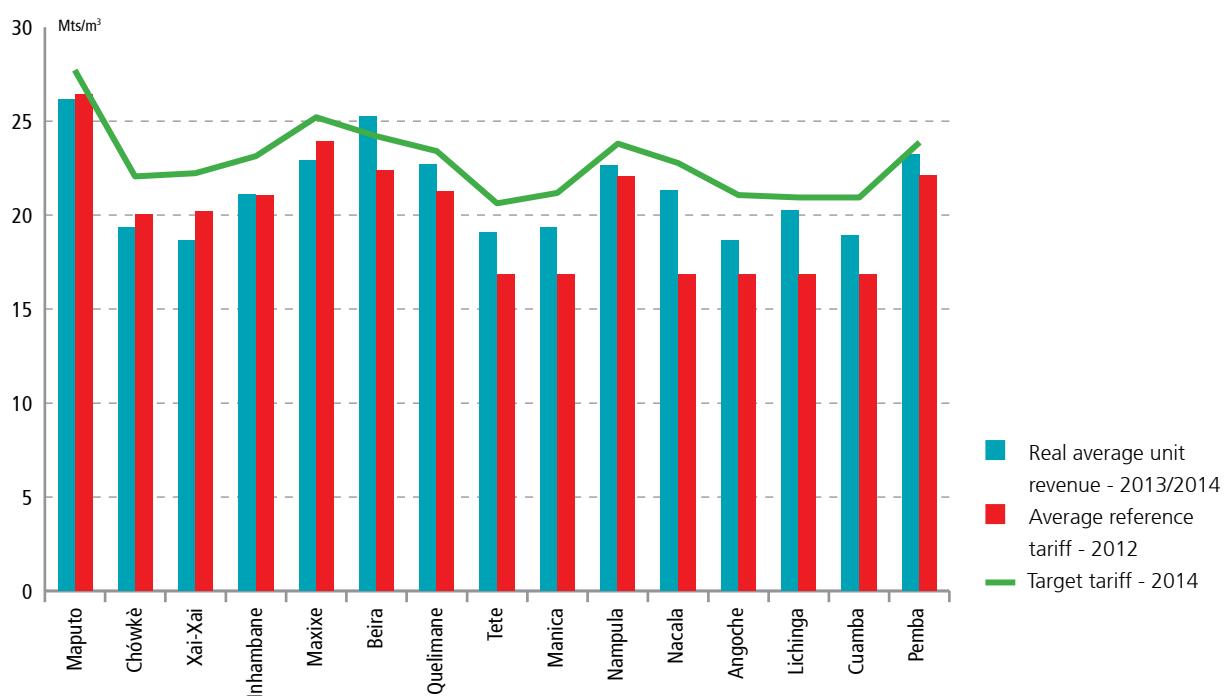## Average Reference Tariff - 2014

Figure 2 - Average reference tariff vs. Real average revenue

On other hand, in order to obtain necessary revenue in pursuing water service objectives, they use cross subsidy whereby consumers with higher consumptions patterns subsidise the "social tariff". Yet the deviation caused by the fact that the average consumption by consumers has fallen down that can jeopardize these cross-subsidies and consequently the viability of water supply systems and quality of service (Figure 3).

This situation will oblige to review the existing tariffs structure and establish alternative tariff mechanisms that will continue to ensure access to water by all sectors of the population and simultaneously will ensure financial sustainability of the ERs in compliance with government guidelines.

Water Tariff for Maputo Region

30 %   70 %   56 %   44 %

2005   2013

≤ 10 m³ / month
> 10 m³ / month

Connections: 90,000   Connections: 220,000
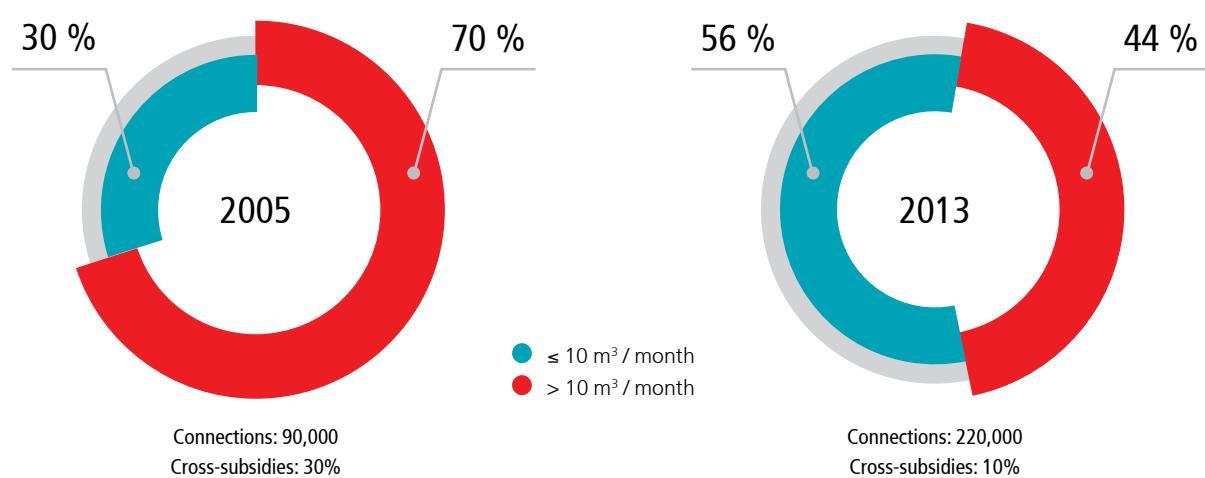Cross-subsidies: 30%   Cross-subsidies: 10%

Figure 3 - Transition of average consumption to the first tiers

III. EVALUATION OF SERVICE QUALITY

Monitoring and evaluation of the quality for water supply services is essential for regulation. In the main water supply systems, CRA has been evaluating annually and systematically on the quality of the services provided by ERs. Evaluation of water services is based on a set of indicators and summary of the results and most relevant trends of the evaluation presented below.

Total water coverage increased significantly from 50% in 2009 to approximately 70% in 2014 (Figure 4). This increased coverage is due to the increase of household connections that has increased from 28% in 2010 to approximately 45% in 2012 and has remained stable since that period. The trend of the coverage by public standpipes has decreased mainly due to consumers' demand for closer water sources.
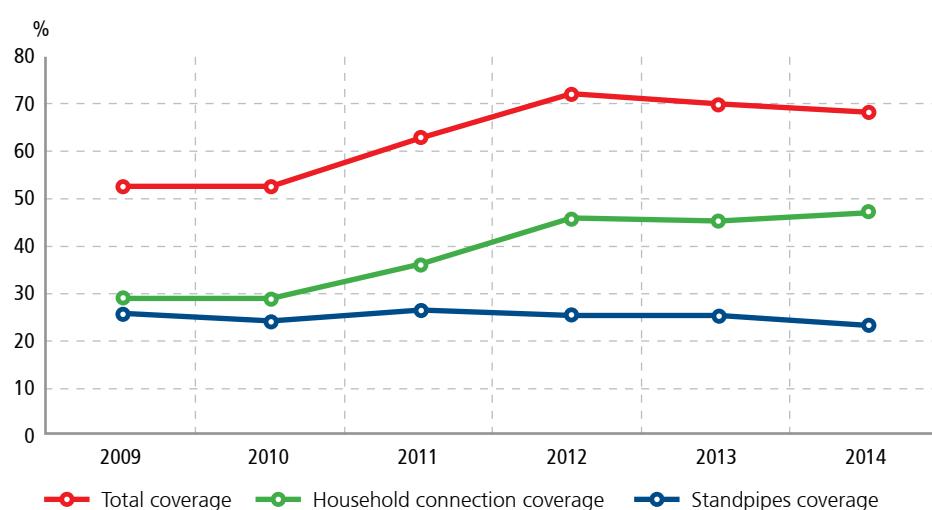
Service Coverage

Figure 4 - Service Coverage (aggregated data)

The methodology used to estimate the coverage by public standpipes is based on the population served by each standpipe. In contrast, CRA believes that it would be more appropriate to base on estimation of the coverage on volumes of water invoiced for standpipes, a criterion that shows operationalisation of this water source is based on per capita consumption of 20 litres/person/day, considered the basic and minimum service as per sector policy, which would result in a total coverage rate below 50%. Increased coverage by household connections of the various ERs is heterogeneous, so, there are some systems with coverage by household connection over 70%, and others below 20% (Figure 5).

The availability average period of 21 hours per day in 2009 dropped to less than 20 hours per day in 2014 and in some cities, this is a concerning issue. Figure 6 shows that as water supply coverage increases, the availability average period decreases. This reduction may be due to the fact that the increase of household connections were not accompanied by an increase in production capacity or reduction of losses in the same period.
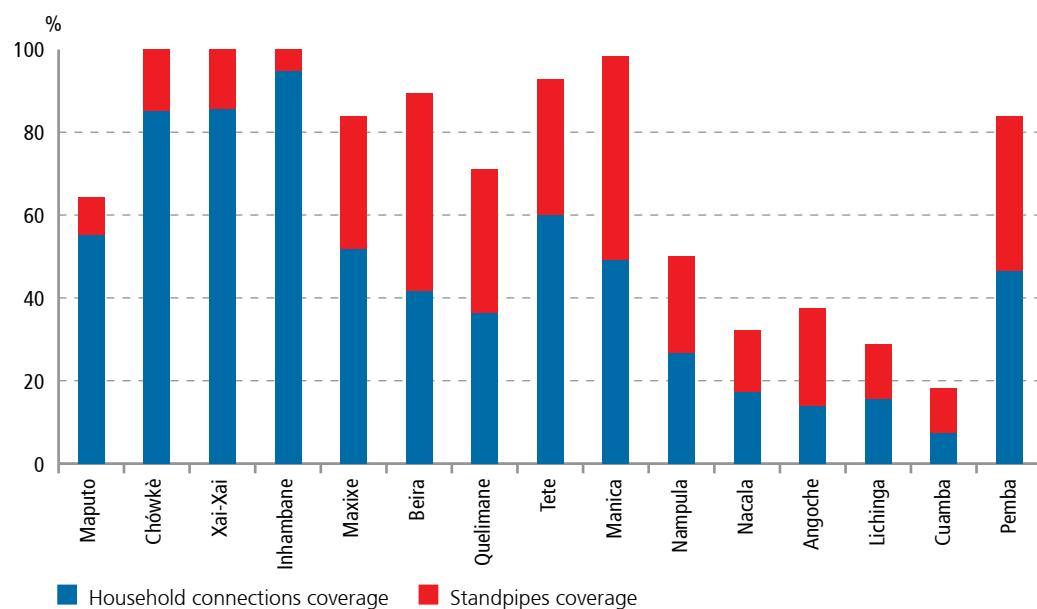
Coverage by System

Figure 5 - Coverage by system on connections and standpipes

In terms of water losses in supply systems, during the period under review, there was a slight decrease of 42% in 2014 (Figure 7). However, taking into account the 35% target established by the Regulatory Framework becomes urgent to implement additional corrective measures. The value of 42% of water losses is relatively reliable due to the fact that district meters are almost non-existed.

In the case of Maputo water supply system, over the last six years recorded losses higher than 45%, although it has shown a positive trend. In contrast, the Nampula system presents regular behaviour in the same period, with a level of losses of about 30%. In the Beira system, a set of measures to reduce high level of losses were implemented and it was confirmed by the success of a very significant reduction from 45% in 2008 to 31% in 2009; however, losses began to increase again in 2014.

Availability Average Period

Figure 6 – Availability Average Period   ●— Hours of water supply   ●— Household connections coverage

Non-revenue Water

●— Non-revenue water (total losses) ●— Maputo ●— Beira ●— Nampula ●— Reference Value
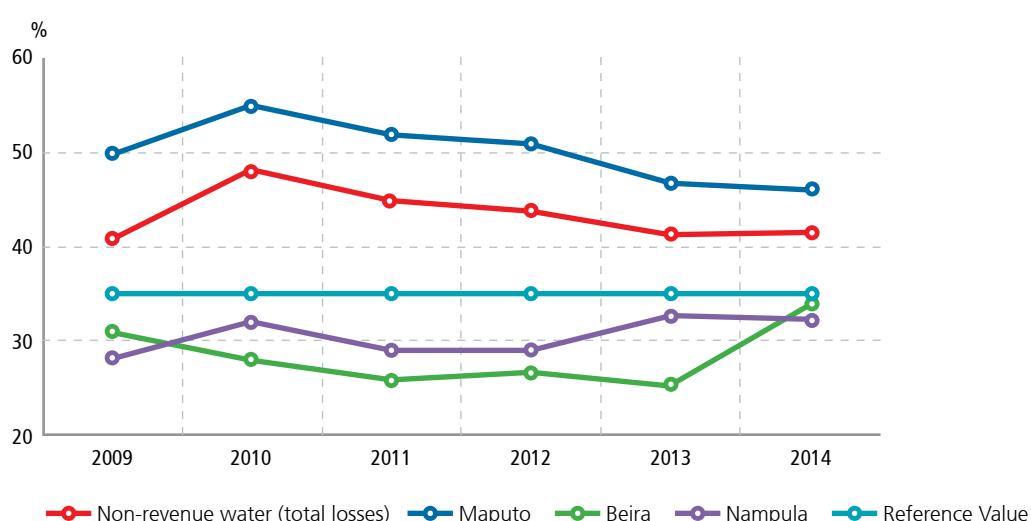
Figure 7 - ANC – Non-revenue water (total losses)

Water quality is a key indicator to evaluate the quality of service provided by ERs. According to the parameters of the legislation in force, this indicator evaluates the degree of compliance by ERs as well as analysed samples.

Over the past few years, according to the aggregated results of all ERs, the percentage of controlled parameters has gradually increased from 74% to more than 80% in 2014. However, the compliance of the analysed samples presents a negative scenario, showing that in 2009, 98% were in compliance and in 2014 this value was only 75% (Figure 8). This is a significant drop in quality of water services taking into account that water quality is closely related to issues of public health.

Compliance of Parameters
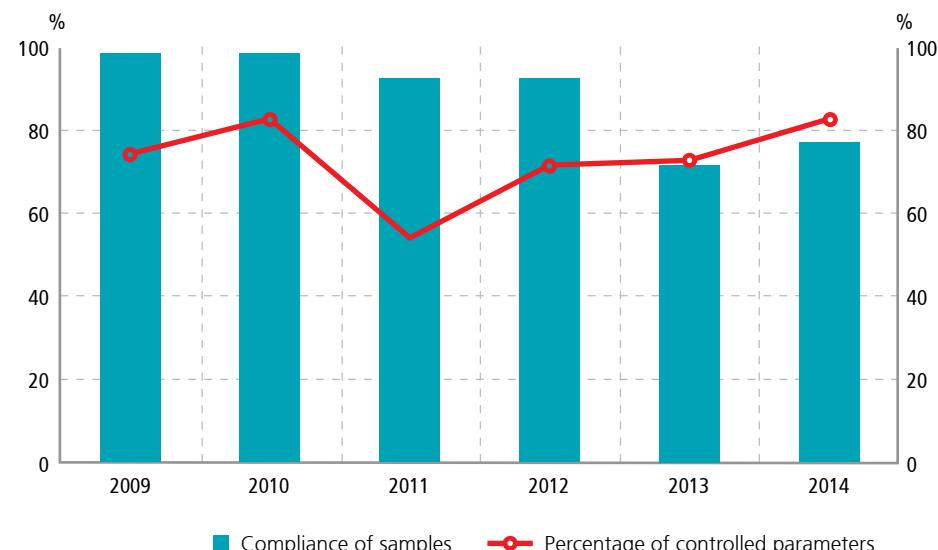
Figure 8 - Compliance of the Water Quality Parameters

In addition to the quality of water supply services provided by ERs, CRA pays special attention to consumer´s satisfaction with these services. Thus, during 2014, CRA carried out an assessment on consumer´s satisfaction degree about quality of the services provided by ERs. In only six of the systems evaluated, more than 50% of the population surveyed were satisfied with the level of service (Figure 9).

In 2009, CRA developed a Service Quality Evaluation Report (BAQS), in order to compare the performance of ERs based on established reference targets and to encourage the competitiveness among them. The table on the following page shows an overall evaluation of ERs in 2014, as per BAQS.

Consumers Satisfaction Level

Figure 9 – Degree of customer´s satisfaction with services provided by ERs

CRA — WATER AND SANITATION REGULATORY COUNCIL 2015

Overall Evaluation of Service Quality - 2014

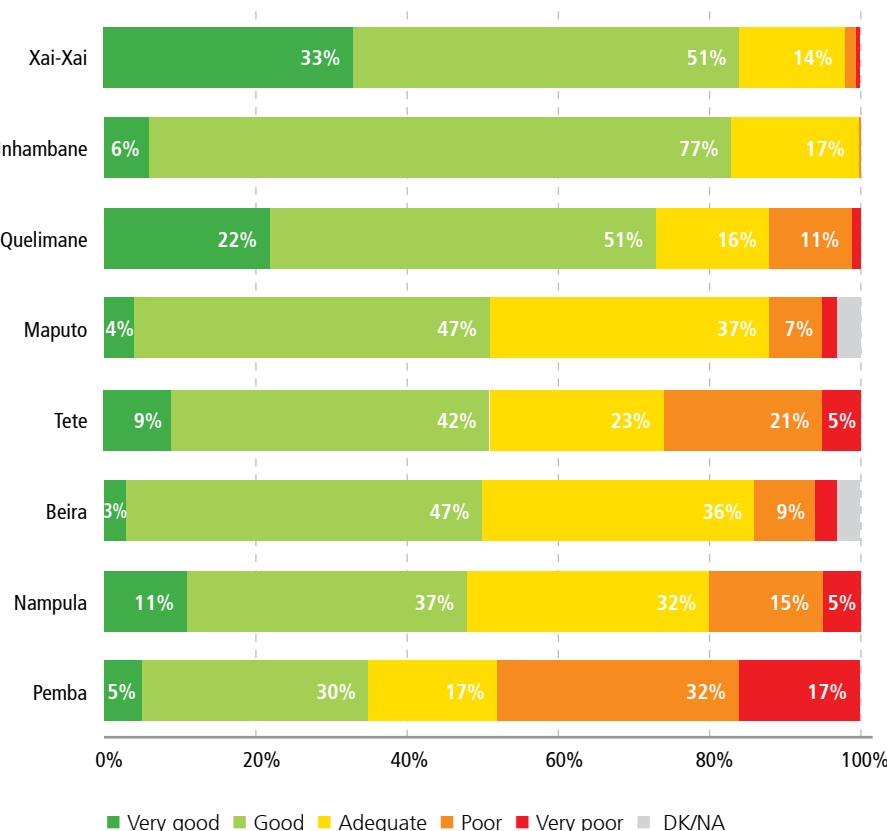| Indicators	Reference Value	Maputo/ Matola	Xai-Xai	Chókwe	Inhambane	Maxixe	Beira/ Dondo	Manica	Tete	Quelimane	Nampula	Nacala	Angoche	Pemba	Lichinga	Cuamba
ACCESS TO THE SERVICE																
- Coverage	V ≥ 60 %	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟡	🔴	🔴	🟢	🔴	🔴
- Availability average period	V ≥ 16 hr/day	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟡	🟢	🟡	🟢	🟢
SUSTAINABILITY OF COMPANIES																
- Non-revenue water	V ≤ 35 %	🔴	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟡	🟢	🔴	🟡	🟢	🟢	🟢
- Invoice Collection ratio	V ≥ 85 %	🟢	🟢	🟢	🟢	🟢	🔴	🔴	🔴	🔴	🟢	🔴	🟢	🟢	🟢	🟢
- No. of employees per 1000 connections	V ≤ 10	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟡	🟡	🟢	🔴	🔴
- Operational cost coverage ratio	v > 1,15	🟡	🟢	🟡	🟡	🔴	🟢	🔴	🟢	🟢	🟢	🔴	🔴	🟢	🟢	🔴
CUSTOMER CARE SERVICE																
- Complaints responded to	V = 100 %	🔴	🟢	🔴	🟢	🟢	🔴	🟢	🔴	🔴	🔴	🔴	🟢	🔴	🔴	🟢
- Average response time to complaints (days)	V ≤ 14 days	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢
- Invoicing based on meter readings (%)	V ≥ 85 %	🟡	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢
WATER QUALITY																
- Percentage of the controlled parameters	V ≥ 80 %	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟡	🟢	🟡	🟢	🟢	🔴	🔴
- Compliance of parameters	V = 100 %	🟢	🟢	🟢	🟡	🟢	🔴	🔴	🔴	🔴	🔴	🔴	🟡	🔴	🔴	🔴

Note:
🟢 Good performance
🟡 Average performance
🔴 Unsatisfactory performance

IV. SHORT AND MEDIUM TERM CHALLENGES AND PERSPECTIVES

To attain "towards universal service" will be the main theme of the sector but the current development stage shows weaknesses. Asymmetries of the country reflect significant inequalities in water supply and sanitation services in different segments of the population.

Performance Challenges in the service provision

- Reduction of non-revenue water (total losses), which is currently more than 40% to 35% of reference value;

- Implementation of water tariffs that support expansion of the service to all consumers and feasibility of the subsidy mechanism for connection cost;

- Adoption of information technologies to evaluate ERs performance;

- Extension of the regulation to secondary systems and urban sanitation services which are still in precarious development stage;

- Restructuring of ERs under management of FIPAG, in the form of commercial companies;

- Financial sustainability of the CRA will require additional measures.

Development of the New Agenda for the Sector

- The feasibility of serving approximately 3/4 of the population living in peri-urban areas, with low income and specific barriers to services, requires new concepts, principles and options:
  - Definition of "Accessible Population" understood as the population that for technical, social, economic viability or any other reason can be served by household connections and use it to define the main target of the coverage;
  - Due to progressive irrelevance of the public standpipes, specific actions must be defined as a compulsory crosscutting component in the plans/projects for "Non-accessible Population", who have no access to household connections.

- The following are also essential elements for new approach for the development of services:
  - Alternative solutions of invoicing and collection by making use of new technologies and customer management practices;
  - A more equitable and efficient tariffs structure to generate revenue;
  - The feasibility of the institutional framework services to district headquarters;
  - The development of the concept of professional and commercial sanitation service in major cities.

Mechanical reproduction of the conventional methods and approaches will not produce the expected results and it is important to prioritize investments of the management and institutional development.

Laurinda Kanji

Member of the CRA Board

THE CHALLENGE OF REGULATION

… a major challenge facing CRA is to regulate water supply and sanitation, two essential components   of the human life in a growing Mozambique where most part of its population does not have access to these services due to the lack of necessary infrastructures and taking into consideration that worldwide the lack of water resource is a reality, therefore, it is important to preserve this scarce resource.

Perfect coordination among various sectors must continue so that studies for projects implementation along the water collection sources should take into consideration on priorities of water use in agriculture, industry and drinking water to population by ensuring non-pollution of water sources.

We are confident that through hard work at national and international levels that water supply service and treatment of wastewater will become reality and comprehensive in our society…

Dr. António Laíce

Member of the CRA Board

It has been gratifying to be a member of the CRA team during this important period of its inception and to share exciting moments of its development, from step-by-step and challenge-by-challenge.

We experienced challenges of its creation with all implications related to facilities, human and material resources. We have experienced challenges of building its identity as a regulatory institution and attempt to reduce its scope of interventions. We shared unique experience of seeking to adapt and expand furthermore to new areas of intervention. Today CRA has been affirmed and consolidated as an institution of reference in the Mozambican legal system. All this progress was possible thanks to the team of young, highly qualified and competent professionals, led by a helmsman who knows how to motivate and encourage to progress, from challenge to challenge, striving to serve even more better to the consumer.

Well done CRA!

LIST OF ACRONYMS

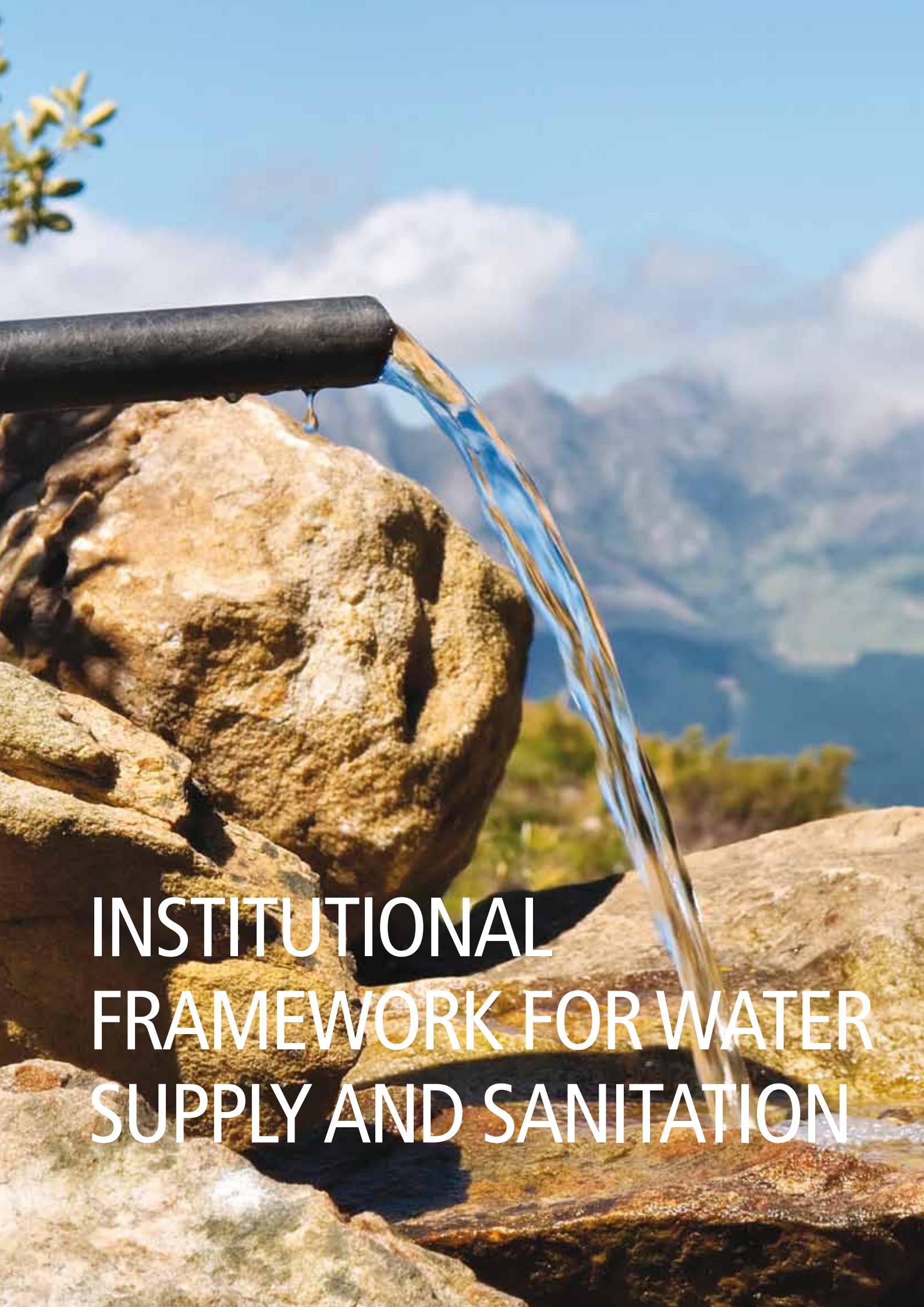|	
AdeM	Maputo Regional Water Utility
AdP	Water of Portugal
AIAS	Water Supply and Sanitation Infrastructure Administration
ALC	Local CRA Agents
ANC	Non-revenue water
AR	Regulatory Agreement
ADB	African Development Bank
BAQS	Service Quality Assessment Bulletin
CGD	Delegated Management Contract
CCM	Maputo City Council
CORAL	Local Regulatory Ccommission
CRA	Water Regulatory Council
DAS	Water and Sanitation Directorate
DNA	National Water Directorate
EdAEE	State-owned Water Company
EMUSA	Municipal Sanitation Company of Quelimane
ENASU	National Water and Urban Sanitation Strategy
ESAWAS	Eastern and Southern Africa Water and Sanitation
ETA	Water Treatment Plant
FIPAG	Fund for Investment and Ownership of Water Supply Assets
IDER	Performance Index of Regulated Entities
IQS	Service Quality Index
ISEF	Financial and Economic Sustainability Index
ISO	Operational Sustainability Index
IWA	International Water Association
MOPH	Ministry of Public Works and Housing
MDG	Millennium Development Goals
PARPA II	Action Plan for Poverty Alleviation
PNA	National Water Policy
PTA	Water Tariffs Policy
QGD	Delegated management framework
QR	Regulatory Framework
4CCN	Four Cities in the Centre and North
4SC	Four Southern Cities
TMR	Average Reference Tariff
UTI	Technical and Information Unit
WASIS	Water Services Institutional Support
WSUP	Water and Sanitation for the Urban Poor
ZMC	District Metered Area

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INSTITUTIONAL FRAMEWORK FOR WATER SUPPLY AND SANITATION

1

1.1. THE STATES BY 2000 AND INITIAL SECTOR REFORM

Water supply and sanitation services play important role at national level where the Government is committed in a series of programmes for restructuring the sector to meet population's needs and empowering economic development.

In the 1980s, water supply in Mozambique was controlled by the State; however, State-owned companies were economically and financially deficient not only because of the high level of infrastructure degradation but also due to macroeconomic environment, which did not allow mobilizing financial resources for the companies´ technical, operational and financial feasibility.

Figure 1 shows the institutional framework of water supply and sanitation service sectors in Mozambique by 2000 and its links[1].

Centralized management that was far from consumers did not contribute to improve infrastructure and quality of the service.

Figure 1 - Institutions responsible for water supply by 2000

[1] In this period, the National Waters Directorate (DNA), through the Department of Water and Sanitation (DAS), was responsible for the State-owned water company (EdA EE), which has never been legally formalized with the exception of the Empresa de Água de Maputo E.E. [State-owned Maputo Water Company].

Coverage Rate

Figure 2 - Context prior to delegated management framework

This environment ended up in causing negative trend on coverage of the water supply service that was already deficient due to the progressive degradation of infrastructures as shown in Figure 2.

To rectify this situation, in mid-1990s, the government initiated with political, economic and social reforms to restructure the water supply and sanitation sectors.

The National Water Policy (PNA)[2] approved in 1995 established the basis and institutional framework for sustainable management of water supply and sanitation service to ensure efficient operation of infrastructures.

The general principles defined in the PNA are applied to all sub-sectors of water supply and sanitation in urban, peri-urban and rural areas.

The PNA aims to meet basic needs of access to water by increasing service coverage, participation of beneficiaries in planning and operation management and maintenance of infrastructures to suit levels of the service to actual needs.

The concept of water value is also considered as an asset with economic and social value and is essential for economic development and improvement of sanitary conditions. The price of water should reflect its economic value aiming to achieve full cost recovery of water supply.

Institutional capacity building is equally considered relevant at the level of human resources and other means.

Specific policies for each of the sub-sector (urban, peri-urban and rural areas) are also defined with their respective objectives and taking into account their specific features and terms.

[2] Resolution No. 7/95 of 8 August.

As for sanitation, we would like to stress that apart from policies, the reference is also made for the development of the master plan for sanitation and environment by identifying the existing situation in major cities and surrounding residential areas in order to establish a business-oriented plan to resolve the most critical sanitation problems.

It was also considered a short-term investment plan that identifies investment priorities, particularly on how to make operational to underused systems and proposes a long-term investment plan, to coordinate activities of the sector at local and national levels with investments in other economic and social sectors.

Furthermore, Water Tariffs Policy (PTA) was approved by Resolution No. 60/98, of 23 December, as legal instrument by which the government defines set of principles that establish objectives and targets to be achieved, as described below.

Key Principles of the PTA

Principle of User Pays	Water being an asset with economic value, water should be paid for by those who use it, according to the cost of its availability;

Principle of Equity	Water being a social asset that is essential for the health and welfare of human beings, tariffs should be set as to guarantee access to basic water and sanitation services for all layers of the population;

Principle of Protection and Efficient Use of Water	Water resources should be used rationally and should be a control from contamination activities of water in order to preserve the environment;

Principle of Sustainability	Tariffs will be defined so that companies and service providers are sustainable or are on the path to economic and financial sustainability by covering operational, maintenance and management costs while ensuring simultaneously their political, social and environmental viability;

Principle of Decentralisation and Administrative Management	Tariffs settings will be done so that the level of service provided should correspond to user's demand and willingness to pay. The government encourages the participation of users and consumers in the management of water infrastructure services, through appropriate tariffs mechanisms without impeding operational independence of the managing companies.

Based on crosscutting sectors that interact in the management, operation, control and monitoring of water resources and on agreed principles, PTA aims to: Improve the provision of water supply and sanitation services for satisfaction of the basic needs considering economic capacity of users in order to reflect on economic value of water; Promote protection of users, as well as their involvement in decision-making about service levels and costs; Promote necessary investment to increase service coverage and improve the quality of the service; Improve integrated water resources management and environmental protection through adequate funding on information services and water forecast solutions.

The objectives of the tariff structure have been designed and implemented for water supply and sanitation services and are differentiated according to specific conditions of production and management of each system.

In this context, for urban water supply systems – major cities, peri-urban areas and towns, – water tariff structure aims to achieve:

- Full recovery of the operation and maintenance costs in a short-term;
- Starting to recover the investment costs in a medium term;
- Increase the coverage and level of service, particularly in peri-urban areas;
- Reduce water expenditures for low-income population;
- Promote service decentralization and ensure it sustainability through improvements in management techniques and tools to be used.

In relation to sanitation service, PTA is based on the same principles and characterised by conventional and low cost sanitation.

For conventional sanitation tariffs, the following objectives were defined:

- Improve the quality of population's life and promote protection of the environment from harmful effects of wastewater and rainwater;
- Ensure the sustainable operation, maintenance and management of the sanitation systems through adequate funding;
- Encourage sustainable investment in the sanitation systems.

As for tariffs of the low-cost sanitation aims to:

- Ensure progressively more cost sharing   and accountability of the beneficiaries in providing low-cost sanitation services;
- Improve the quality of the population's life in rural and peri-urban areas.

The sustainability of the water supply and sanitation systems is recognized as a key element to improve the quality of service. The progress of the tariffs structure is a key component to achieve sustainability that will be dealt within the context of the regulatory instruments (Chapter 3).

1.2. REFORM DEVELOPMENT IN THE URBAN WATER SUPPLY AND SANITATION SECTOR

1.2.1. Delegated Management Framework – Urban Water Supply

As a result of the PNA, there was a reforms process that has been studied on urban water supply. In 1997, the government approved participation strategy of the private sector to operate in water supply systems. This process of privatization proved to be complex and there was a need to shift the management away from central organization of the state-owned companies to a comprehensive decentralized management of private water companies.

In 1998, Decree No. 72 of 23 December approved the sectoral framework for delegation of water supply management and operation services to private operators, called the Delegated Management Framework (QGD)[3], which aims to ensure the efficiency of public management and meet the needs for planning, development and policies implementation.

Figure 3 shows Delegated Management concept and will contribute for the sector development and meet consumers' needs.

Delegated Management Concept

INVESTMENTS   +   OPERATION   =   SERVICE

Public Sector (FIPAG)

Private Sector (Operators)

Municipalities Autarkies

Monopoly Regulation (CRA)
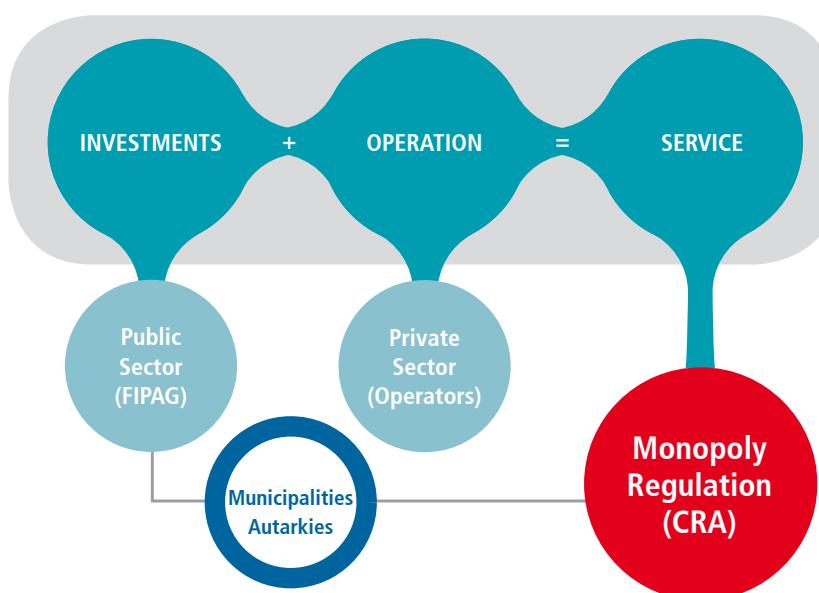
Figure 3 - Concept of Delegated Management

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[3] Legal basis for restructuring water supply systems and the framework for delegated management to private operators.

Two public institutions were established under umbrella of the QGD:

- Fund for Investment and Ownership of Water Supply Assets (FIPAG) owns and is responsible for managing water assets and public investments programmes in water supply systems of the major provincial cities. FIPAG is also responsible for contracting private water companies to operate water supply systems;
- The Water Supply Regulatory Council (CRA) is responsible of the public water supply services on economic regulation by setting up tariffs and consumer protection, promotion and ensuring sustainability of water supply systems.

Figure 4 is the QGD diagram representing tasks and competencies with its processes thereof and structured by areas of action as part of the following organizations and bodies: 1. The Council of Ministers; 2. Ministry of Public Works and Housing (MOPH); 3. National Water Directorate (DNA); 4. Coordinating Forum for Delegated Management; 5. Fund for Investment and Ownership of Water Supply Assets (FIPAG); 6. Water Supply Regulatory Council (CRA); 7. Municipalities; 8. Operators.

As per QGD, the government gradually restructured the sector and defined the private sector participation modalities in water supply in order to benefit from their dynamics, experience and technological expertise. Following this process, the government decided that systems of Maputo/Matola, Beira/Dondo, Quelimane, Nampula and Pemba would be operated by private water companies, however, only the water supply system of Maputo/Matola was privatized, as discussed in Chapter 2.

Expansion of the QGD
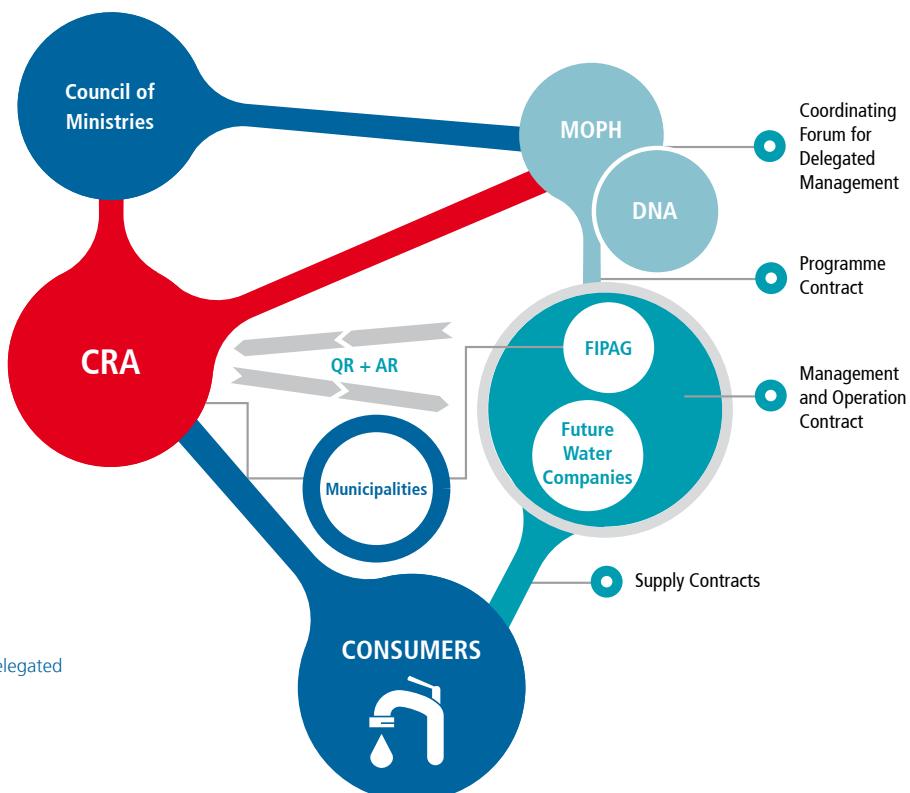
Figure 4 - Organization of the Sector after Delegated Management Framework

1.2.2. Main Government guidelines for Water Supply and Sanitation Sector

The improvement registered in the water supply systems performance with implementation of the QGD, observed in the annual service quality evaluation reports issued by CRA and other information from different operating entities in the sector that approved the expansion and adoption of QGD guidelines by more water supply systems.

On other hand, the overall development of the water sector, particularly, the Millennium Development Goals (MDGs), the fight against extreme poverty and the growing need for sustainable water supply and sanitation services, it requires strategies formulations and options for the sector development in a medium and long term towards universal service.

In this context, the Government approved the Resolution No. 46/2007 of 30 October on Water Policy together with the National Water and Urban Sanitation Strategy of November 2011, resulting in strategic planning framework that will guide the next stage of sector development.

Resolution no. 46/2007

The Water Policy of 30 October, together with National Water and Urban Sanitation Strategy approved in November 2011, resulting in strategic planning framework that will guide the next stage of sector development.

[4] Revokes Resolution 7/95 of 8 August – former National Water Policy.

Water Policy

This legal framework provides continuity of the initiated reforms and promotes proper use of water resources and encourages prevention of water pollution and responds to new water sector challenges. To this end, the following six objectives are defined:

- Satisfaction of human basic needs for water consumption, especially safe and reliable drinking water;
- Improvement of sanitation to prevent water-borne diseases, improving life quality and environmental conservation which require integrated vision of water supply, sanitation and hygiene to maximize the rational use of resources and to ensure more impact on communities health;
- Efficient water use for economic development;
- Water for environmental conservation;
- Reduction of vulnerability from floods and droughts;
- Promotion of peace and regional integration and ensure water resources for development.

Water policy focuses more on sanitation and integrated management of water resources due to pressing needs of water service provision. With regard to satisfaction of human basic water needs that shall be considered in an integrated manner with provision of sanitation means, educational and environmental conservation.

VISION

Desired future in relation to water availability in adequate quantity and quality for present and future generations, for sustainable development, poverty alleviation and promotion of well-being and peace and minimizing the negative effects of floods and droughts.

The objectives will continue to be defined, taking into account the specific features of population areas to be served both in water supply and sanitation. This division of the sector allows adjustment of services quality and investments to meet the needs and keeping the systems sustainability prospect towards universal access to drinking water in a medium term.

In addition to social and environmental value of the drinking water, Water Policy also reaffirms the economic value to different use. The tariff for drinking water will continue to allow services to become financially and economically viable in the long run and full recovery of the costs and always ensuring access to minimum services by low-income population.

For sanitation service, the Water Policy establishes the operation, maintenance and management of the sanitation systems in urban areas, which should be performed by autonomous entities such as a municipal service or through a management contract with a private company, in order to create better conditions of sustainability.

National Strategy for Urban Water and Sanitation

Mozambique is going through a growing urbanization process. In 2007, the population living in cities, towns and other district centres were about seven million people; with an annual growth rate of about 3,5%, by 2025 more than 50% (12,5 million) will be living in urban areas, which represents roughly a double of the current number of the urban population. From this number, about three-quarters will be living in peri-urban areas, with precarious conditions of housing, water supply, sanitation and hygiene.

The National Strategy for Urban Water and Sanitation aims to implement the main objectives of water policy in urban and peri-urban areas and promote institutional development to increase efficiency of the systems and to ensure, in a medium term, that urban communities should have access to safe drinking water and adequate sanitation.

Relating to water supply, the medium-term strategic target of 70% set for 2015[5] for water supply coverage, serving approximately 6.6 million people. In a long term (2025), the target is to attain universal coverage and ensure the sustainability of the sector.

For urban sanitation areas, the medium-term strategic target is to increase the coverage to 67% in 2015 and universal coverage by 2025.

For strategy implementation, after defined general and sectoral objectives and deployment methodologies is needed to identify the funding means required. In funding strategy, the government is the main source of funding for large investments required for rehabilitation and expansion of the infrastructures in large cities, towns and villages.

Briefly, both Water Policy and National Urban Water and Sanitation Strategy reaffirm that financial contribution in a form of tariffs paid by consumers are essential for sustainability of the systems and for required investments to expand the coverage, in particular to low income population.

[5] Figure 8: Development in access and continuity of water services in 2014 indicate compliance of the goal.

1.3. CONSOLIDATION AND EXTENSION OF THE DELEGATED MANAGEMENT FRAMEWORK

The implementation of the reforms proposed in the institutional framework established in 1995 shows the value added and consistency of the sectoral policies and objectives defined thereof, with particular emphasis on the QGD.

Within QGD, major investments made by FIPAG, particularly in major cities, including progressive expansion from 5 to 15 systems, ensuring State's investment in the systems could supply surrounding areas, as shown in Figure 6.

Such investments only became possible due to the robustness of the QGD and the trust inspired by partners (government, municipal authorities, private operators, donors and users), based on the separation of functions and independence performance within legal and institutional framework (Figure 5).

Attributes of the QGD

Figure 5 - QGD attributes

Construction of reservoir.

Refurbished reservoir.

15 Water Supply systems under FIPAG Management

LICHINGA

PEMBA

CUAMBA

NACALA

NAMPULA

MOATIZE

TETE

ANGOCHE

QUELIMANE

CHIMOIO

MANICA

GONDOLA

DONDO

BEIRA

Integration year of the QGD

- 2009
- 2006
- 2004
- 2000

MAXIXE

INHAMBANE

CHÓKWÉ

XAI XAI

MATOLA

MAPUTO

BOANE

Figure 6 - 15 Main Water Supply Systems under FIPAG's Management
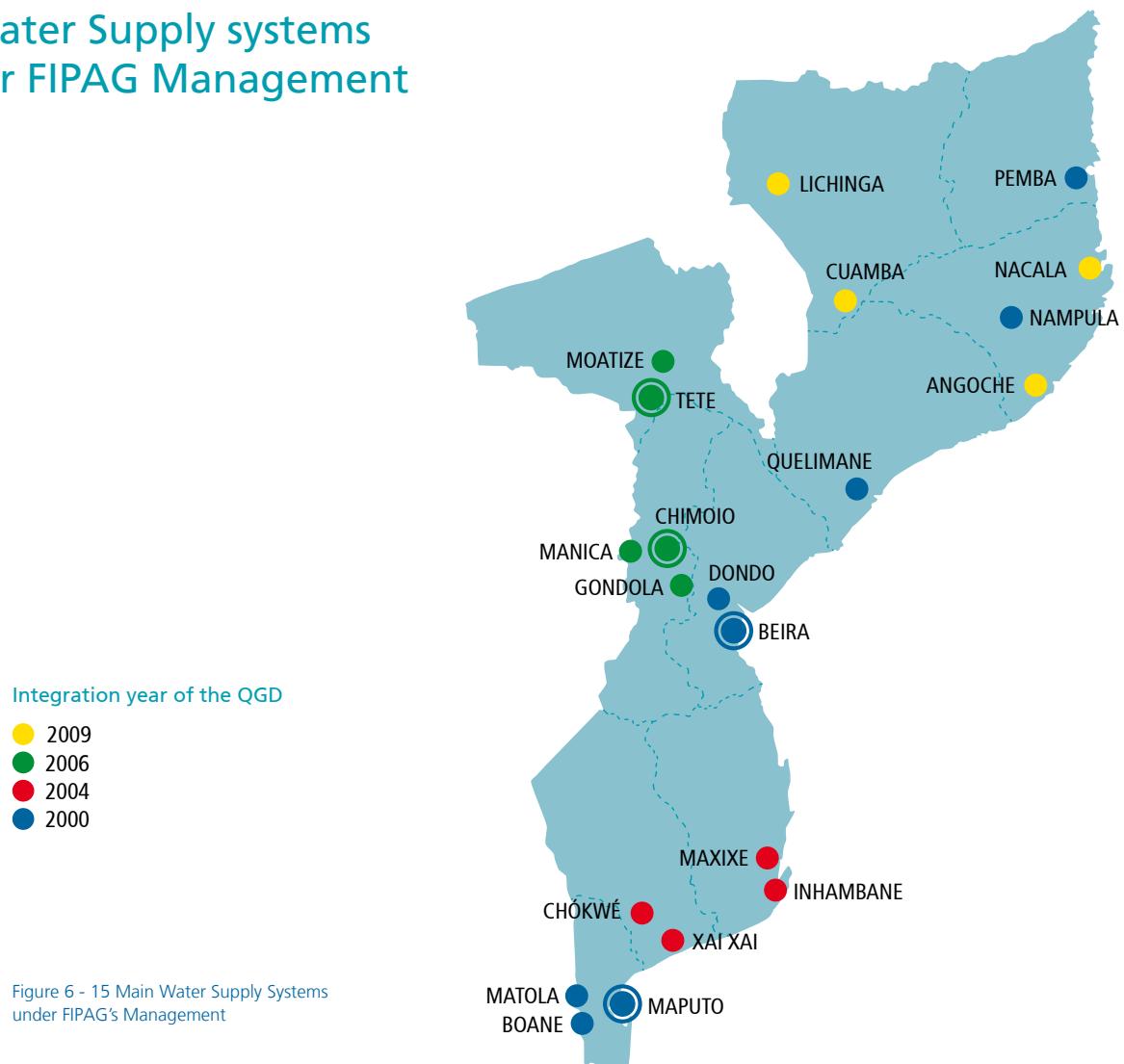
Works undertaken within QGD to improve water supply

Conclusion of the construction of the Xai-Xai Reservoir.

Tete Reservoir.

Construction of the Inhambane Reservoir.

Water treatment plant under construction (ETA) to supply water to Great Maputo area.

Pipelines in Campoane to supply water to Great Maputo area.

Expansion of the network to Chimoio.

Water treatment plant in Lichinga.

Inauguration by Hon. Minister of Public Works and Housing at Lichinga water treatment plant.

CRA WATER AND SANITATION REGULATORY COUNCIL 2015

Investment
2002-2014 (10^6 USD)
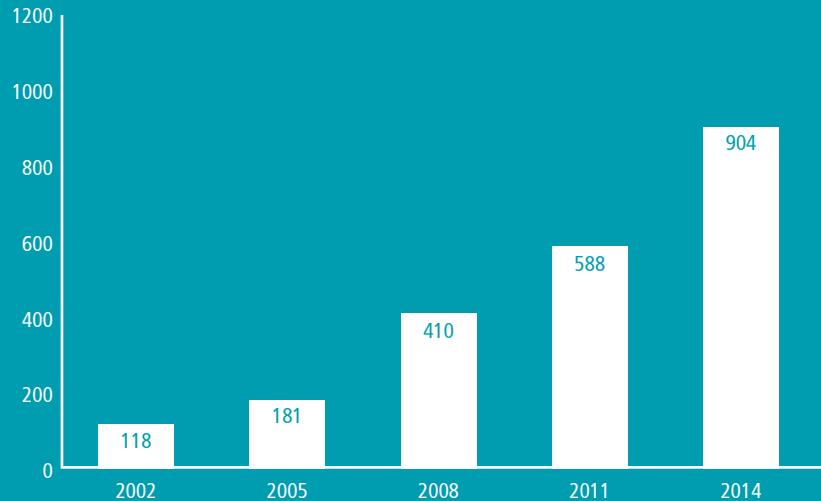
Figure 7 - Financing Portfolio under QGD

Figure 7 shows the progress of the funding portfolio from 2002 to 2014, in cumulative values.

Figure 8 shows reversal negative trend of the service coverage. The implementation of the mechanisms within QGD, particularly new tariff structure and fund raising allowed progressive sustainability of the systems and access to drinking water to low-income consumers in peri-urban areas.

The sustainability of water supply services will be further promoted through involvement of autonomous entities, private water companies or municipal autonomous services that operate on the basis of commercial principals. It is also necessary to reinforce supervision and ensure good services to consumers by: (1) separation of governance functions; (2) financial management of assets; (3) operation of services; and (4) regulation.

Based on encouraging results in the implementation of the QGD in main systems[7], the experience is being gradually expanded to small systems. Through Decree No. 19/2009, of 13 May, the government established Water and Sanitation Infrastructure Management (AIAS), with the responsibility of improving water supply services in towns and district headquarters and also to improve sanitation services in major cities. Thus, reinforcing the principle of separation of functions, particularly, provision of independent or delegated services. In this context, the government's role is limited to define general legal framework.

Coverage Rate
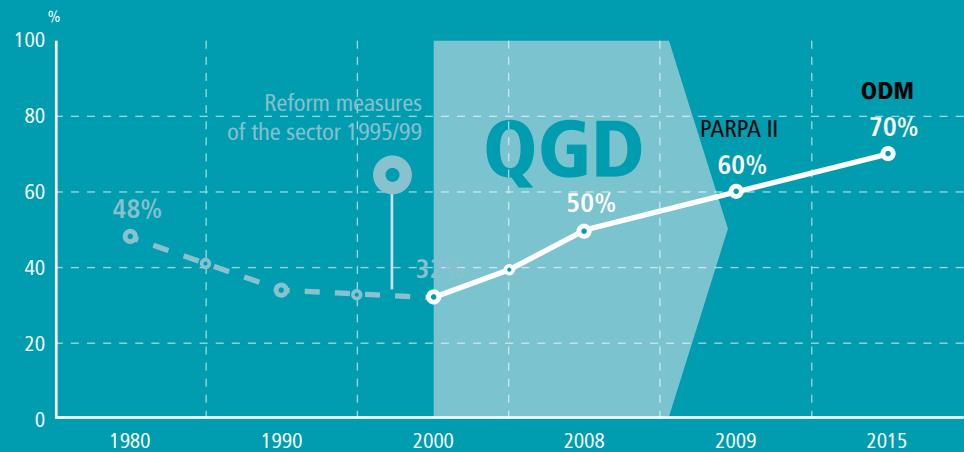
Figure 8 - Situation After the Delegated Management[6]

Similarly, the Decree No. 18/2009, of 13 May, extended the CRA's mandate to regulate all public

1. Water and Sanitation Infrastructure Management (AIAS);
2. The Advisory Body for coordination of the reform process on public systems for waste water drainage[8];
3. The Provincial Water and Sanitation Councils (CPAS), consulting bodies of the Provincial Governor.

Extension of QGD
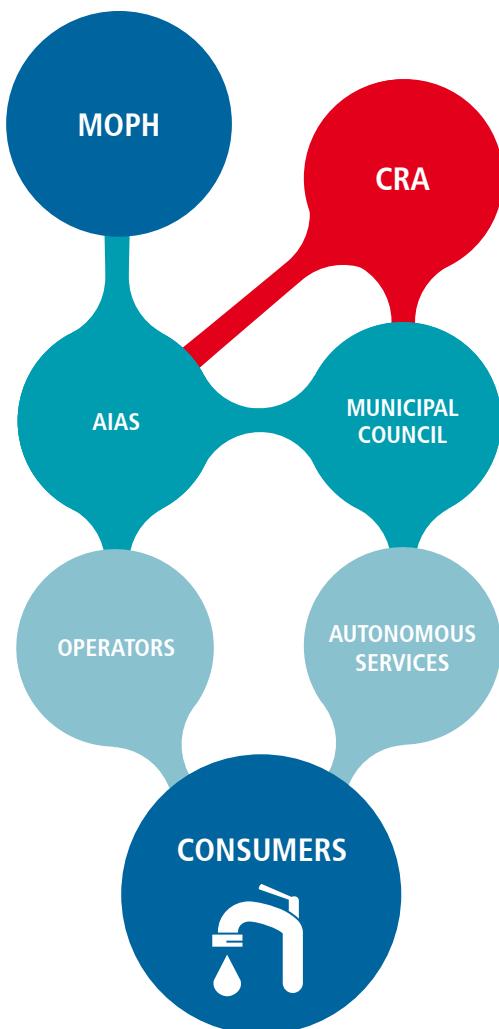
Figure 9 - Extension of regulation to all public water supply and sanitation systems in urban centres

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[6] PARPA II – An action plan for poverty reduction, the PARPA II recognises the need to improve the management of water resources to minimize the impact of climate change, and ensure sustainability of water services and water availability as important factors for achieving the objectives of development and poverty alleviation. MDG-Millennium Development Goals, define measurable targets and determine the time adopted by the international community for poverty alleviation (MDG 7-Ensure environmental sustainability).

[7] Water supply systems to main provincial capitals (under FIPAG responsibility), as opposed to secondary systems supplying municipalities and district headquarters.

[8] To be created by the Ministry that oversees the water sector.

The funding of water supply systems for small towns and district headquarters is still limited. Creation of AIAS is part of the government's effort as well as FIPAG to raise and manage public investment funds for small urban water and sanitation systems.

The Ministerial Diploma No. 237/2010, of 2 December, identified the secondary public water supply and waste water drainage systems that are to be gradually transferred to AIAS (see Annex 2).

The management of the following systems have been transferred to AIAS: Mocímboa da Praia (Cabo Delgado province), Ilha de Moçambique, Ribaué, Nametil (Nampula province), Mocuba, Mopeia (Zambezia province), Ulongué (Tete province), Caia and Nhamatanda (Sofala province) and Chibuto and Praia do Bilene (Gaza province).

Secondary Systems (Initial Stage)
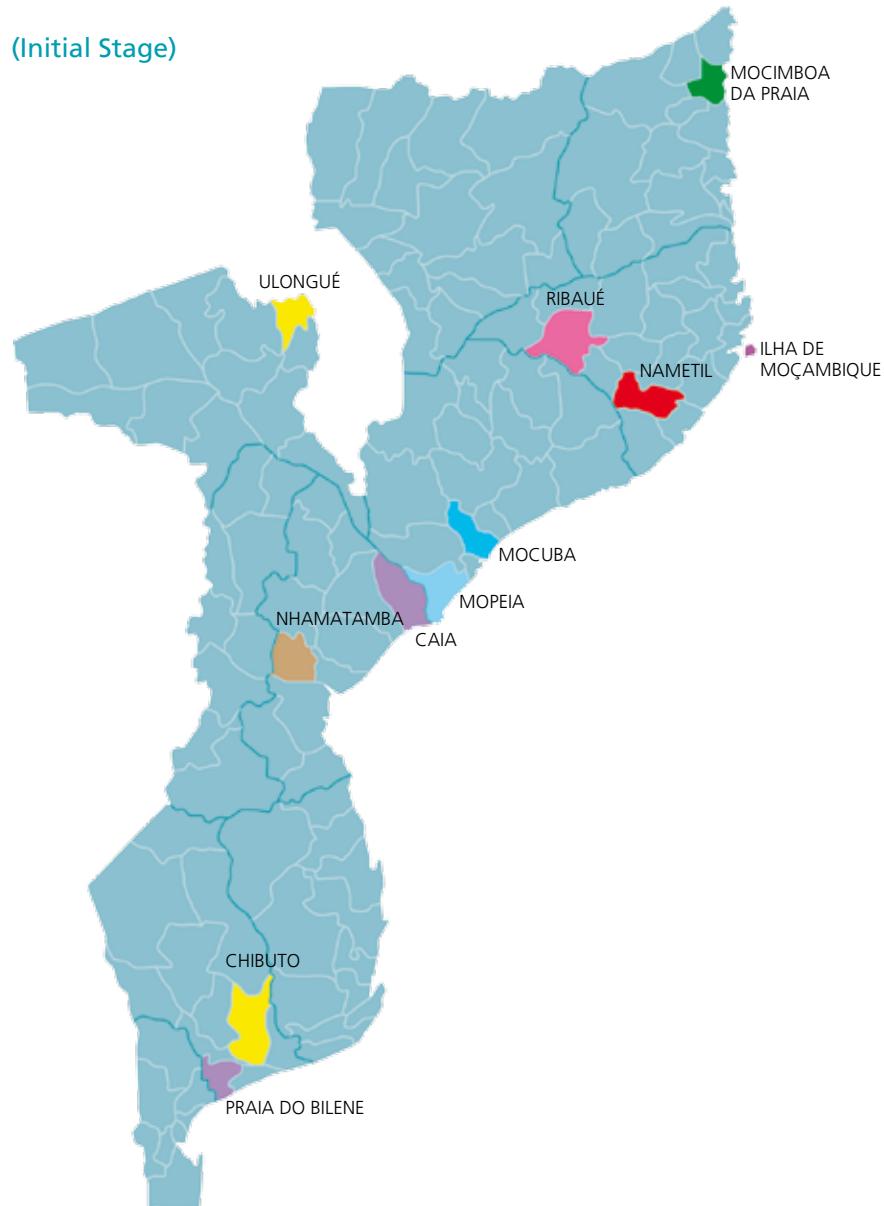
Figure 10 - Secondary water supply systems under AIAS management.

Chronological Development of the Water Supply Sector

Review of the CRA Statute

In 2011, the new statute of the CRA (Decree No. 23/2011, of 8 June) was approved and created necessary instruments for regulation in view of its expansion to public water supply and wastewater drainage systems.

Extension of the QGD 2009

In 2009, based on experience gained and good results obtained in the QGD implementation, regulation was expanded (Decree No. 18/2009 of 13 May) to all water supply systems that initially were not included and waste water drainage systems.

New National Policies 2007

In 2007, the Water Policy (Resolution No. 46/2007 of 30 October) was approved and established key principles for medium and long-term objectives for an integrated management of water supply and sanitation services by strengthening and increasing the role of the private sector and water as an economic asset.

Selection of the Private Operator 1998/99

In 1998/99, the private operator was selected and started the preparation and negotiation of the PNDA II. The PNDA II is designed to implement the participation of the private sector such as public-private partnerships, concessions, management contracts and to establish necessary institutions within a delegated management framework.

1998 Water Tariff Policy

In 1998, the Government approved the Water Tariff Policy (Resolution No. 60/98 of 23 December) which defines water as an economic asset and tariffs should reflect the need for costs recovery.

Delegated Management Framework - 1998 Implementation -1999

In December 1998, the Delegated Management Framework for water supply services (Decree No. 72/98 of 23 December) was approved and created new entities in the sector, and its implementation happen in the following year. The institutionalization of the QGD aims to ensure efficient management of public water supply services and meet planning and development needs as well as to implement policies, standards and objectives defined in the National Water Policy.

Private Sector Involvement Strategy 1997

In 1997, the Government began comprehensive restructuring of the urban water supply sector and together with World Bank designed the First National Program for Water Development (PNDAI) which, among other projects, defined the private sector involvement strategy.

National Water Policy 1995

In 1995, the Government of Mozambique approved the National Water Policy (Resolution No. 7/95 of 8 August), which established key principles for competitiveness of the sector, especially privatization of urban water supply sector.

Eng.ª Suzana Saranga Loforte

National Water Director

During introduction of the 2014 Final Report, the National Water Directorate is pleased with the work undertaken by Water Regulatory Council for regulating water supply and sanitation services in Mozambique.

Notwithstanding, the challenge is to be depend furthermore on organization and regulation of sanitation sub-sector, taking into account large investments made by the government and cooperating partners in this sector. However, we are aware that this challenge requires the strengthening of the CRA in human and material resources enshrined in our Sanitation Integrated Programme, as a result of National Sanitation Conference.

We still have the challenge to ensure the regulation of all stakeholders operating in water supply sector.

DEVELOPMENT OF REGULATION IN MOZAMBIQUE

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2

2.1. THE INITIAL PHASE OF REGULATED SERVICE (2000-2008)

The regulation of water supply service in Mozambique began in 2000 with entry of the private sector in the management and operation of public water supply systems.

However, the beginning of regulation was marked by a difficult process of renegotiation of the assignment contracts due to the different reasons that reduced the operator performance and affected the rhythm of contract implementation. The strong storms that occurred at the beginning of 2000 caused damage to water supply systems and it also delayed the starting of undergoing projects rehabilitation, apart from internal processes occurred within operator shareholders.

The response capacity of the private operator *"Águas de Moçambique"* (AdeM) proved the weakness by the company management team. In December 2001 these ongoing disruptions ended up by operator withdrawal from leading consortium, SAUR international, during contract negotiation with the Government. However, according to external sources[1], the real reasons for SAUR's withdrawal were based on strategy change by the main shareholder of the company, Bouygues Group that was under pressure from its shareholders and took decision to sell SAUR and eliminate considered unprofitable projects.

Subsequently, FIPAG reached an agreement with Águas de Portugal (AdP), until then, it was a minority shareholder that took leadership of the consortium in December 2001 by replacing SAUR. The negotiation between parties resumed immediately and resulted in the Revised Assignment Agreement that entered into force by April 2004 and was supposed to terminate by 2014 without changing the initial 15-year period of the 1999 original contract.

[1] *In Mozambique's Experience with Delegated Management of Urban Water Supply, 1999-2007. Case study of FIPAG submitted by Thelma Triche for the World Bank, January 2009.*

Notwithstanding, operations carried out under assignment agreement did not achieve the expected results. Partly, this was due to the delay in the execution of investment plan and negative implications within business environment and inability of AdeM to improve its performance, particularly in reducing water losses and achieving higher level collection. The high cost of AdP's technical assistance was another financial burden that had to be faced. These aspects were evident during CRA's deliberation and periodic review in 2008 that should deserve attention by the parties to increase efficiency and effectiveness of the operation for water supply systems. However, the scenario did not change significantly until December 2010, when AdP withdrew from the consortium by mutual agreement with FIPAG. On behalf of the State, FIPAG took over the position of majority shareholder by acquiring shares from AdP, and then AdeM was called *"Águas da Região de Maputo"*.

On other hand, the management contract between FIPAG and AdeM at the four central and northen capitals of the country (Beira, Quelimane, Nampula and Pemba) was revised for the period 2004 to 2007 and subsequently was extended for an additional year. Then it was followed by several public bidding processes to contract new private operators to manage the systems under a management contract. It was expected that new private operators would be hired by mid-2009, but the Government decided to cancel the bidding process due to weak participation of the private sector, particularly by national companies.

Five years after the beginning of the operation for the water supply systems, the period of uncertainty and misunderstanding performance came to an end. As a result, most of works initially planned to be completed within first five years of the original contracts (1999-2004) were only completed in 2007 and in Maputo by 2011, which marked a turning point in service provision and increase availability of safe drinking water, and improved service quality and reliability.

In 2004, FIPAG signed a three-year contract with Vitens, Dutch company, to provide technical assistance for services management and professional training in four southern cities[2] of the small and medium size: Xai-Xai, Chókwè, Inhambane and Maxixe; where the African Development Bank (ADB) was financing major investments. In 2006, FIPAG and Vitens signed another contract for services provision in five more cities of the central region of Mozambique: Chimoio, Gondola, Manica, Tete and Moatize. These contracts were considered temporary in the service preparation process to conventional delegated management.

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[2] Ministerial Resolution No. 67/2004 of 21 April.

In 2005, the sectorial policy reviewed is concluded and approved advocating public-private partnerships as a vehicle to improve services provision. Based on results of first ten years of implementation, it was concluded that QGD was a suitable option to promote good governance, transparency and accountability through separation of functions and powers in services provision. These lessons were integrated into the new Water Policy and approved in 2007.

Therefore, 2007 marked a turning point for QGD implementation, as it was recognized by the former Prime Minister[3], as quoted below;

"The government is fully aware of the challenge and that is why it took the initiative to promote measures that we call "2nd. Generation of Water Sector Reforms", under guidance of a new "Water Policy" approved by the Council of Ministers, on 20 August 2007 which indicates that the experience of regulation will be expanded in line with separation of functions by establishing independent regulation to public or private service providers and taking into consideration on specific differences between primary and secondary systems".

The regulation in the period under review was done on the basis of assignment or management contracts and since then, the regulation became more effective instrument, to an extend that environment of transparency, accountability and respect for consumer interests is becoming reality in Mozambican society. These advances have been complemented by infrastructure rehabilitation, increase in production capacity, network extension and improvement of service quality to consumer and substantiated by more availability and safe drinking water.

[3] Dr. Luisa Diogo, in the opening speech of the International Conference on Regulation, September 2007.

2.2. EXPANSION OF REGULATION SCOPE (2009-2014)

The second phase of the institutional development of water supply regulation began in late 2009[4], and it was influenced by the sector dynamics, improved management, of viability of major water supply systems under FIPAG's management and promulgation of the Decree No. 18/2009, that broaden the scope of the Water Supply Delegated Management Framework to public water supply and drainage of wastewater systems (see Chapter 1) and simultaneously expand the CRA's mandate to regulate all these systems. The water and sanitation systems covered by this legislation are called secondary systems under AIAS responsibility.

From a technical point of view, almost all these smaller systems were built in the period before independence and they did not undergo any significant improvements that made them to be obsolete and under-sized. The management, operation and maintenance of these smaller systems became a major challenge and affecting the modus operandi of the CRA.

To address these challenges, in 2011, the entire legal and institutional framework for CRA´s decentralised activity[5] with establishment of Regional Technical Units and concept of "Local CRA Agents" and "Local Regulatory Commissions", a pioneer model in water regulation that called attention to international community. The Decree No. 23/2011, of 8 June, extended and reinforced the CRA´s mandate and defined instruments that established "regulatory regimes adapted to the specific technical and management conditions for each system."

Thus, Regulatory Agreement (AR) is defined as the "basic instrument for public service regulation and it is between the CRA and the ownership entity or grantor which is based on specific Regulatory Framework to certain water supply or wastewater drainage systems".

Within the framework of public service provision, the Regulatory Framework (QR) is an instrument "where they establish basic definitions on issues that are subject to regulation by CRA, namely service quality, performance efficiency by managing entities, setting-up of tariffs and rates, consumer or user protection, provision of information and other related issues".

With this legal framework, two ARs were signed with FIPAG and AIAS, which establish the level for service quality and performance of the systems and they include responsibilities of both parties as regards to general rules for regulation in complying with the respective QR, at each system.

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[4] Ministerial Resolution No. 177/2009, with integration of one more group of systems (Tete, Moatize, Chimoio, Manica and Gondola).
[5] As shown in Figure 11.

The Regulation of secondary systems is done on a decentralized basis by local regulatory commissions (CORAL) through delegation of certain CRA assignment, with exception of acts that are within Board competence,6 in order to benefit from consumer proximity and local reality.

During the period under review, 15 Regulatory Frameworks were signed with FIPAG and three with AIAS in relation to the intervened systems. As mentioned above, QRs are specific to each system and apart from reference values and targets for service quality and operator performance, they establish expectations to improve infrastructures and projections on tariffs and rates. With this methodology, FIPAG and AIAS are ultimately responsible for enforcing the AR and QR for each water supply system.

Wastewater drainage (sanitation) service became an important focus for CRA to develop a vision that was completed in 2014, as shown in Annex 3. On this topic and on other hand, CRA signed QR with AIAS and municipalities of Beira and Quelimane for regulation of public water supply and wastewater drainage services, as described in Decree No. 23/2011. As pointed out, regulatory frameworks (QR) signed with AIAS and municipalities are still at early stage of implementation, therefore, with low degree of demand however, the periodic review will allow progressive adjustment to local reality and in accordance with achievement of investments, goals and respective management model.

Signing of the Regulatory Framework - "Ilha de Moçambique" and "Mocimboa da Praia", in 2011.

Signing of the Regulatory Agreement with FIPAG in 2012.

6 Article 12 of Decree No. 23/2011, of 8 June.

2.3. THE CRA – 15 YEARS OF SERVICE REGULATION

In pursuant to the Decree No. 18/2009, of 13 May, the government extended Delegated Management Framework, particularly CRA´s mandate, to integrate the service provision through secondary systems and wastewater drainage services into delegated management approach.

In order to meet the role of the regulator to new legal framework, the decree that created CRA (No. 74/98, of 23 December) was revoked and replaced by Decree No. 23/2011, of 8 June. This new decree apart from changing the name of (CRA) Water Supply Regulatory Council to (CRA) Water Regulatory Council, it also

ensures mechanisms that legitimize the Regulator´s authority at the national level:

I. ensuring service stability;

II. assignment of normative power for service definition;

III. imposing normative compliance; and

It has prerogative to delegate certain regulatory functions in partnership with local authorities. With new legal framework, there is a need to update the Vision, Mission and Values of the CRA in order to meet the current context, as follow:

Vision

A universal water and sanitation service that is sustainable, equitable and accessible to all focused on satisfaction of customer and based on adequate legal and regulatory environment.

Mission

Regulating public service of water supply and sanitation, balancing interests involved and promoting a reliable, transparent, efficient and fair service for all.

Values

Universal Service
Regulation that enables sustainable and equitable access to the service by all current and future consumers; Regulation that promotes a social service that is economically fair and capable of satisfying consumers and service providers.

Participation
Regulated entities and consumers should be consulted in decision-making on key aspects of regulation and on prior evaluation of its impact.

Pragmatism
Resource availability to regulation procedure and alternative regulation options according to the reality and specific conditions of the service in each water supply and sanitation systems.

Consistency and Reliability
A predictable and stable regulation system that allows service accountability and promote consumer confidence and stability of interests involved.

Accountability and Transparency
Regulatory objectives, processes and decisions as well as respective costs are exposed to competent authorities and to public domain.

2.4. FUNCTIONING OF THE CRA

The CRA's operating principles are based on good governance, transparency and accountability by preserving its autonomy for independent regulation that ensures execution of its mandate, as shown in Figure 11.

In 2011, CRA began to review its Organic Statute in coordination with the Ministry of Public Works and Housing as a way of meeting new demands and with consequent operationalization of the internal administration and management and establishment of the regional delegations.

Within CRA's mandate, the Board is the high decision-making body of CRA that in future will be assisted by an advisory council, as provided in the new organic statute comprised of representatives of various interests involved in the regulatory process, including civil society.

Autonomy of the CRA

COUNCIL OF MINISTERS

Annual Report

ADMINISTRATIVE COURT

Appointment term: 3 years

CRA

Accounts Report

Regulation Rate

The Board
3 members

CONSUMERS

Normative Decisions

GOVERNMENT GAZETTE
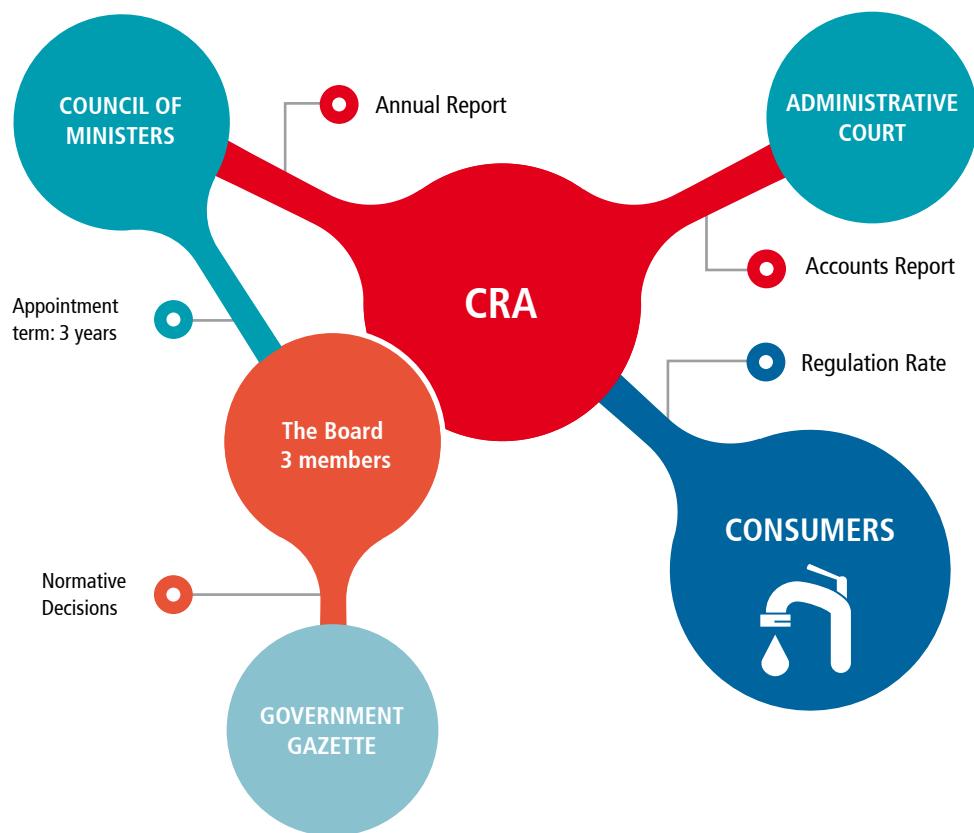
Figure 11 - Model of governance

Normative decisions taken by the Board, namely approval of tariffs, opinion on contracts termination or assignment agreements and consumer subscription contracts are binding for regulated entities and are subject to publication in the Government Gazette.

The organization and functioning of CRA are based on organizational structure, comprised of the Board supported by the Executive Secretariat that supervisors functional departments (Department of Planning and Coordination, Department of Studies and Projects, Department of Operations, Department of Administration and Finance) and then Regional Technical Units, Local CRA Agents (ALC) and Local Water Regulatory Commissions (CORAL)[7], are supervised by Department of Operation, as shown in the diagram below.

Currently, CRA functional structure is comprised of 32 contracted employees and 13 service providers that include ALCs and CORAL members.

As shown in this report, since 2009, CRA ́s mandate and assignment have been extended to regulate an ever greater number of water supply and sanitation systems, however, the size of its staff remained the same, particularly due to financial constraint.

The organizational chart was developed to include 62 employees, however, CRA is operating with about half of this number and it is creating serious constraints. To minimize this situation, CRA intends to review career plan and in parallel with a training plan to improve employees ́ skills, as per Organization's Strategic Business Plan to be developed in 2015.

As it can further observe, in CRA ́s sustainability assessment, allocation of all required human resources for regular operation and would have direct consequence and complex resolution on financial and economic sustainability.

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[7] Which will be discussed in detail in Chapter 3 - Regulatory Instruments.

CRA – Organizational Structure

BOARD

PRESIDENT

EXECUTIVE SECRETARY

Planning Coordination Office

DEPARTMENT OF OPERATIONS

DEPARTMENT OF STUDIES AND PROJECTS

DEPARTMENT OF ADMINISTRATION AND FINANCE

Great Maputo Area

Southern Region

Central Region

Northern Region

Southern regional unit (Xai-Xai)

Central Regional Unit (Beira)

Northern Regional Unit (Nampula)

ALC

CORAL

Evaluation of Service Quality

Tariffs

Institutional

Sanitation

Participation and Consultation

2.5. FINANCIAL AND ECONOMIC SUSTAINABILITY

In pursuant to the Decree No. 23/2011, of 8 June, broaden Regulator´s scope of work and determines funding sources for its operation:

1. Fixed rate charged to regulated entities or regulation rate;
2. Services Provision;
3. State budget funds;
4. Other revenues.

The regulation rate (TR) is the main source of the CRA operational funding and is set at 2% of the gross annual revenue of each regulated entity[8]. The TR is included in the tariffs paid by consumers; therefore, its growth has been carefully evaluated in order to reduce an excessive weight on the final consumer's water invoice.

The increase contained in TR, although it depend on revenues of regulated entities, it aims to provide CRA on essential resources for its functioning. Although CRA is a small institution, the multidisciplinary nature of its work requires specialized human resources with necessary skills to meet the challenge of regulation. Therefor personnel costs represent 80% of the CRA's operating budget.

By 2004, the CRA covered all operating costs from regulation of the first five[9] systems, the situation changed as regulation was extended to more systems that were progressively integrated into FIPAG, which currently are comprised of 15 systems, as mentioned above.

The Balance Position

Figure 12 - Regulation Rate vs. Total Costs

Figure 12 shows that between 2009 and 2013, earmarked revenues (40% of the regulation rate revenue is for the state budget) from TR did not cover total current expenditures (OPEX) nor personnel costs. As a result of an increase of TR, in every two years, in pursuant to Article 10 of the Decree No. 23/2011, in 2014, this situation has slightly improved; however, funds are still insufficient to cover the costs.

The financial autonomy is an essential pillar for CRA´s independence and it deserves attention from competent authorities. The CRA short-term goal is to be able at least to cover its operating costs, although it will continue to require funding from government for more several years.

Furthermore, in pursuant to the Decree No. 18/2009 of 13 May, the CRA's responsibility is to regulate water supply and sanitation systems in towns and district headquarters that in a short- and medium-term will not contribute significantly to TR and will create more difficulties.

Thus, TR revenue is insufficient and it requires an increase of about 10 to 20% through state budget funds to cover current costs.
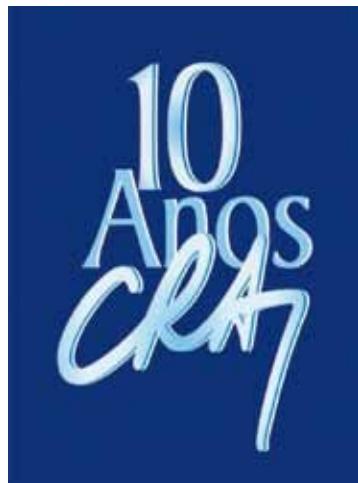
Inauguration of the Technical and Information Unit (UTI) in March 2010, during CRA´s 10th anniversary.

Meeting at UTI inauguration day, where the CRA progress view by 2015 was presented.

2.6. TECHNICAL AND OPERATIONAL ACTIVITIES

As mentioned above, the extension of QGD required CRA to adapt its organizational structure and resources to carry out its mandate, just highlight the opening of Technical and Information Unit (ICU), office building, conference room and water sector-themed library in March 2010 and it coincided with the 10-year regulation anniversary. The moment included a meeting where they presented CRA progress view by 2015.

The CRA as an entity that ensures consumers protection in water supply and sanitation services, it has been working on monitoring and supervision activities of the Regulated Entities, through regular visits to the systems not only to assess impacts of the investments in infrastructure as far as access and service quality but mainly to monitor the operation, maintenance and management of systems to motivate the improvement on service quality.

Control of losses at
Moatize boreholes.

Water pressure
measuring by CRA
agent.

Meeting with CRA
technicians and the
Mayor of Chókwè
Municipality.

Inspection of water
losses in Xai-Xai.

The visits to the systems enable to validate relevant data and information that contribute for sustainability of ERs and consumer satisfaction with services provided. During field visits, attention is especially given to control and monitor the water quality and losses and evaluate consumers´ level satisfaction.

In the context of the field visits to the systems, meetings are also held with local authorities such as Provincial Directors of Public Works and Mayors.

Recognizing CRA´s proximity to the consumer as key driver of its governance, it has been participating in activities that facilitate sharing of information to the consumers. The themes addressed in these activities are focused on economic regulation, the cost of drinking water producing, protection of consumers interests and their rights and obligations within the framework of Drinking Water Supply Contract (Subscription Contract) approved by CRA in 2007.

In relation to issues of proximity and transparency to the consumer, CRA has also launched a new website where consumer has access to useful information to protect his-her interests, namely how to act in the event of dissatisfaction with the service provided by ERs, the legislation in force allow to know his-her rights and duties as a user of water supply service, a simulator to calculate the amount of water consumption, television spots on efficient use of water and environmental education, in addition to other relevant information.

2012 Performance Awards.

With a view to increase social and environmental responsibility to promote values and attitudes for conservation of water resources and environmental education, CRA with the support from UN-Habitat, has been carrying out the "Consumer Education Campaign", which included the use of television spots to increase education on "Waste of water", "Rational use of water" and "Water resale in the neighbour's yard".

CRA also implemented serious of actions to sector technicians on dissemination and training on efficient water use, environmental education and new technologies, including plans for water safety and integrated assets management systems that enable significant improvements in the management and performance of regulated entities and on provided service quality.

To evaluate consumers' opinion on services provided, CRA undertook the first Consumers' satisfaction survey, in 2014; whose methodology and results are presented in Chapter 5, along with the performance evaluation of ERs. Prior to this, several exercises have been undertaken to indirectly evaluate the service, particularly in peri-urban areas.

During this period, CRA also began to publish its newsletter titled "Água para todos" (Water for all) to disseminate information on its activities and strengthen its relationships with sector key players.

Finally CRA held the first performance awards ceremony for ERs, in 2013, based on their 2012 activities. In 2014, during celebration ceremony of 15 years of CRA's activities; they also granted performance awards for ERs based on 2013 activities.

Annual meeting of the
ESAWAS, 2014, Maputo.

2.7. GOVERNANCE AND INTERNATIONAL COOPERATION ACTIVITIES

As regard to institutional cooperation, CRA has been collaborating with the government and other institutions to adjust the legislation to Mozambique's reality, namely on the definition of goals and conditions for its viability, by contributing to the organization of water supply and sanitation sector and preserving CRA´s independence on protection of consumer´s interests and ERs´ rights in order to ensure their sustainability.

CRA has also participated in conferences and meetings with other national and international agencies to strengthen its institutional competencies and share knowledge and experiences that have been also a challenge. So, CRA became a member and has been participating in International Water Association (IWA) events, and is a founding member of the Association of Water and Sanitation Regulators of the Eastern and Southern Regions of Africa (ESAWAS), and is also a member of International Network of Regulators (RegNET), whose focus is water quality monitoring.

Just to highlight that in 2014, CRA organized the 8th Meeting of ESAWAS, in Maputo, under the theme "Strengthening Governance and Regulation". Participants to this meeting were from water and sanitation regulators of Zambia, Kenya, Tanzania, Rwanda, Lesotho, Ghana, and Uganda, apart from stakeholders of water and sanitation sectors from countries such as South Africa, Burundi, South Sudan, Ivory Coast and Botswana, as well as national institutions.

CRA also received visits by delegations from various countries, including Lesotho, Angola, Malawi and Nigeria, among others, as recognition of the work done on transparency, independence and autonomy of the water regulation sector and in spite of all difficulties that are required to overcome.

In 2010, CRA signed a Memorandum of Understanding with the Municipality of Maputo city and Stanford University in USA, in partnership with Water and Sanitation Program of the World Bank. Still on the same framework, in 2014, through a partnership between CRA and Water and Sanitation for the Urban Poor (WSUP), the Transitional Regulatory Framework was developed to extend regulation to Maputo sanitation services, a project that is currently under consultation process.

REGULATORY
INSTRUMENTS

3

3.1. REGULATORY INSTRUMENTS AND REGIMES

As noted in Chapter 2, the Regulatory Agreement established between CRA and Ownership entity or grantor is a basic regulation instrument to materialize Delegated Management Contract or Regulatory framework in accordance to the Decree No. 23/2011, of 8 June. As shown in Figure 13, in case of delegated management, the grantor will ensure full compliance of regulatory agreement under the scope of the CGD. In case of direct management by the Ownership entity and autonomous service control, the compliance of the AR will take place within QR. The CGD and the QR set goals and standards of service quality as well as the tariffs structure, appropriate to each system[1]. In the event that the services do not have autonomous management (e.g. municipal services) the regulation is not compulsory and is merely consultative.

Nature of Regulation in the Management Function
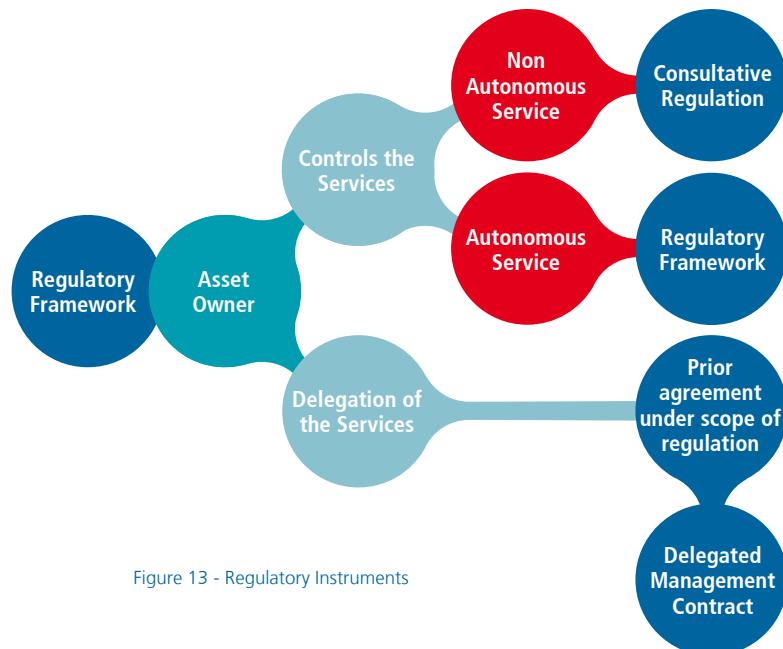
Figure 13 - Regulatory Instruments

[1] According to the National Strategy for Urban Water and Sanitation, tariffs for sanitation services must be proportional to the volumes consumed and applied gradually on the domestic category only for consumption that exceeds the social consumption tariff.

Regulatory Regimes

Direct
Centralized
Regulation
15 MAIN
SYSTEMS

Indirect Regulation
130 SECONDARY SYSTEMS
(Gradually Incorporated)

General standards
issued by CRA, and
locally enforced by
Local Regulatory
Commissions

Standards issued and locally
enforced and prior consultation
with CRA

Consultative Regulation
Non-Autonomous / Integrated Services
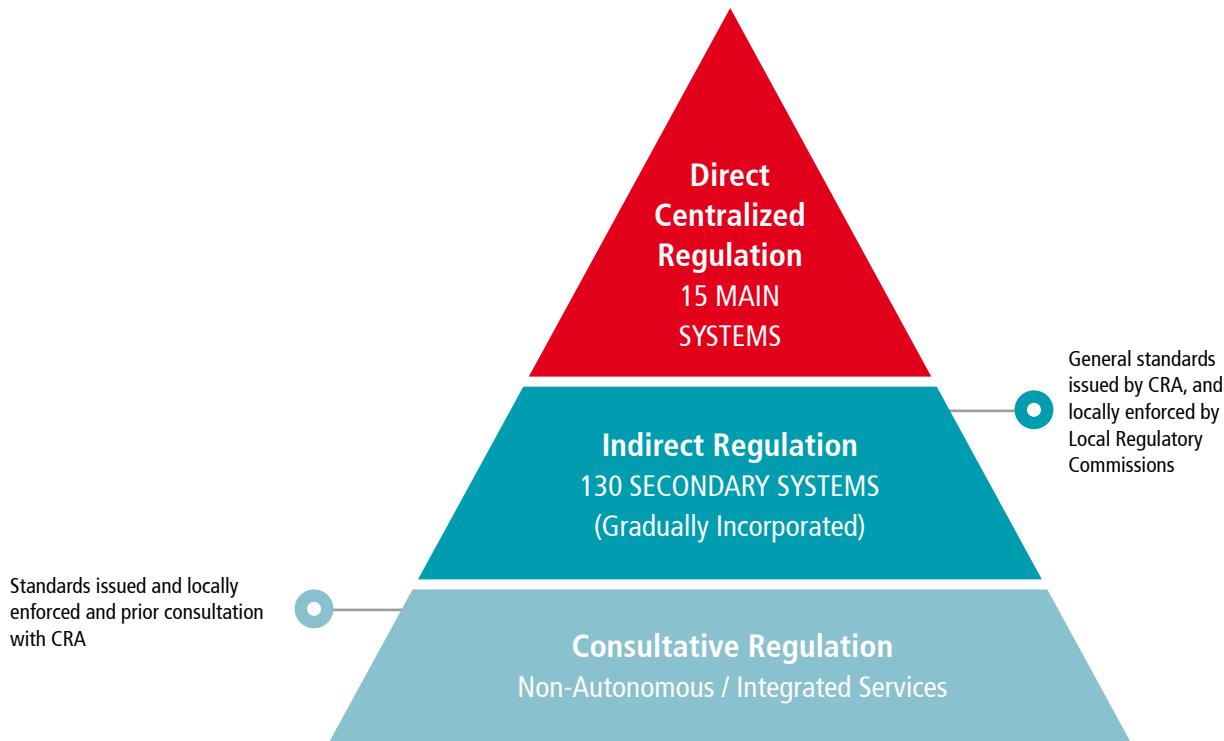
Figure 14 - Regulatory Regimes

In addition to regulatory instruments, approaches for regulation were also developed based on classification of the systems and level of delegation to maintain rational regulation costs.

As shown in Figure 14, for the main systems with delegated management or autonomous services, the regulation is direct and regulatory norms are issued directly by the CRA and locally enforced by its local agents (ALC).

For secondary systems with delegated management or autonomous services, the regulation is indirect and the CRA defines the regulatory principles and standards that are implemented locally by a Local Water Regulatory Commission (CORAL).

Finally, there is a third regulatory regime to consider in which consultative regulation is applicable when the local government[2] is the "ownership entity" and does not have autonomous services. In this regime, whenever necessary, the regulatory norms are issued by a local government with prior consultation of the CRA.

[2] Administration of the District or Municipal Council.

3.2. ECONOMIC REGULATION

Economic regulation is the component that should ensure application of appropriate tariffs for water supply and sanitation services, in order to contribute to universal coverage, efficiency of the Companies and develop complementary mechanisms that mitigate problems related to consumers' ability to pay.

The essence of economic regulation is equity in prices based on desired quality of service, while safeguarding interests of consumers without harming the sustainability of the ER.

As explained above, the CRA began its operations in the year 2000, with a regulatory mandate based on the following:

- Economic regulation (services versus prices);
- Protection of consumers' interests;
- Mediation and conciliation of interests between the grantor and the operator.

Through combination of these assignments, particularly economic regulation, CRA promotes efficiency and balance of service provision, particularly in the public water supply, as shown in Figure 15.

As mentioned in Chapter 1, the Water Policy (PA) reinforces the concept of water economic value that has been already considered in the 1995 PNA. It is equally recognized that economic value and social development and poverty reduction go hand in hand and it requires mechanisms to ensure the balance between access by consumers and operation of systems by ERs. Thus, there are two types of subsidies adopted[3], including offer and cross subsidies, the latter is aligned with the PTA, which has its main objectives to improve the provision of water

Economic Regulation
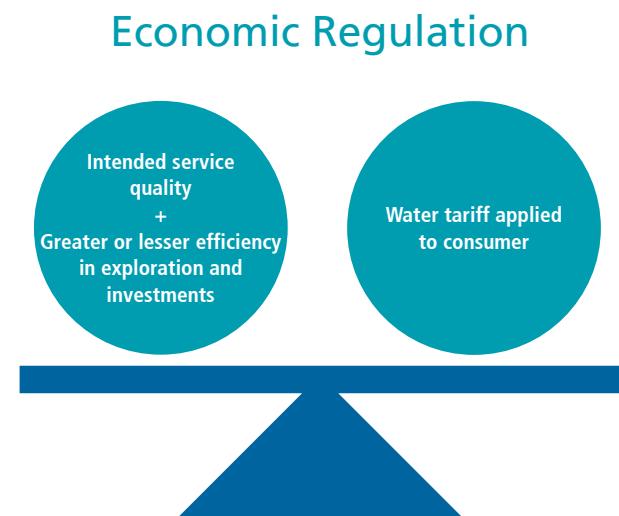
Figure 15 - Balance on efficiency, service quality and tariff

supply services and sanitation, according to the demand and consumer´s economic capacity However, it should be noted that PTA foresees transitional subsidies for infrastructures and without losing sight of its main final objective of full coverage costs.

It is under CRA´s responsibility to make economic regulation viable and functional by defining the model and tariffs structure as well as criteria for their calculation, as discussed below.

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[3] The companies are unable to cover their total costs through revenues from tariffs, so that the government subsidizes investments in infrastructure through the temporary subsidy budget, with the goal to reach full coverage of costs by revenues. The cross-subsidy is based on the tariff structure, which varies according to specific levels of consumption.

Tariff Model

The current tariffs model on coverage costs is based on operator's efficiency to ensure the financial and economic viability of the ER, by obtaining sufficient revenues to cover the operation costs and meet the debt service without compromising the quality of the service.

Thus, tariffs of the drinking water are established by calculating all costs incurred in service production, divided by the volume of the produced water which results in a total average cost in relation to the managing entity´s efficiency improvement model for a certain period. This method, although it ensures revenues to cover ER´s operation costs, it penalizes ER of not achieving set efficiency targets within CGD or QR, since tariffs are only reviewed in light of cost variation factors outside of operator´s control, for example, inflation rate, increase on fuel prices and electricity, which has significant deviations from initial plan.

The tariff is also defined within CGD and QR, depending on the performance and efficiency targets and it is subject to periodic review. As above mentioned, the model predicts and penalizes the ER of not achieving set efficiency targets without contemplating compensation of any losses from possible inefficiencies under responsibility of the ER management or operation.

Tariff Structure

The Tariff Policy also sets out tariff structures that are applicable to different types of water use, taking into account principles of equity, sustainability, environmental protection and efficient use of the resource.

The current tariff structure, as above mentioned and taking as an example on tariff practice in the Maputo region, as shown in Figure 16, it has adopted cross-subsidies mechanism for financial viability of the ER, based on the following:

I. Tariffs for domestic consumption are established in consumption tiers and charged in progressive tariffs, with a minimum monthly consumption4 of up to 5 m³;

II. For lower income consumers, there is a subsidized tariff called the "social tariff", for water consumption through public standpipes;

III. Tariffs for commercial, public and industrial categories are established and charged with constant tariff with values higher than domestic tariffs. For commercial and public categories, the minimum consumption is 25 m³ per month and 50 m³ per month for industry, also shown in Figure 16.

During tariff review, the aim was to apply the cross-subsidies to the first tier of the household tariffs (up to 5 m³), but this expectation was not realized in practical terms due to the Fixed Tariff that placed it at 30 MZN/m³.

Due to its relevance, this theme will be developed in Chapter 4, when we will be dealing with the issue of sustainability of the systems.

As for sanitation tariffs in force only two cities of the country are still in a transitional phase and they apply the criterion of charging a fixed percentage of water consumption value. According to the National Strategy on Urban Water and Sanitation, social tariffs are exempt from paying sanitation tariff.

Tariff Structure (example of Maputo tariff)

	Household			General	
	5m³	5 - 10m³	> 10m³	Trade / Public	Industrial
Fixed Tariff (MZN/month)	60,00			712,50 (minimum consumption of 25m³/month)	1425,50 (minimum consumption of 50m³)
Variable Tariff (MZN/month)	14,50	19,00	28,30	28,50	
Typical Consumption Invoice (MZN/month) includes VAT	5m³ - 150,00	10m³ - 257,00	30m³ - 895,00	40m³ - 1140,00	80m³ - 2280,00
Effective Tariff (MZN/m³)	30,00	26,00	30,00	28,50	

Figure 16
Tariff Structure

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4 Minimum value that the customer must pay for the services of water supply in accordance with the tariff structure defined by the CRA, and refers to (i) expenses for replacement or periodic inspection of meters, (ii) administrative expenses, and (iii) costs of conservation and maintenance of public water systems.

3.3. DECENTRALIZED ACTION OF THE REGULATOR

The decentralization is defined as the transfer of power, resources and responsibilities from the national to local level and it became a trend in most African countries and other parts of the world in order to improve accountability, effectiveness and efficiency of the provided services and taking advantage of synergies arising from proximity of the service users.

Regardless of the legal frameworks adopted in each country on decentralization of power, particularly financial, fiscal and administrative responsibilities for local actors, this transfer involves numerous challenges in its implementation. These challenges do not constitute an exception for regulation, especially in the water and sanitation sector that requires high-level of technical skills that are often lacking at local level.

In Mozambique context, as a first step and as illustrated in Chapter 1, it has been adopted a centralized framework for assets management and for regulation in order to overcome challenges associated with local weak capacity. However, the expansion of the QGD with extension of the CRA's mandate to regulate all water and sanitation services and taking into account specific technical and management conditions of each system that led to reflection on governance regulation model.

In this context, CRA designed a regulation approach whose main objective is to ensure controlled costs through involvement of local governments, by means of Collaboration Agreements, which set out the main terms and conditions for local regulation, understanding that joint coordination and inter-institutional collaboration with the Local Authority constitutes an important instrument to safeguard the interests of the consumers and to improve secondary public services. Local communities are the main beneficiaries of this joint regulation.

In decentralization, CRA delegates powers that are not reserved to the board to Local Water Regulatory Commission (CORAL) and their members are selected by local governments, in order to ensure local legitimacy and meet local needs, as shown in Figure 17.

So far, there are four CORALs, three operate in the northern region, including two for the Ribaué and Ilha de Moçambique systems (Nampula province), and one in the Mocímboa da Praia system (Cabo Delgado province). The fourth CORAL operates in the southern region at Vilanculos system (Inhambane province). As the secondary systems increase their capacity for regulation, the number of CORAL will increase, up to a total of 15.

CORAL Recruitment Procedure
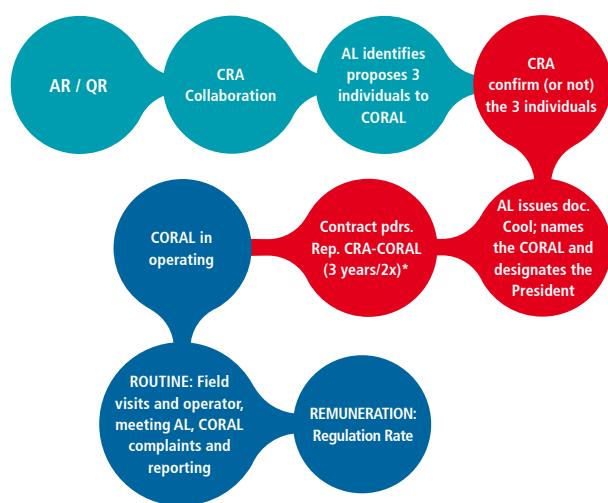
Figure 17 - Decentralization in CORALs

* 3-year contracts with powers of representation of the CRA.

3.4. PERFORMANCE EVALUATION SYSTEMS FOR REGULATED ENTITIES

Performance evaluation for regulated entities is done under the scope of the CGD or QR, based on data collection from monthly activity reports sent to CRA by ERs.

Basically this performance evaluation is comprised of a set of key-indicators5 established in the AR, that enable to identify and mapping of the strengths and weaknesses of each system, including: (i) accessibility of service; (ii) sustainability and efficiency of regulated entities, (iii) quality of water supplied and, (iv) quality level of the service care provided to consumers, as shown in Figure 18.

Ranking levels are as follows:

- GOOD (●) when the value of the calculated indicator is equal to or above the reference value, except indicators on number of employees per 1,000 connections, non revenue water and average

time of response to complaints that must be equal or lower to the reference values;

- AVERAGE (●) when the value is close to the reference value;
- UNSATISFACTORY (●) when the calculated amount is well below the reference value;
- POSITIVE TREND (⬆) OR NEGATIVE TREND (⬇) when the indicator shows upward or downward trend from the previous year. When the trend remains represented by (➡).

So far, there are some established targets under review in the CGD and QR so that they can reflect on the progress and efficiency of the systems, and expecting new targets and/or updating criteria for calculation of indicators to be implemented from 2016.

After data processing, the Service Quality Evaluation Reports (BAQS) are prepared, whose example is shown in Figure 19.

Key Indicators

1. Total coverage
2. Availability Average period

3. Response Time to complaints
4. Complaints responded in Filled based on metering reading
5. Invoiced Volume based on meter readings

6. % of the controlled parameters
7. % compliance of parameters

8. Employees / 1000 connections
9. Non revenue water
10. Invoice collection ratio
11. Operational cost coverage ratio

Access to Service
Customer Care Service
Water Quality
Sustainablity of the Companies

Key Performance Indicators adopted by the CRA

Figure 18 – Fey Indicators Diagram

5 The description of each indicator can be found in Annex 3.

Overall Evaluation Service Quality - 2014

Legend: 🟢 = Good performance, 🟡 = Average performance, 🔴 = Unsatisfactory performance

Indicators	Reference Value	Maputo/Matola	Xai-Xai	Chókwe	Inhambane	Maxixe	Beira/Dondo	Manica	Tete	Quelimane	Nampula	Nacala	Angoche	Pemba	Lichinga	Cuamba
ACCESS TO THE SERVICE																
- Coverage	V ≥ 60 %	🟢	🟢	🟢		🟢	🟢	🟢	🟢	🟢	🟡	🔴	🔴	🟢	🔴	🔴
- Availability average period	V ≥ 16 hr/day	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟡	🟢	🟡	🟢	🟢
SUSTAINABILITY OF COMPANIES																
- Non-revenue water	V ≤ 35 %	🔴	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟡	🟢	🔴	🟡	🟢	🟢	🟢
- Invoice Collection ratio	V ≥ 85 %	🟢	🟢	🟢	🟢	🟢	🔴	🔴	🔴	🔴	🟢	🔴	🟢	🟢	🟢	🟢
- No. of employees per 1000 connections	V ≤ 10	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟡	🟡	🟢	🟢	🔴
- Operational cost coverage ratio	v > 1,15	🟡	🟢	🟡	🟡	🔴	🟢	🔴	🟢	🟢	🟢	🔴	🔴	🟢	🟢	🔴
CUSTOMER CARE SERVICE																
- Complaints responded to	V = 100 %	🔴	🟢	🔴	🟢	🟢	🔴	🟢	🔴	🔴	🔴	🔴	🟢	🔴	🔴	🟢
- Average response time to complaints (days)	V ≤ 14 days	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢
- Invoicing based on meter readings (%)	V ≥ 85 %	🟡	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢
WATER QUALITY																
- Percentage of the controlled parameters	V ≥ 80 %	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟡	🟢	🟡	🟢	🟢	🔴	🔴
- Compliance of parameters	V = 100 %	🟢	🟢	🟢	🟡	🟢	🔴	🔴	🔴	🔴	🔴	🔴	🟡	🔴	🔴	🔴

Note:
🟢 Good performance
🟡 Average performance
🔴 Unsatisfactory performance

Figure 19 - Summary of the Service Quality Evaluation Repo

Composite indicator called Performance Index of the Regulated Entities (IDER) is designed to complement the assessment system based on BAQS, where strengths and weaknesses are identified for each system without benchmarking and it allows to analyze integrated information on ERs performance and it brings as added value the performance evaluation systems by clusters combined with key-indicators that allow to analyses more effectively on the progress of the service provided over the years and it establishes the comparison (benchmarking) between ERs and their positioning.

Figure 20 shows evaluation criteria adopted under IDER and indicators comprising of each criterion.

The use of this indicator, CRA intends to identify priority actions and introduce corrective measures and simultaneously to motivate the improvement of ER performance.

Methodology:

The next steps were followed to design composite Indicator:

1. Selection of basic indicators;
2. The standardization of indicators;
3. Allocation of weight indicators;
4. The aggregation of basic indicators.

Development of the IDER

Criterion (Level 1)	Criterion (Level 2)	Performance indicator	Unit
Economic and Financial Sustainability		1. Collection Rate	%
		2. Operational costs coverage	%
Operational Sustainability		3. Employees per 1000 connections	dimensionless
		4. Non-revenue water (total loss)	%
Quality of the Service	Customer Service	5. Total Coverage	%
		6. Invoicing based on household meter readings	%
		7. Availability Average period	hours/day
	Water Quality	8. Percentage of the controlled parameters	%
		9. Percentage of compliance of parameters	%
	Customer Care	10. Average response time to complaints	Dias
		11. Total number of complaints per connection	Nr. of complaints / 1000
		12. Complaints answered vs. totals	%

Figure 20 - Development of IDER

Selection of Basic Indicators

In order to develop IDER, groups and subgroups of indicators listed in the following table were selected by consensus with involvement of ERs.

Standardisation of Indicators

The Maxmin standardization was selected from a range of possibilities, which is the simplest normalization technique based on the use of minimum (Xmin) and maximum (Xmax) values, with prior determination of maximum and minimum values considered in accordance with the performance goals established in the various ERs regulatory frameworks and providing them with standardized performance values between 0 and 1, where zero is the worst performance and 1 is the best possible performance.

Allocation of Weight to Indicators

Through the technique of weighting and aggregation, the basic weights of indicators were determined. This technique was adopted because it is the most common. To this end, the procedure recommended by the OECD-JRC[6] (2008) was followed by designing composite indicators. To develop IDER, at this stage, weights were considered according to the opinions of CRA, FIPAG and AdeM experts who have defined the relative importance of basic indicators, as shown in Figure 21.

Relative Importance of Indicators

Performance indicators	CRA	FIPAG	AdeM	Harmonised weights
1. Total Collection	5.72%	10.29%	8.27%	7.50%
2. Operational costs coverage ratio	16.15%	7.69%	9.88%	12.47%
3. Employees per 1000 connections	2.97%	7.15%	4.67%	4.44%
4. Non-revenue water	18.68%	33.16%	25.35%	23.97%
5. Total coverage	7.02%	1.66%	4.81%	5.13%
6. Invoicing based on household meter readings	3.84%	4.33%	5.77%	4.45%
7. Availability Average period	7.96%	2.83%	2.95%	5.42%
8. Percentage of the controlled parameters	8.05%	10.31%	6.08%	8.12%
9. Compliance of the controlled parameters	24.35%	16.12%	26.28%	22.78%
10. Average response time to complaints	1.55%	1.69%	2.63%	1.85%
11. Total number of complaints per connection	0.65%	2.63%	1.09%	1.26%
12. Complaints responded in relation to the total	3.06%	2.13%	2.23%	2.62%

Figure 21 - Relative Importance of the Components and Basic Indicators from IDER

[6] Organization for Economic Co-operation and Development - Joint Research Center (OECD-JRC).

Definition of Group Indicators

Economic and Financial Sustainability (ISEF): The basic group of indicators that reflect the economic and financial situation of the company, considering elements like Collection rate and Operational costs coverage;

Operational Sustainability (ISO): The set of basic indicators that reflect the operational capacity of the company comprised of the number of employees per 1,000 connections and non - revenue water;

Service Quality (IQS): Corresponds to the aggregation of three subsets of indicators:

1 - Customer service, which integrates total coverage and invoicing based on meter readings and availability average period;
2 - Water quality, which includes the percentage and compliance of the controlled parameters;
3 - Customer Care, which includes number of complaints, average response time and percentage of complaints responded.

Overall Performance (IDER): Corresponds to the considered integration of the three (3) abovementioned groups (ISEF, ISO and IQS).

Aggregation of the Basic Indicators

To develop IDER, it was decided to use of an additive aggregation formula, since this type of aggregation accepts the existence of exchange rates between different indicators that forms the Composite Indicator - IDER, with the possibility of compensation between them. For the Composite Indicator-IDER it was used:

$$IDER = \sum_{k-1}^{k-12} w_k \cdot I_k$$

For the aggregation of indicators based on sets of indicators, it was used three groups with names and aggregation below:

$$IDER_{eco} = \sum_{k-1}^{k-2} w_k \cdot I_k \qquad \text{ISEF}$$

$$IDER_{oper} = \sum_{k-3}^{k-4} w_k \cdot I_k \qquad \text{ISO}$$

$$IDER_{qual} = \sum_{k-5}^{k-12} w_k \cdot I_k \qquad \text{IQS}$$

Dr. Pedro Paulino

General Director of FIPAG – Fund for Investment Ownership and Water Supply Assets

It has been 15 years since the creation of the Delegated Management Framework for urban water supply, as a result for implementation of principles of Water Policy and Delegated Management Strategy. We have witnessed actions and accomplishments led by Water Regulatory Council, Fund for Investment Ownership and Water Supply Assets, Maputo Water Utility and Water Supply Units of the Northern Region and Regional Delegations from the North, Centre and South.

The experience gained within Delegated Management Framework allows me to consider and suggest that successes achieved are result of the vision and strategic objectives accompanied with institutional adequate changes required in this context and preserving and strengthening their competences and responsibilities.

The strengthening of institutions occurred with the creation of AIAS, the adjustment of CRA and FIPAG statutory regime, the change in the corporate structure of AdeM, among others, gave a robust institutional framework of the delegated management and created conditions for among other results, significant improvement in covering the population served, economic and financial sustainability.

In the five-year period 2009-2014, the role of delegated management was reaffirmed with focus on capacity building of national operators. The powers of FIPAG were strengthened, which was endowed with the responsibility to create regional private water companies and be a shareholder in them, as part of attracting process and capacity building of national operators. In fact, the process started in assessing technical and economic-financial feasibility for the creation of private companies and defining model of strategic partnerships with specific competences in identified objective areas for each company.

The institutional and human resource capacity building resulted in a current priority and challenge for motivation and empowerment of human capital and long-term operational sustainability. The staff inherited from the reforms of 1998, predominantly comprised of personnel with practical qualifications and low academic qualification did not meet motivational policies and professional career paths and progressions in force. It is expected that with creation of vocational training academy for professional development to certify the know-how and a motivating career system.

The sector to which we belong is characterized by providing a product and service whose usefulness is confused with life and social and economic development. Thus, investments in infrastructure and technologies used are expected for future generations´ return. From this type of sector emerges from our real challenge of long-term planning solutions, contrasted by spontaneous demands that require immediate attention in one hand and on other hand with limited funding capacity. In fact, it is necessary to make in-depth reflections on viable forms of funding to meet the needs of new sources of water infrastructures and other bodies of water supply systems, including special attention to low-income population.

We hope that at the end of the five-year period, we provide water supply service with modern institutions and excellent staff and practices by honouring commitments to all financial partners.
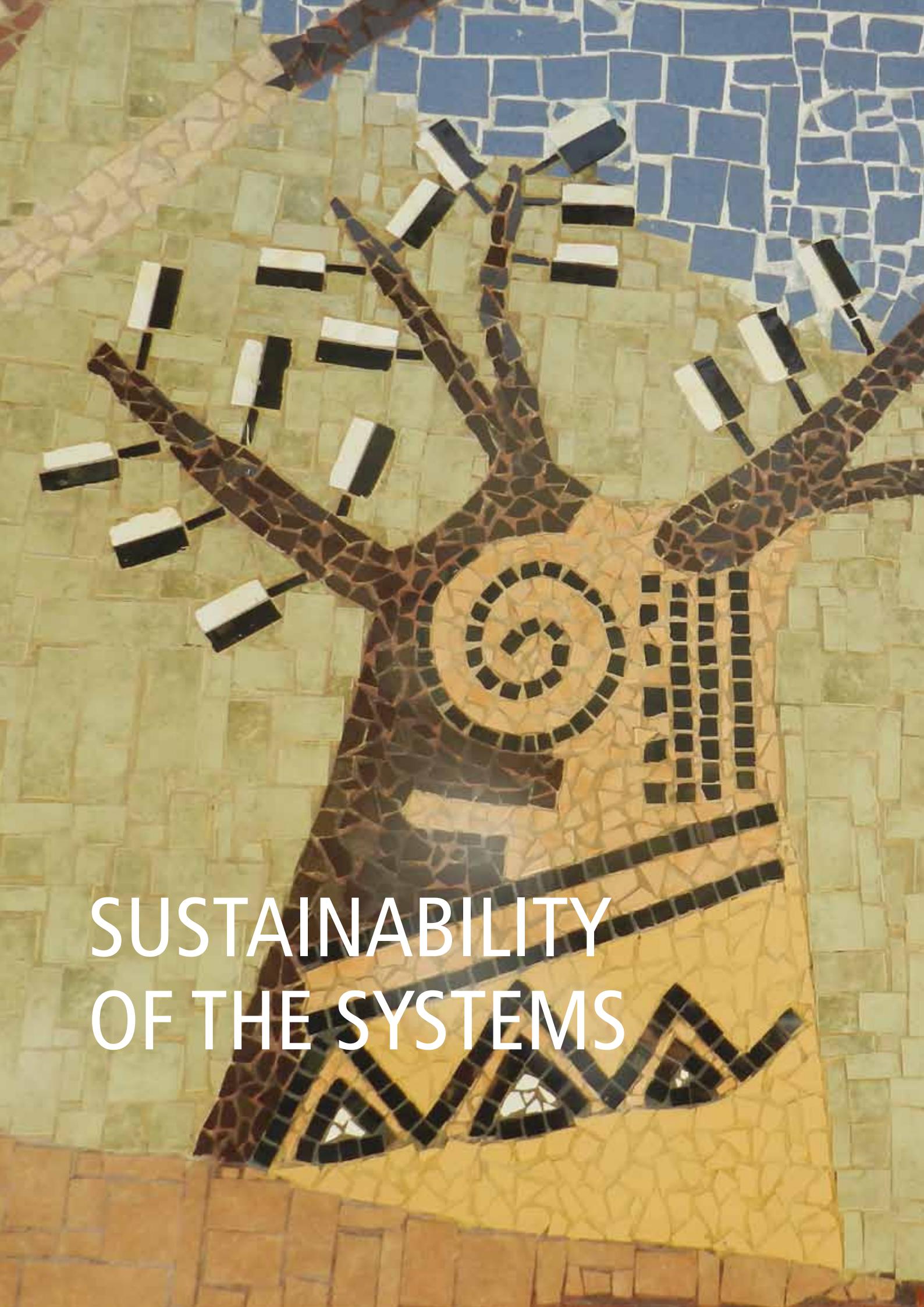
SUSTAINABILITY OF THE SYSTEMS

4

4.1. PROGRESS OF THE WATER TARIFF STRUCTURE

The water tariff structure in force by 2010 presented historical structure of 1980s, tiered in growing tariffs taking into account different consumptions usages and levels, the household consumptions (household tariffs) and commercial, industrial and public consumptions (general tariffs). These tariffs "were hiding" fixed component in its structure in a form of "minimum consumption", at the same time was seeking to generate revenue in a context of less percentage of metered consumers.

As far as water supply, Water Policy was one of the main initiatives of the Government to sustain and meet basic needs of the population with real participation of the beneficiaries in defining solutions to be adopted. Participation of the beneficiaries also takes place through payment of provided services according to their expectations and needs, which is regarded as crucial to ensure sustainability and rational use of the resources.

In 2009, according to CRA assignments, a new tariff structure was established to harmonize tariffs that were in force with changes in consumption patterns focussing more on consumers with lower consumptions tiers as well as to provide viable response to the expected growth of new household connections in per-urban areas (Figure 22).

Percentage of Consumption by Tiers

Tiers	Maputo and Matola		
	2010		2013
	Old structure	New structure designed	Real
0 - 5 m³ *	52 %	26 %	19 %
5 - 10 m³ **		26 %	37 %
10 - 20 m³	25 %	48 %	44 %
20 - 30 m³	9 %		
More than 30 m³	14 %		

* New tariff structure: up to 5 m³/month (minimum consumption)
** Old tariff structure: up to 10 m³/month (minimum consumption)

Figure 22 - Weight of the consumed volumes

The new tariff structure approved in 2009[1], has reduced from four to three consumption tiers, and it adjusted the monthly minimum consumption[2] (10 m³ per month to 5 m³), aligned to consumption patterns, especially for low-income consumers, that in 2006, represented more than 50% of total consumption. This shows the importance of saving and rational use of water by consumers, for example: Maputo/Matola system shown in Figure 22.

Figure 23 illustrates variation of the expected revenue from new tariff structure, using 2012 tariffs (most recent adjustment), which aimed to impose a much lower increase for the first tier of consumption (5 m³ - the social tariff) than other tiers.

Finally, the new tariff structure sought to adjust water tariff to the principles and provisions in force in the water supply sector, in particular Water Tariff Policy, by applying two-part tariffs where a volumetric tariff is combined with a fixed charge, called binomial tariff. The new structure is transitional and it represents a commitment to the current situation as regard to General Tariff.

[1] Resolution No. 1/2009 of 30 December (published in the BR No. 52-12/30/2009).
[2] Until 2009, the domestic tariffs were broken down into four tiers, allowing easier application of cross-subsidisation However, in the study done by the CRA, it considered phasing out the last two tiers due to similarity of tariffs.

Tariff vs. Expected Consumption
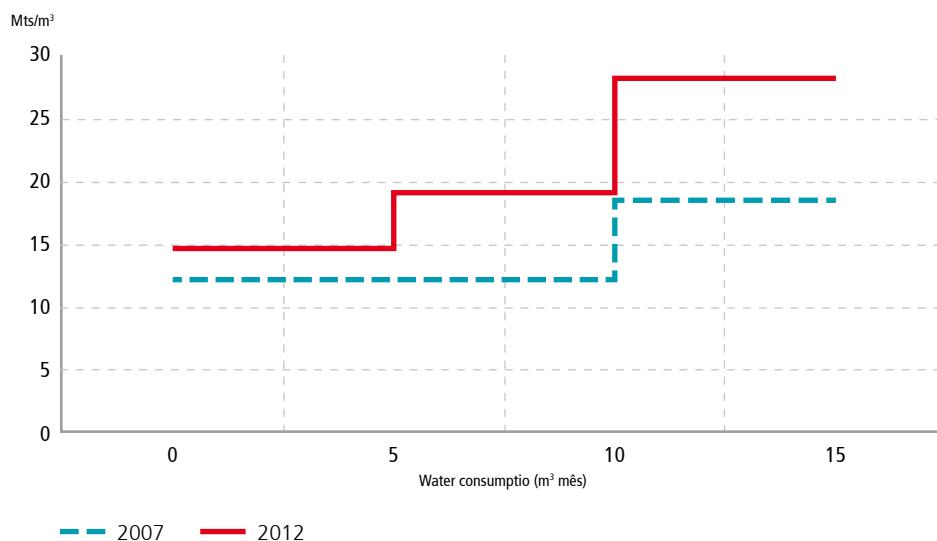
Figure 23 - Expected revenue variation under the new tariff structure

4.2. PROGRESS OF THE COSTS COVERAGE CAPACITY

When the QGD was initially deployed in 1999 and was based on five water supply systems[3], associated with cost recovery programme agreed between the Government and external financing institutions, expecting an actual annual increments in tariffs and some operating costs, particularly those derived from "delayed maintenance" that would be temporarily subsidized through specific projects such as "Delegated Works".

Tariffs development is a result of periodic adjustments approved by CRA since the beginning of the QGD. These adjustments, in one hand, they had positive impact on company liquidity and to achieve cost recovery as the main priority, and on other hand, they allowed FIPAG to meet their financial obligations from investments made from 2009, in particular the debt service.

In short, tariffs adjustments allow significant development of the tariff and gradual reduction of the differences between revenues and operating costs, thus, enabling ERs to improve services provision to current and future consumers. So, tariffs continue to be a fundamental tool for the ER financial sustainability and viability.

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[3] The systems of Maputo/Matola, Beira/Dondo, Quelimane, Nampula and Pemba.

The Progress of the Average Tariff (Mzn/m³)

Region	Water Supply Systems	Average Reference Tariffs			Target Tariff
		2003	2007	2012	2014
Southern Region	Maputo / Matola	9,80	15,11	26,41	27,73
	Chókwè - Cidade e Distrito	(a)	10,52	20,05	22,06
	Xai - Xai	(a)	10,3	20,22	22,24
	Inhambane	(a)	11,65	21,04	23,14
	Maxixe	(a)	11,24	23,93	25,22
Central Region	Beira, Dondo e Mafambisse	8,70	13,66	22,41	24,20
	Quelimane e Nicoadala	8,70	13,50	21,28	21,18
	Tete e Moatize	(a)	(a)	16,86	20,62
	Chimoio, Manica e Gondola	(a)	(a)	16,86	23,41
Northern Region	Nampula	5,90	13,35	22,05	23,81
	Nacala	(a)	(a)	16,86	22,77
	Angoche	(a)	(a)	16,86	21,07
	Lichinga	(a)	(a)	16,86	23,88
	Cuamba	(a)	(a)	16,86	20,95
	Pemba, Morrébue, Metuge e Morrebuè	8,10	12,97	22,11	20,96

(a) Before integration into QGD.

Figure 24 – Progress of the average reference tariffs

However, it should be kept in mind on the need for efficient operation of systems and correct decision-making in investments, because tariffs should not incorporate inefficiencies that are under Operator´s responsibility neither inadequate investment needs.

Figure 24 shows the progress of Average Reference Tariffs (TRM) from 2003 to 2012[4] and the target tariff for 2014. This target was calculated based on 2013 costs, subject to validation.

Initial tariffs were too low and affected water service provision with minimum quality standards Tariff adjustments were initiated to reverse this situation.

Figure 24 also allows to understand that tariffs of Maputo/Matola, Maxixe, Beira/Dondo, Nampula, Quelimane, Pemba, Chókwè, Xai-Xai and Inhambane had an average increase of 180% during that period and it shows a very significant effort to achieve tariffs that ensure economic viability of ERs, taking into account the quality of service parameters defined in regulatory agreements. Systems of Tete/Moatize, Manica/Chimoio/Gondola Angoche, Lichinga, Cuamba and Nacala, later integrated into the QGD, they also follow specific dynamics for tariff alignment that enable full costs coverage.

Average Reference Tariff - 2014

Figure 25 - Average reference tariff vs. Real average revenue

Figure 25 shows deviation of TMR and real unit revenue in relation to target tariff projected for 2014.

Since TMR of all ERs continues to be lower than total costs, including debt payment[5], although temporarily, government subsidies through State budget to fund public infrastructures will be maintained, due to its nature of being public service, which leads to positive externalities translated into productivity growth rates and improvement in life quality and social welfare of the population.

Electricity, chemical products and manpower are large burden costs in producing drinking water. The cost structure increases through payment of concession fee to provide necessary liquidity to FIPAG, as grantor responsible for assets management in fulfilling its financial obligations, especially on debt service from retrocession agreements associated to important investments held in water supply systems, as it was already emphasised in this report.

Just to point out, tariffs approved by CRA aims not only to achieve financial balance of targeted tariffs to become more aligned to full costs coverage but also to attain universal water supply service.

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[5] Note that, AdeM is the only operator that pays the fixed lease fee to FIPAG to fulfil its financial liabilities, so it can be asserted that Maputo tariffs subsidises other water supply systems which remain unable to cover their costs.

4.3. THE CURRENT WATER TARIFF "PROBLEM"

The design of water tariff structure is always a challenge for regulators by being an economic asset of social value and essential for human life, therefore, it can be considered two opposite objectives, namely the efficiency of the systems/costs recovery and equitable access.

Thus, the establishment of water tariff levels and its structure is not an easy task, because it requires harmonization of solutions and commitments between different objectives that water tariff is looking for.

The first tariff tier of up to 5 m³ / month, called the "social tariff", is created to allow low-income consumers to have access to water through a "tap in the yard" connection, and their ability to pay for it. The social tariff corresponds to a per capita consumption of about 25 litres / day, to ensure 20 litres / person / day to meet the water basic needs, as set out in the Water Policy. The price paid by social tariff is about 50% of the family budget devoted to purchase water from small private operators.

On other hand, Fixed Tariff was introduced to generate enough revenue to cover costs arising from production and provision of water services due to high burden of the fixed costs.

However, as shown in Figure 26, consumers with social tariff pay more for water consumption (around 30 MZN/m³) due to the incorporation of the fixed tariff that cause this negative effect in the first tier of water consumption.

Average Water Price and Water Invoice*

Maputo System	Water price (MZN/m³)			Water invoice (MZN/m³)		
	5m³/month	10m³/month	40m³/month	5m³/month	10m³/month	40m³/month
2010	30,00	26,00	28,00	150,00	257,00	1120,00
2012	30,00	26,00	30,00	150,00	257,00	1214,00

* Including VAT at the rate of 12,5%**
** VAT (75%x17%)

Figure 26 - Average water price and average invoice

Another disappointment found in the implementation of the new tariff structure was the average consumption by consumer that is currently reducing at 15m³/month in the Maputo Great Region. Potentially this progressive reduction in consumption is strictly related to the fact that new consumers are connected to the network, especially in per-urban areas, where the average consumption is under 10m³/month, as shown in Figure 27.

This reduction trend of the average consumption places most consumers in the first two consumption tiers. In the medium and long term, the economic sustainability of ERs may be at risk if this trend continues and it may jeopardise the current used mechanisms for cross-subsidy where there is need for urgent work to assess the tariff structure in force since 2010, with the main objective of ensuring financial and economic viability of ERs so that they can continue to expand the network to the poorest sectors of the population and towards universal water supply service.

Progress of the Consumption Structure (Maputo)

30 %   70 %
2005

56 %   44 %
2013

≤ 10 m³ / mês
> 10 m³ / mês

Connections: 90 000
Cross-subsidy: 30%

Connections: 220 000
Cross-subsidy: 10%
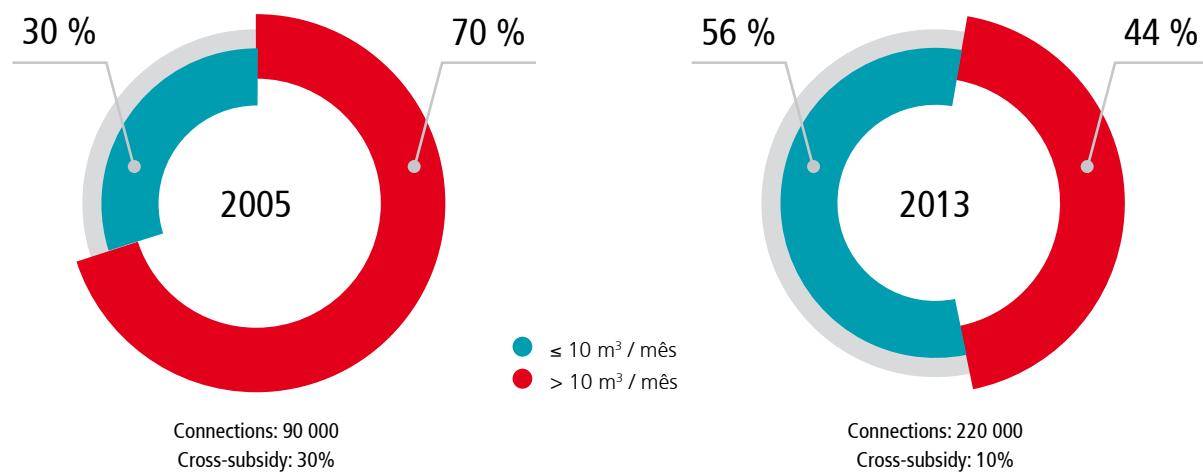
Figure 27 - Transition of average consumption to the first tiers

WATER AND
SANITATION
REGULATORY
COUNCIL

2015

Bento Mualoja,

**Engineer and Chairman of the Board of Directors
for *"Águas da Região de Maputo"***

MY OPINION

In 1998, when the Government of Mozambique took a decision to create the Delegated Management Framework for Water Supply Service that aimed above all, to put the public water supply service under private management, in order to meet major challenges of creating well-being for the population in our country, through a reliable and sustainable public service of the drinking water supply.

After fifteen years of Delegated Management Framework implementation, water supply in urban areas has improved significantly, both in quality and quantity. The number of people served in all cities almost have doubled and in certain cities have tripled. Although availability period of 24 hours per day has not been achieved in all cities, it was possible to increase from around four or five hours per day to an average of 15 hours per day, almost national-wide. There was a remarkable improvement in supplied water quality. These actions have contributed mostly to improve lives of urban population.

In terms of the management, systems have gained a corporate orientation with clear definition on mission and vision and with enlightened and committed employees focused on company objectives and above all, companies gained recognition of the consumers that tirelessly demand quality service.

Personally, I think it was worthwhile to create the Delegated Management Framework for public water supply service and during its 15 years of implementation we have learnt a lot that it will serve us to improve our commitment in order to better serve our people.
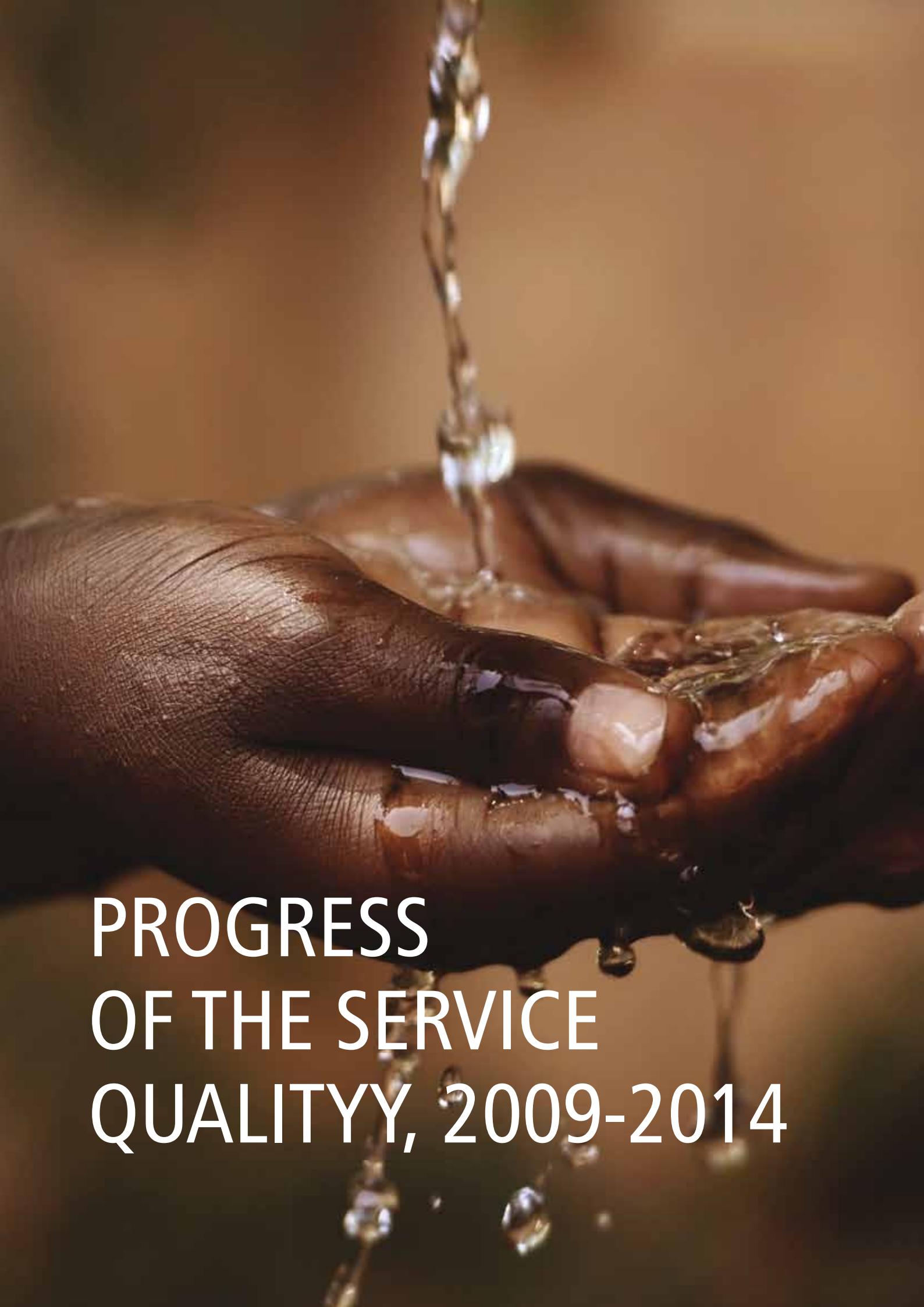
PROGRESS OF THE SERVICE QUALITYY, 2009-2014

5

5.1. INTRODUCTION

Quality of water supply service is an essential aspect of regulation and it is translated through indicators that evaluate the continuity of the service, access and water quality. To this end, CRA has been systematically evaluating on annual basis the quality of services provided by ERs responsible for the main water supply systems.

As previously mentioned, the evaluation allows competitive comparison or benchmarking of the performance among ERs, in order to promote improvements in the management and efficiency in the operation, resulting in improving service provision.

This chapter addresses the progress of the service quality during the period under review (2009-2014), and it is for the first time reported on consumers' perception of provided services and their level of satisfaction.

The evaluation of service quality provided to consumers is based on a set of indicators, whose reference values are based on ARs[1], including management efficiency and effectiveness of investments made by ERs. Although there are more indicators monitored, this chapter only analyses the progress of the following indicators:

- Access and continuity of the service;

- Water losses;

- Meter readings;

- Water quality;

- Relationship with consumer .

[1] Materials that are object of regulation in the scope of delegated management or operation of systems, in particular, definitions of service quality, performance efficiency, tariffs and rates pricing, and data availability, etc.

Following the expansion of its mandate[2] in 2010, CRA began to regulate secondary systems under management of AIAS, however, this report only considers performance evaluation of the main systems under responsibility of FIPAG, with an exception of the Ilha de Moçambique system, which was the first secondary system to be regulated. Performance evaluation will be gradually extended to other secondary systems as well as sanitation systems that are under responsibility of AIAS and/or municipalities.

This report includes a brief statement of the service quality from 2000 to 2008, in accordance with CRA's report to the Government, by facilitating the understanding of water supply service development.

5.2. BACKGROUND OF THE SERVICE QUALITY PROGRESS (2000-2008)

During this period, the evaluation was carried out just on nine systems, including Maputo/Matola system, under a lease contract, four systems of the central and northern cities (4CCN), including Beira, Quelimane, Nampula and Pemba, and four systems of the southern cities (4CS), including Xai-Xai, Chòkwé, Inhambane and Maxixe. By 2008, the 4CCN systems were under AdeM delegated management and the 4CS systems were under direct FIPAG management, and they were all regulated through Regulatory Framework.

When the QGD started, in 2000-2003, ERs reported poor quality data therefore, there was a need for ERs to adapt to new guidelines and while they invested in the recovery and expansion of infrastructure, that were very deteriorated, they improved management tools, including information systems and preparing for fulfilment of the established targets and continuous improvement of the provided data.

Therefore, only three performance indicators are highlighted:

- Water supply coverage by the ERs increased from 25% in 2004 to more than 50% in 2008[3]; due to investments made in infrastructures;
- Water availability average period increased from 16 to 20 hours per day, due to the repair and/or replacement of equipment in water treatment plants;
- Finally, as regards to non-revenue water, there was a reduction from 50% to 40%, proving the quality of investments made in infrastructures.

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[2] Decree No. 18/2009 of 13 May.
[3] As mentioned in Chapter 1, Figure 8 - Coverage after Delegated Management Framework

As regards to water quality[4], investments were made for capacity building on water analysis in laboratories, which enabled to increase the number of samples analysed according to the legislation in force, in addition to an increased minimum number of parameters that ERs must control, as per regulatory agreements.

During 2000-2008, there was a positive progress in water supply service quality by ERs, which encouraged progressively the government to integrate more systems into the Delegated Management Framework and its respective performance evaluation.

5.3. ACCESS AND CONTINUITY OF THE WATER SERVICES (2009-2014)

This chapter addresses on the progress of service quality, in the context of accessibility and availability of the water supply service to the population based on the following performance indicators: service coverage and availability average period. This analysis includes an evaluation of the combined effect of these two indicators on provided service quality by regulated entities and evaluation of the service coverage versus average consumption per connection.

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[4] The data on water quality by regulated entity can be found in the Retrospective Report of the CRA for the period 1999-2009.

5.3.1. Service Coverage

This indicator allows to evaluate the level of access by resident population in the areas served by the main systems, under the responsibility of ERs, considering the population served by household connections and public standpipes. Figure 28 presents the aggregated data of ERs for the period under review.

As regards to the progress of total water coverage, there is a significant increase in coverage from 50% in 2009 to approximately 70% in 2014. This increase contributed for completion of investments by FIPAG to increase production capacity and extension of the network as well as a massive campaign for household connections by reducing more than 50% of the price for new connections for lower-income population so that they can have access to water supply service[5].

In the same Figure 28 it also shows an increased coverage in the country due to gradual increase of household connections, notably from 28% in 2010 to approximately 45% in 2012, and since then it remained more or less constant by 2014. Public standpipe coverage tend to decrease, mainly due to consumers' demand on closer alternatives access of water supply, particularly household connections and water resale in the "neighbor's yard"

The methodology used for calculating public standpipes coverage is based on population served by each standpipe. In contrast, CRA believes that it would be more appropriate to calculat its coverage based on volumes of water invoiced for a standpipe, a criterion that shows its functionality as per capita consumption of 20 liters/person/day, considered as basic service acording to sector policy.

Figure 29 shows the coverage calculation that incorporate criteria of standpipe coverage depending on volumes of water invoiced, in which the total coverage rate would be below 50%. This is an issue addressed in Chapter 6.

However, it is necessary to underline that an increased coverage for household connections by various ERs is heterogeneous; so, there are systems with coverage by connections above 70%, such asthe case of Xai-Xai, Chókwè and Inhambane and other systems with coverage below 20% such as the case of Nacala, Angoche, Lichinga and Cuamba6, as shown in Figure 30. It should be noted that these last four water

Service Coverage
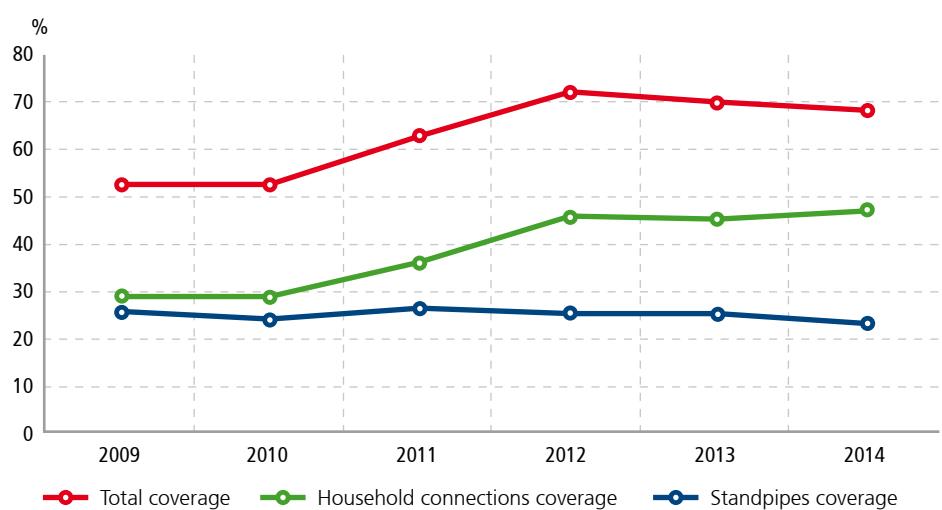
Figure 28 - Service coverage (aggregated data).

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[5] CRA's resolution No. 2/2010 of 7 September.

supply systems only entered into QGD by 2010 and investments are still ongoing. When these systems integrated the QGD, the existing infrastructures were significantly degraded.

It should be noted that main systems do not cover the entire population in the service area, so, people resort to alternative means of supply, namely small private suppliers and aforementioned water resale in the "neighbor´s yard". Studies conducted in recent years by CRA indicate that the impact of water coverage on population served by these alternative means could increase by 25% of the total water coverage.

Service Coverage (Public standpipes - 20 liters/person/day)
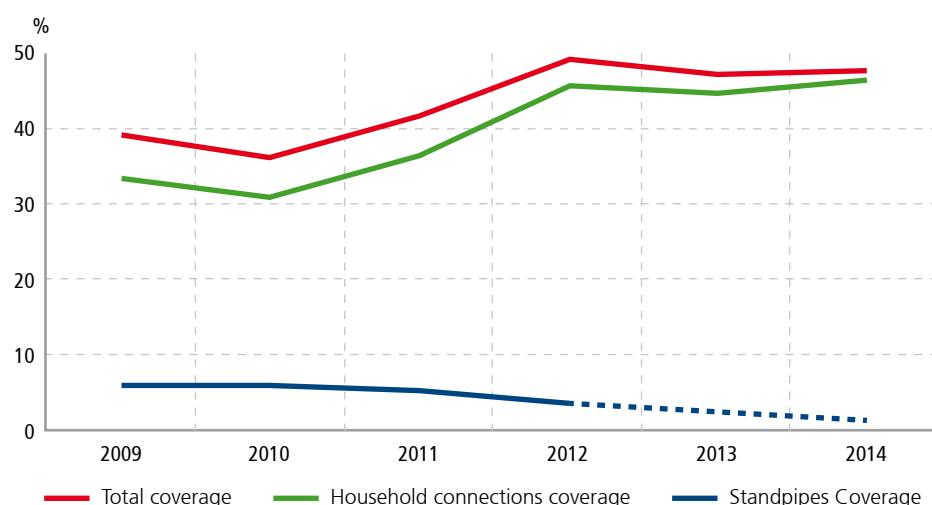
Figure 29 - Service coverage considering standpipes coverage (20 liters/person/day)

Coverage by System
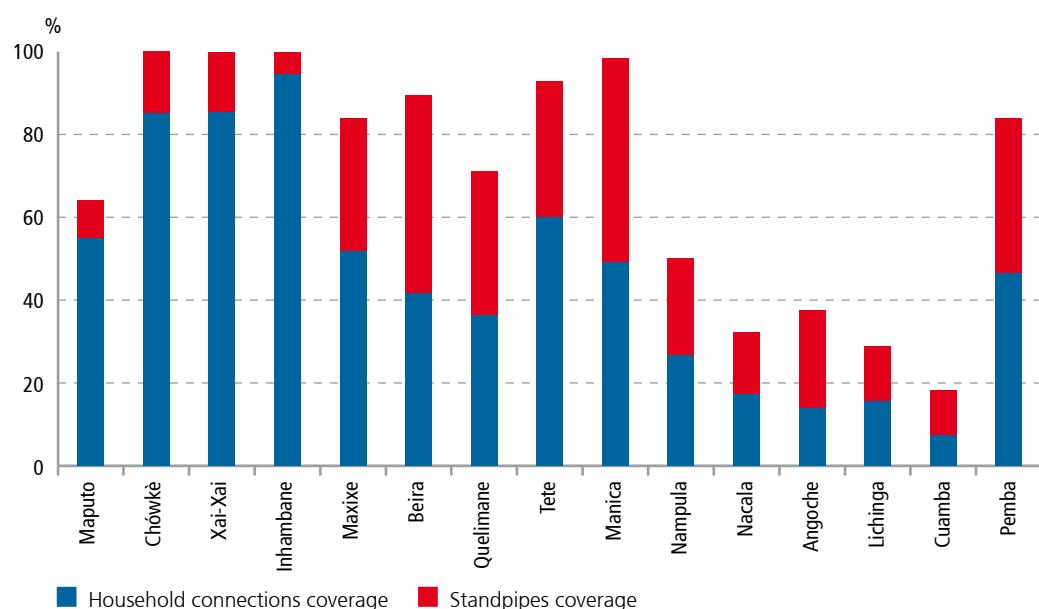
Figure 30 - Coverage by system on connections and standpipes

6 As per disaggregated data by regulated entity listed in Annex 2.

5.3.2. Availability average period (hours/day)

The availability average period shown in Figure 31 allows to verify the level of water availability at consumers' premises. The availability average period in 2009 was 21 hours per day and in 2014, this figure was below 20 hours. Although the calculation of aggregated availability average period to all regulated entities was based on arithmetic average on supplying hours at the Distribution Centres, it end up creating some distortions, even though, it is a good indicator to assess reliability and continuity of the service.

Establishing the relationship between service coverage and availability average period, it is found that as the water supply coverage increases, the average number of hours/day service decreases.

The analysis by system allows us to realize that in 2009 the Maputo system recorded a coverage rate of 36% and an availability average period of 12 hours/day. In 2013, it was recorded the coverage rate of 63% and an availability average period of 17 hours/day. In 2014 the coverage rate recorded new growth of 66% but with a slight decrease (1hour/day) in the average number of hours/day service, which begins to show an opposite ratio of the two indicators.

With regard to the Southern Region, systems maintain the situation of 100% coverage and an availability average period of 24 hours/day. To understand the variation shown in Figure 31, we decided to analyse the aggregated data of the Northern and Central Region, cleared by the effect of Maputo Region and Southern Region. The result of this analysis is shown in Figure 32.

Although the indicator shows a performance above the reference value for availability average period, which is 16 hours/day, the situation of availability average period is very worrying, with a negative trend in most systems of these regions.

The reduction of availability average period may be due to household connections increase that was not accompanied by an increase in production capacity or reduction of losses in the same period.

Analysing the progress between the average water consumption per month and coverage rate presented in Figure 33, there is the same trend in average number of hours/day in water supply service. So, as the coverage for household connections increases in the country, there is a significant decrease in monthly average water consumption per connection, which went from 19 m^3/connection/day in 2010, to a lower consumption of 15 m^3/connection/day in 2014 that in relative terms is equivalent to a decrease of about 20% of consumption per connection.

For example, systems that in 2010 recorded average consumption levels above 30 m3/connection, like Tete that is currently around 18m3/connection. Maputo and Beira had a similar decrease at the same period, from an average consumption per connection of 22m^3 to 16m^3. The Angoche system is the one that recorded the lowest average consumption per connection of 10m^3 in 2014.

The demand for new connections in urban centres is very low and there is more demand in per-urban areas where consumptions are lower taking into account living patterns and household's consumption habits.

Keeping consumption reduction trend, the economic sustainability of ERs may be at risk due to the fact that average consumption will fall into the first and second tier of water tariff and with a consequent reduction of revenue per connection. This situation can also have direct impact on mechanisms in place to calculate cross-subsidies of the tariffs, which is addressed in Chapter 4.

Availability Average Period
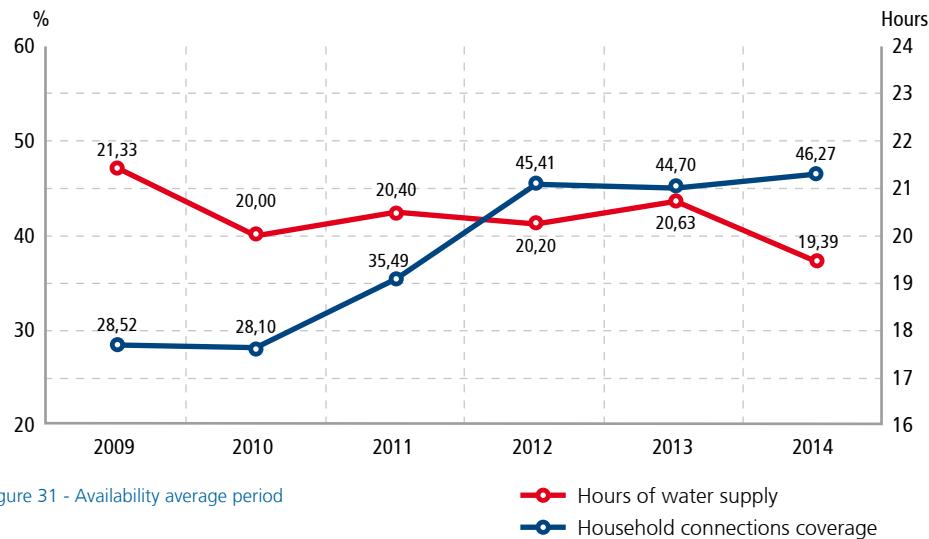
Figure 31 - Availability average period

Legend:
- Hours of water supply
- Household connections coverage

Household Connections Coverage, Central and Northern Regions

Figure 32 - Household connections coverage vs. Availability average period in the Central and Northern Regions

Legend:
- Hours of water supply
- Household connections coverage

Average Water Consumption
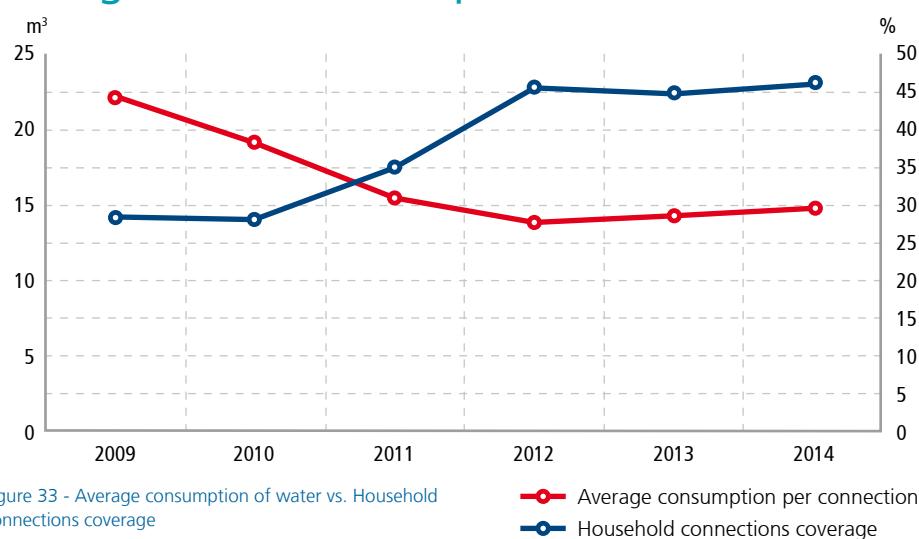
Figure 33 - Average consumption of water vs. Household connections coverage

Legend:
- Average consumption per connection
- Household connections coverage

5.4. ANALYSIS OF WATER LOSSES

With regard to water losses (including technical and commercial losses), technically called as "Non-revenue Water (ANC)", during the period under review, there was a slight decrease of losses at aggregated level of all ERs and it reached 42% in 2014 (see Figure 34).

To understand better, it is important to analyze separately some ERs that present significantly different behaviors.

The Maputo system, the largest water supply system in the country has recorded losses over 45%, in the past six years. In the same period, Nampula system had a regular level of losses of about 30%. Series of actions were implemented at Beira system in order to reduce the high level of losses and the success was confirmed by a very significant reduction from 45% in 2008 to 31% in 2009, however, in 2014, it presented an upward trend.

From 15[7] regulated entities, it should be noted that in 2014, eight of these, (Chókwè, Xai-Xai, Maxixe, Manica, Tete, Lichinga, Cuamba, Pemba), declared water losses less than 30%, although in some cases there should be a reserve of the reported figures on lower losses. Other ERs recorded water losses greater than 30%

Taking into account the target of 35% on water losses set by the QR, the aggregated water losses by ERs are higher than reference value, therefore it is necessary to continue implementing corrective measures to reach the target. Furthermore, apart from non-revenue water of being higher than the target, data have a relative reliability due to the fact that district meters and district metered areas do not exist.

Non-revenue Water

Figure 34 - ANC – Non-revenue water (Total Losses)

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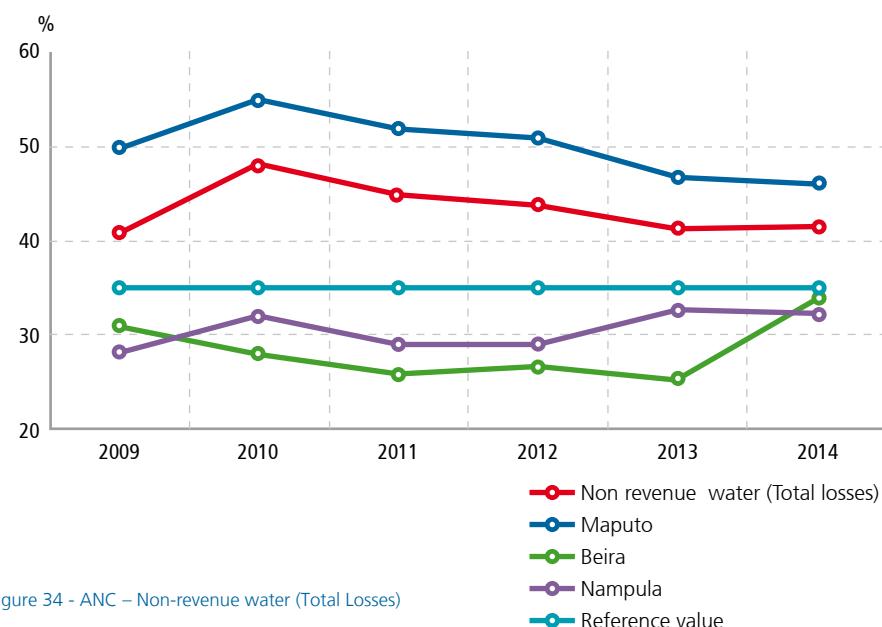
[7] Data for each regulated entity for the year 2014 can be observed in annex 2.

5.5. INVOICING BASED ON METER READINGS

This indicator measures the percentage of invoices issued based on meter readings. In Figure 35 shows that during the period under review, the aggregated meter readings by ERs increased from 88% in 2009, to 96% in 2014; thus, more than 95% are invoices based on meter readings. However, this positive trend, presents heterogeneous behaviour in different ERs. On other hand, these high figures reported have not yet been confirmed by validation technical audit.

The Beira system presents a stable behaviour on meter readings greater than 95%. The Nampula system shows an improvement on this indicator, increasing from 80% in 2009 to 97% in 2014. The Maputo system has increased meter readings by 5% in 2014 in relation to the previous year.

Taking into account on reference value of 85% defined by the QR and ERs´ aggregated average is greater than 95%, which is above the reference value of 85%.

This indicator contributes to a more quality and fair invoicing and thereby reducing consumers´ complaints. The invoicing based on meter readings also contributing to calculate water losses more effectively.

Actual Meter Readings
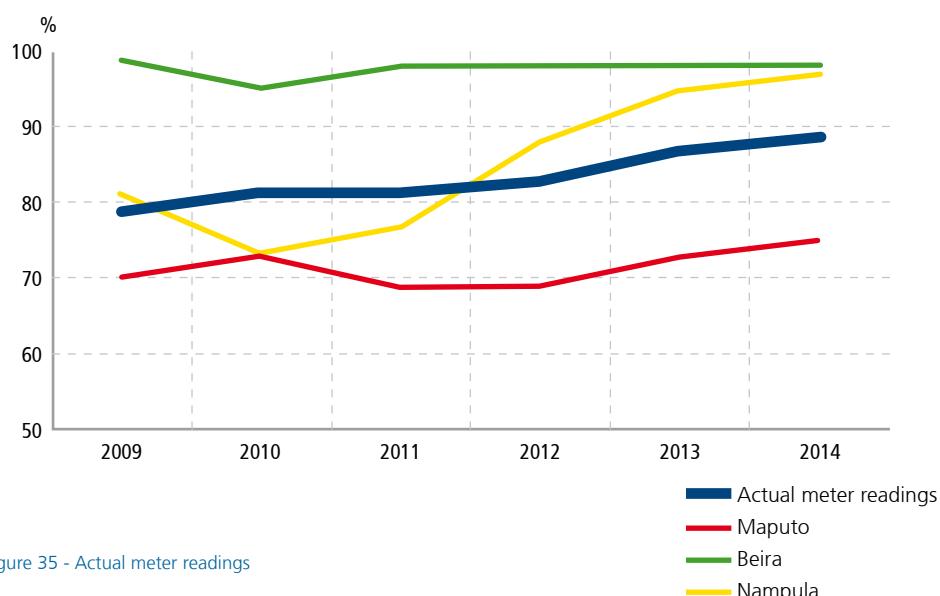
Figure 35 - Actual meter readings

5.6. WATER QUALITY

This indicator evaluates the degree of compliance by ERs in relation to the number of parameters effectively analysed. So, it presents the progress of the percentage of controlled parameters and compliance of samples analysed. It should be pointed out that each ER has defined, in its QR, different minimum requirements on number of parameters to be controlled.

Figure 36 presents aggregated results of all ERs showing that, during the period under review, the percentage of controlled parameters has been gradually increasing from 74% in 2009 to more than 80% in 2014 on required parameters. However, as regard to the compliance of analysed samples, it presents negative trend showing that in 2009, 98% of samples were accordingly while in 2014 they dropped to 75%. This is a significant drop in service quality and taking into account that water quality is closely related to public health. Therefore, it is important that ERs should make their efforts in the next years to reverse this situation.

It should be noted that AdeM lease contract establishes 33 parameters for water quality control and for remaining ERs, the number of parameters set out in QR is smaller, varying from 11 to 24.

Compliance of Parameters
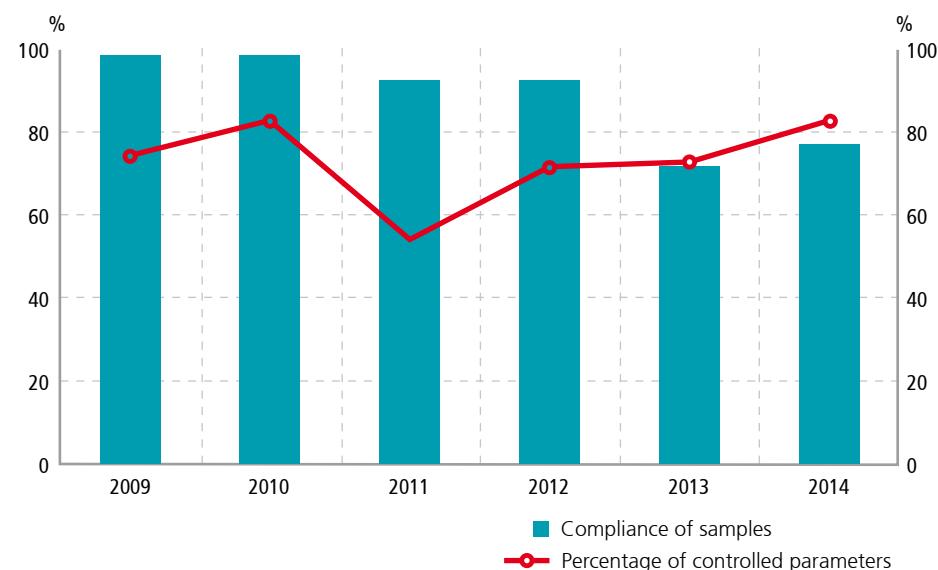
Figure 36 - Compliance of water quality parameters.

Water treatment by aeration process for
iron removal - Tete.

Water treatment process through slow sand filtration
in Inhambane.

Control of Chlorine by ALC in Tete system.

Laboratory for water quality control in Xai-Xai.

Dialogue with consumers near a public standpipe at Ilha de Moçambique.

5.7. QUALITY OF CUSTOMER CARE SERVICE

In relation to service quality based on complaints by consumers (percentage of complaints responded and average time, in days, responses to complaints) one can see how customer care service changed significantly over the past six years (see Figure 37). There is a negative trend shown in the percentage of complaints responded which dropped from 95% in 2009, to 64% in 2014, i.e. 36% of complaints were not responded. As regard to average response time to complaints, data indicate that percentage of complaints responded, in terms of number of days taken to respond (less than five days), shows a slight improvement.

In reality, this indicator needs to be audited in order to certify the quality of information due to discrepancies thereof.

The quality of invoicing (excessive invoicing, tiers of consumption or prices and others) is the main reason for complaints, then followed by service complaints, (lack of water supply, improper cut-off) and the product (quality and others). Invoicing by estimate is an important factor in the quality of invoicing, and it can lead to consumption deviations and cause instability in the family budget. Therefore, it is important to audit the rate of invoices based on meter readings, above 90%

Public care service
in Tete.

Dialogue with a consumer in
Chókwè town.

AdeM Costumer
Care Service.

Complaints and Responses

Complaints responded (%)

Average number of days for responding to complaints
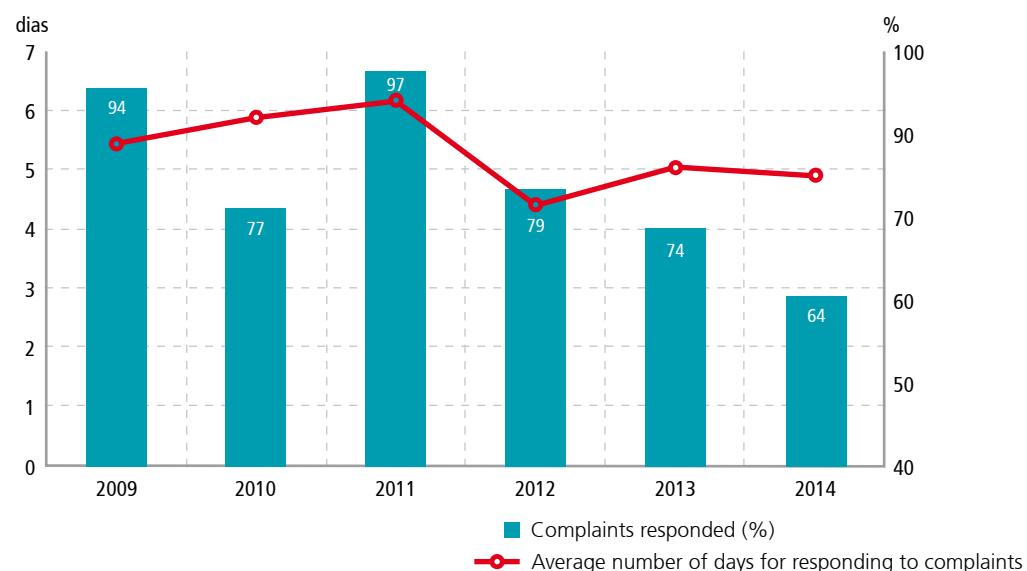
Figure 37 - Complaints responded and average response time.

5.8. OVERALL PERFORMANCE EVALUATION OF REGULATED ENTITIES

Comparative evaluation report of the service quality - 2009 / 2014

The service quality evaluation reports (BAQS) were introduced in 2009, aiming to assess comparatively the performance of ER based on established reference targets as well as to motivate the competitiveness between those who are responsible for operation of the systems, as referred in Chapter 3.

For example, the table below shows the progress of the three systems from 2009 to 2014.

In summary, it can be concluded that despite all difficulties and challenges faced within this period, CRA consider that there is a positive progress in most water supply systems although some of the performance indicators are still at avarage or unsatisfactory levels.

Progress on Service Quality - 2009 / 2014

Indicators	Reference Value	Maputo/ Matola		Beira/ Dondo		Nampula	
		2009	2014	2009	2014	2009	2014
ACCESS TO THE SERVICE							
- Total coverage	V ≥60 %	🟡	🟢	🟢	🟢	🟡	🟡
- Availability average period	V≥16 hr/day	🔴	🟢	🟢	🟢	🟢	🟢
SUSTAINABILITY OF COMPANIES							
- Non revenue water	V ≤ 35 %	🔴	🔴	🟢	🟢	🟢	🟢
- Collection rate	V ≥ 85 %	🟢	🟢	🟡	🔴	🔴	🟢
- nr. employees per 1000 connections	V ≤ 10	🟢	🟢	🟢	🟢	🟢	🟢
- Operating costs coverage ratio	v >1,15	🟡	🟡	🔴	🟢	🔴	🟢
CUSTOMER CARE SERVICE							
- Complaints responded	V = 100 %	🔴	🔴	🔴	🔴	🟢	🔴
- Complaints response time (days)	V ≤ 14 days	🟡	🟢	🟢	🟢	🟢	🟢
- Invoicing based on meter readings (%)	V ≥ 85%	🔴	🟡	🟢	🟢	🔴	🟢
WATER QUALITY							
- Percentage of the controlled parameters	V ≥ 80 %	🔴	🟢	🟡	🟢	🔴	🟢
- Compliance of parameters	V = 100%	🔴	🟢	🟡	🔴	🟡	🟡

Performance signs:
🟢 Good performance
🟡 Average performance
🔴 Unsatisfactory performance

Special attention to customer care service indicator, where the response to complaints remains unsatisfactory with exception of Nampula that suggests that ERs need to change their behaviour in relation to consumers. Water quality Indicator is equally important and with exception of AdeM, compliance of parameters remains at average or unsatisfactory levels.

Performance Index of Regulated Entities (IDER)

The integrated performance evaluation of ERs based on composite indicator developed by CRA and standardized by AdeM and FIPAG and it was first introduced in 2013. The IDER allows to measure the aggregate level of overall performance of the systems, as well as its three main components: financial and economic sustainability, operational sustainability and service quality.

As shown in Chapter 3, IDER evaluates twelve performance indicators. The use of IDER allows to identify in a simple way about the trend of ERs performance.

Taking into account that this is a retrospective report, it was considered to be appropriate to conduct evaluation on retrospective performance of ERs using IDER and its components. Figure 38 shows the progress of aggregate performance of regulated entities in its various components of IDER.

Performance Index of ERs

Figure 38 - Performance index of the regulated entities.

The evaluation confirms that ISEF does not only shows negative trend but also it is performance component of ERs with poorest performance (below 50%). This decrease in performance on economic component is linked to the fall of cost coverage ratio over the last few years.

However, in 2010 there was a decrease in IDER as a result of general decrease on the remaining components due to introduction of new systems in QGD (Nacala, Angoche, Lichinga and Cuamba), that in general terms presented low performance due to infrastructure problems.

We must emphasize that, in the last few years, operational performance of ERs has remain relatively stable and ISO in comparison with others indexes it has featured better performance of above 70%.

As regard to service quality, IQS has experienced a negative trend in the period under review decreasing from 75% in 2009 to 55% in 2014.

Taking into consideration on economic and service quality "negative" pressure, IDER also had an overall negative performance trend over 65% in 2009 to approximately 57% in 2014.

Therefore, the main challenge in the following years, ERs will be required to improve their economic performance, essential for economic and financial sustainability in the long term, on other hand, it is necessary to improve the performance of the service quality.

5.9. CONSUMERS' PERCEPTION ON QUALITY OF THE PROVIDED SERVICES

The CRA´s mandate includes identification of the current and future consumers´ needs. CRA pays close attention to the quality of water supply services as well as the degree of consumers´ satisfaction on provided water services. Therefore, CRA recently launched a survey on consumers' attitudes and satisfaction on provided services by ERs in 2014 and the intention is to continue to do so, on annual basis. The main parameters evaluated were: water quality, number of hours/day of water supply, water pressure, customer care service and general perception on quality of the provided services. The purpose is to understand the perception of the population served by the water supply systems wether their needs are satisfied. In this first pilot experience, they analysed consumers' perception in eight water supply systems, namely: Maputo, Xai-Xai, Inhambane, Beira, Quelimane, Nampula, Tete and Pemba. In total 4347 consumers participated in the survey.

Considering aggregated results of the eight systems evaluated (Figure 39), in general terms, results have shown that drinking water consumers hadgood degree of satisfaction with quality service based on parameters used. However, still there is a significant percentage of consumers who are not satisfied with the quality of water supply services provided that are perceived as not meeting their expectations for a

Average level of consumers' satisfaction
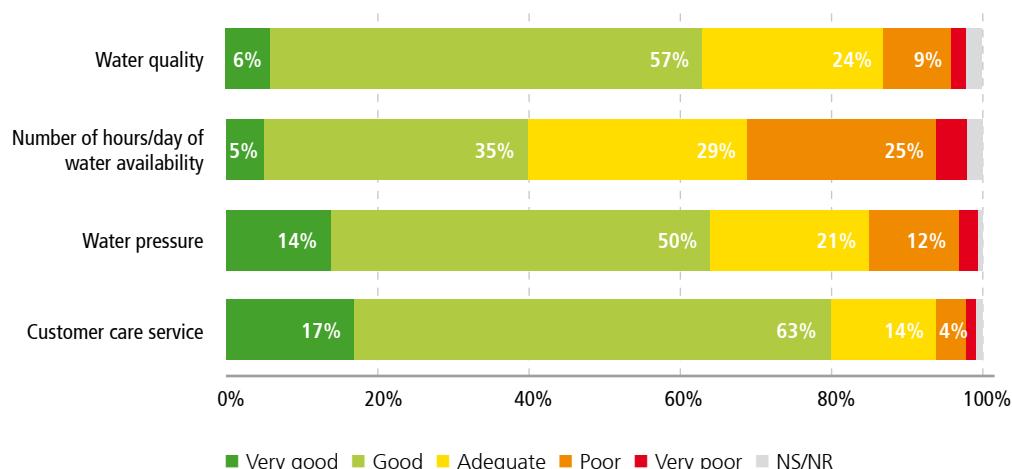
Figure 39 - Level of consumers´ satisfaction.

basic service. Results have shown that consumers are not very satisfied with number of hours for water availability. The existence of low levels of consumers' satisfaction in some areas may be due to low level of knowledge on quality parameters of water supply services in Mozambique. Thus, better sector public information on reality will allow consumers to "adjust" their subjective expectations to more objective performance data on service quality. In contrast, consumers indicated high degree of satisfaction with regard to care service received at the branches of regulated entities

On other hand, it is also important to understand the degree of consumer's satisfaction with overall performance of water supply systems included in the survey. Figure 40 shows that only 6 of the evaluated systems, more than 50% of the surveyed people present good level of satisfaction.

Level of Satisfaction With the Provided Service
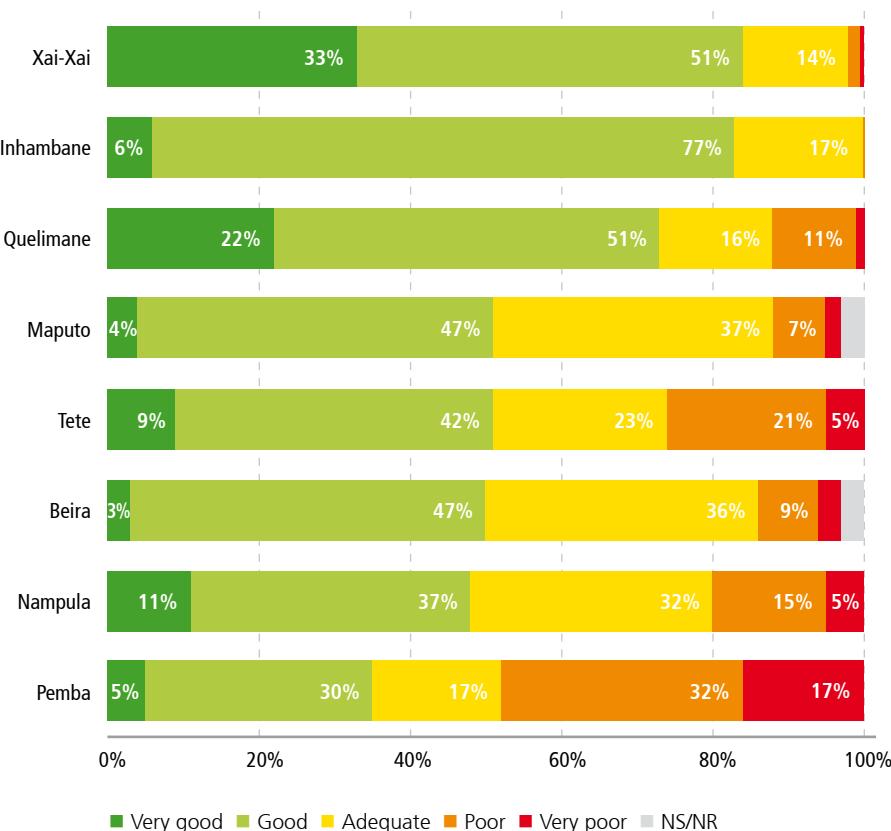
Figure 40 - Level of satisfaction on overall ERs' performance.

An interesting aspect of this type of integrated evaluation on the level of satisfaction can be linked to ERs' performance. Thus, it is possible to appreciate the level of consumer´s satisfaction that is closely linked to the level of the service quality provided by ERs. Figure 41 shows that ERs provide better service quality that at the same time, consumers are also more satisfied with the provided services.

Through consumer satisfaction survey, it was verified that Xai-Xai water supply system had the highest overall consumer satisfaction index. The analysis through IDER has concluded that Xai-Xai is the system with the best overall performance. Figure 41 illustrates the direct relationship between these two variables, consumer satisfaction and the provided service quality.

Satisfaction Index vs. Performance Index
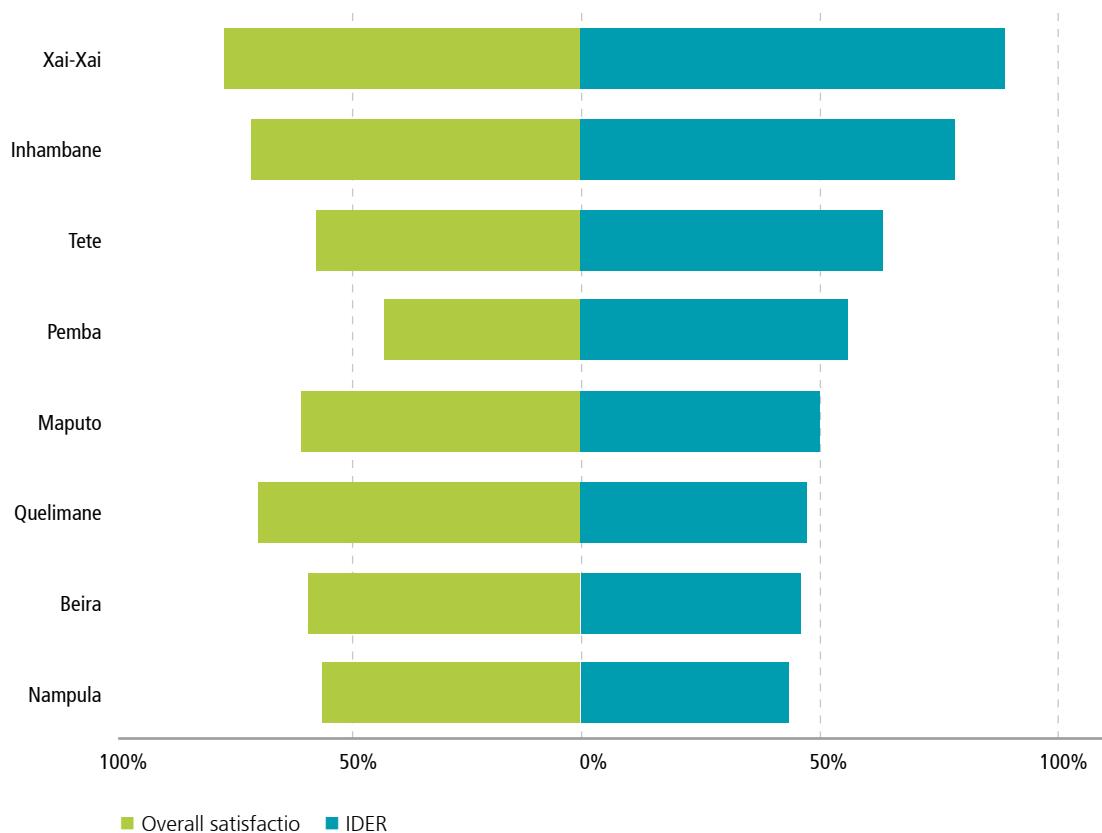
Figure 41 - Consumer satisfaction index vs. ER performance index.

The CRA team

Eng.º Magalhães Miguel
Executive Secretary of the CRA

LONG WALK

Expansion of the Water Regulatory Council's mandate has imposed multiple challenges to the organization as the market was expanding to more customers with different demands that required to be met according to their expectations and right to safe drinking water and sanitation.

It is within a context of restructuring and demand for more and better services that the regulator is pursuing and it is imposed by multiple challenges whose answers are given on the basis of means and resources that can be mobilized. So, the Regulatory role happens progressively and proportionally as resources growth .

Improving values in regulation and competencies on CRA´s staff has been one of the CRA´s on-going commitment. The staff is the most valuable resource where lies the potential to meet these multiple challenges.

I am pleased to say, that despite a difficult environment, CRA has been growing and consolidated its performance under committed leadership, that has been striving to ensure staff engagement and through its action, regulation is regarded as an added value to the sector stability

If one considers the regulation building is minimally built, then decentralisation and deconcentration will always require intelligence and creativity of the CRA´s leadership in these front: to be present in all systems from provincial capitals and municipalities headquarters that will be intervened by Operators without being there; and by doing this without an extra cost to the consumers' invoice; they should adopt means that will provide in real time, reliable information on various water and sanitation systems throughout the Country. In my view, this is the challenge that Regulator as to face, because regulation cannot be done without information or knowledge!
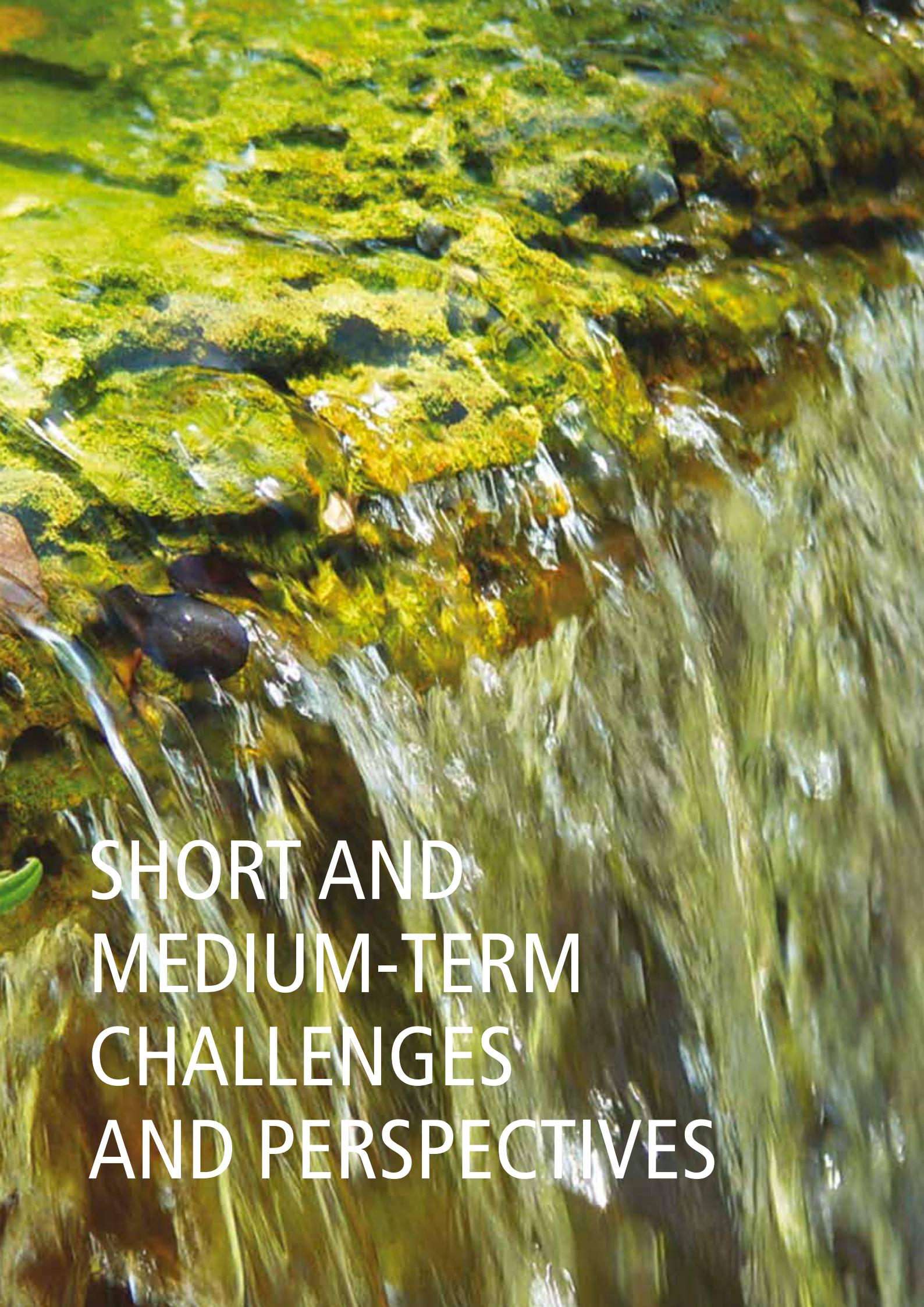
SHORT AND MEDIUM-TERM CHALLENGES AND PERSPECTIVES

6

6.1. INTRODUCTION

The development of the Mozambican water sector, particularly in the water supply and sanitation areas are key factors to guide socio-economic development and poverty alleviation. Significant progress has been made in country during the last decade on drinking water and especially network expansion in order to increase water access. As far as sanitation is concerned, it is worth noting that urban sanitation facilities have not undergone significant development since 90s, despite improvement initiatives in the institutional framework and investment in recent years.

Contrary to urban water supply development, the country will be unable to meet objectives set out in the Millennium Development Goals (MDGs) for the sanitation sub-sector.

The country's inequalities are reflected significantly in water supply and sanitation imbalances and differentiated population segments. We should take into account that, if in one hand the coverage of water supply is almost achieving MDG for 2015, on the other hand, more than half of the urban population have no access to safe drinking water through a household connection (private or shared tap water). As previously mentioned, the sanitation sub-sector will not achieve these objectives. This situation is particularly relevant in per-urban areas of the major cities as well as small towns and district headquarters served by secondary systems. As such, it is evident that one of the main challenges posed by primary and secondary systems is the water supply and sanitation facilities to all layers of the population towards universal access. This goal will require significant economic and financial efforts to change the reality of the country. Therefore, it seems appropriate to remove the main challenges in order to achieve new objectives for water supply and sanitation facilities in post-2015 scenario.

Challenges should be addressed through innovative solutions based on holistic approaches towards universal access to safe drinking water and sanitation facilities in an equitable and sustainable way. The main challenges, from regulator's point of view, that will be discussed later in detail as follows:

- An approach of water supply and sanitation facilities towards universal access to water and sanitation by all layers of population, irrespective of their economic status and level of education.
- Adoption of long term strategies that will allow economically and financially sustainable expansion of the water supply network and sanitation infrastructures.
- Ensure that technical solutions adopted for water supply and sanitation facilities should allow high quality of the provided services to consumers.
- Comply with basic principle of equity in water supply and sanitation so that no family should bear direct and indirect costs more than internationally recommended that may exceed 5% of their household budget for these services.

These challenges are aligned with those set by the international community as far as the development of urban areas in developing countries requiring implementation of a wide range of activities over the next 10 years.

The National Strategy for Urban Water Supply and Sanitation for 2011-2025 period indicate challenges that the country should overcome in order to expand water and sanitation services to all Mozambican people based on the country's reality and international guidelines.

The Water Regulatory Council has drawn a three-year Strategic Plans establishing Strategic Objectives (last three-year plan was for 2012-2014). While maintaining its independence, CRA rather acts within the legal framework of public policy, using programmes, plans and strategies as reference for establishing its Strategic Plan and contributing to the sector's organization and efficiency. Thus, CRA has opted to draft its next five year Strategic Plan (2015 to 2019), structuring its challenges and perspectives in a short and medium-term.

In a short-term, challenges are set in a context of service provision performance or, in other words, the organization and management of the services by Regulated Entities. In the medium-term, challenges are defined for the development of so-called New Sector Agenda, also in the context of the global debate on Sustainable Development Goals.

6.2. PERFORMANCE IN THE CONTEXT OF SERVICE PROVISION

6.2.1. Systems Efficiency vs. Operational and Commercial Efficiency

The reduction of non-revenue water (total water losses) above 40% to reference value of (35%), without any doubt, it is one of the greatest challenges to be met by ERs and it has a direct impact on water availability to the systems, increase of service coverage and cost reduction. CRA believes that ERs should create and/or improve control mechanisms for produced water and water supply network by defining District Metering Areas (ZMC) and installation of district meters.

The quality of invoicing based on actual meter reading and introduction of collection control mechanisms is also a key factor for both commercial and financial efficiency and the quality of service desired by consumers.

Meeting these challenges at the efficiency and effectiveness level of the systems will contribute to improve the management, reduction and control of ERs' cost structure and quality of the provided services.

CRA considers that it is fundamental for ERs to embark on a new cycle aiming at management support solutions, maintenance and operation of the systems, as means of improving their efficiency and ensuring long-term operation.

6.2.2. Range of Balanced Tariffs and Household Connection Subsidy

Setting of water tariffs that support water supply network expansion to all consumers remains a major challenge, particularly to the low-income urban population.

In order to maintain the reduction of new contract connection rates in force since 2010, as an access facilitator to the service of the low-income population and it will be necessary to find mechanisms to subsidise these tariffs since consumptions arising from these new connections have not compensated the effort of cost sharing by ERs. One of the ways to mitigate this effect and make the process sustainable would be to create a Solidarity Fund, which would compensate new connections subsidy by replacing the VAT amount, making drinking water consumption and other related supply services tax exempt. In fact, many countries exempt VAT for drinking water and sanitation services.

Within the framework of tariffs rescheduling for 2015 - 2017 period, it is envisaged to bring closer the value of revenues and real operation costs by mitigating inefficiencies generated by the systems under the ER's responsibility.

Leaking at Matola water supply branch line.

6.2.3. Information Technology for Customer Service

The continuous increase in regulated systems has been creating some constraints in data collection, analysis and processing.

In this context, CRA considers that adoption of information technology which facilitates data collection, development and dissemination will be fundamental to ERs performance evaluation and simultaneously monitoring the quality of the provided services to consumers. With this in mind, the use of internet-based tools with electronic feedback systems, such as an Information Monitoring System and mobile phones is being considered within this framework.

The intention is to create a central database that will guarantee the quality, processing and storage of the information collected.

CRA admits that this is a complex operational challenge because it demands committed involvement of ERs.

6.2.4. Regulation of the Secondary Systems

Regarding secondary systems regulation, CRA places major importance on collaboration between CRA and AIAS in order to disseminate the regulatory regime and its instruments, namely the QR and operational or delegated management contracts to be entered into and AIAS begins to assume the responsibility of the water supply systems and start implementing investments and public tenders for its operation. The consultation and involvement of local partners are essential to ensure the sustainability of these procedures in such a way that solutions found will meet the community's wishes and economic capacity.

Another challenge imposed by CRA and its partners is related to the selection, training and monitoring of the ALC and CORAL so that they may play a competent and professional role at the local level, especially protection of consumers' interests.

6.2.5. Regulation on Sanitation Services

The broadening of regulation across all public urban water supply and waste-water drainage systems requires technical skills of the regulator and also clarification of regulatory approach and the role of the main parties involved.

The regulation on sanitation service constitutes a new front for CRA, but the main challenge lies in the definition of the service level, its classification and the need for an improved coordination of institutions and accountability on service management as well as its prioritization in the investment plan. This is how the extension of sanitation service and consumer price charged through water invoice becomes feasible. It is essential for regulator that managing entities of sanitation services should do such management based on separation of functions, resources and accountability.

6.2.6. Reorganisation of Water Utilities

In compliance with Government guidelines, it is expected that systems under FIPAG management should be subjected to a number of reorganisation measures on their management practices, namely the transformation of regional units into autonomous regional companies, including negotiation of the respective delegated management contracts.

CRA will have the challenge of revising regulatory framework in force to adapt it into future business organisation scenario, as well as appropriate definition and projection of tariffs vs. provided service.

6.2.7. CRA Financial Sustainability

As previously noted, the integration of secondary water supply systems and sanitation systems into regulatory framework implies that the regulator should be simultaneously and duly qualified and possess the human capacity to recruit and retain adequate staff and also it requires continuous capacity building and creation of adequate monitoring mechanisms taking into account service development level and to be provided in a .professional and competent manner.

Systems to be intervened will be restructured both in terms of organisation and management as well as in terms of capital injection for rehabilitation and expansion of infrastructures, assuming that at initial stage these systems will be unable to pay the regulatory rate which may result in restraining the regulatory action. Even though, the regulatory regime takes into account this aspect, it is not always possible to make a payment according to the plan.

This situation is aggravated by the fact that CRA is obliged to channel 40% of its revenue to the State Treasury (in pursuant to Decree 23/2011 of 8th June), the situation that potentially jeopardises the institution's sustainability and financial autonomy. CRA will take initiatives to review the Decree or limit its expansion regulatory action to systems that have no capacity to generate revenue that will allow them to pay costs for their own regulation.

6.3. DEVELOPMENT FOR NEW SECTOR AGENDA

6.3.1. The Universal Water Supply Service in the Main Urban Systems

The Challenge

The main challenge refers to the feasibility of serving around ¾ of the population living in precarious urban areas and most of them with low incomes.

The current criteria and expansion options for service access are becoming inadequate to provide service to low-income groups. On the other hand, it is acknowledged that there is a certain low-income population group that has specific barriers and they need diversified approach.

Developing Options

The objective of the discussion on this topic is to find best technical and managerial tools for water supply systems towards universal access to drinking water which proves sustainable from an economic and environmental point of view, taking into account different socio-economic contexts and dynamics throughout the country.

The first aspect refers to the definition of the target population towards universal access. We must acknowledge that the 100% value should not be mechanically accepted for at least ten-year period. . International trends which have already been verified in the country establish household connection as a preferential vehicle towards universal service.

So, we propose to accept the principle of **"accessible population"** be recognised as being the population that, due to technical, social, economic or other feasibility issues, can be served by means of household connections in a period between 10 to 15 years. We propose to define specific target coverage for 2025/30 for population served by means of household connection.

This way and by exclusion, we are left with **"non-accessible population"** that, due to other socio-economic reasons and barriers, they will hardly have a household connection and get water outside their residence. This group of population should receive special care through definition of specific actions contained in programmes/ projects and based on the following options:

Sale of water in a yard
in a per-urban area in
Maputo.

- Establish part of the population that would have potential to buy water from their neighbour or have access to a shared connection in the per-urban area. In this regard, they should take into account upper bound coverage effect, especially household connections in per-urban areas.
- Redefine the role of the public standpipe/kiosk, considering its value as an emergency or temporary solution.
- Consider that the effect of public standpipes on service coverage increase is marginal and should not be accounted for.
- Consider informal household connections as safe access solutions as long as water quality has been verified and minimum requirements for service quality have been complied. Prices charged should neither exceed the average price of the formal tariff charged in the nearest water supply system nor inferior to the service yet to be assigned in the context of specific legislation.
- Consider the option of investment criteria to reduce discrepancies and give priority to the neglected areas.
- Establish criteria that are economically viable ceilings to the network expansion and population density.

6.3.2. More efficient alternatives for Invoicing and Collection

The Challenge

In the previous item, we have mentioned that, as the service is extended to per-urban areas, certain conventional management methods and services provided seem to be less effective. One of the areas that require redefinition is the invoicing and collection.

The reduction of the high estimated commercial losses (due to wrong meter readings/illegal connections) and improvement in collection systems indicate that there is a need to establish alternative means for an easier and more flexible payment for low-income groups.

Developing Options

Explore new methods of invoicing and collection that will allow to improve the current efficiency of these processes, ensuring that these processes should be more adequate to socio-economic possibilities and needs for consumers and water supply companies. Options to consider would be:

- Introduction and massive promotion of the invoicing and payment methods via mobile phones or prepaid systems;
- Consider the introduction of the periodic invoicing/collection that is different from the current one by conducting feasibility study to increase the frequency of invoicing/collection, for example weekly option;
- Accommodate water tariff to alternative invoicing and collection;
- Outsourcing of invoicing and collection services.

6.3.3. Alternatives to the Current Water Supply Tariff

The Challenge

The current water tariff structure was introduced in 2010 after a survey on willingness/capacity to pay by non-serviced population groups. Although the structure proved to be suitable for sustaining large growth in the household connections, it seems to be having adverse effects in the low-income groups as a result of the VAT. On the other hand, the capacity of the cross-subsidy was drastically reduced.

Example of a small private supplier

Developing Options

Ensure that water tariff should allow physical and financial access to water supply services by all levels of consumers, without creating social inequalities, while simultaneously guaranteeing the sustainability of the water providers. On the other hand, the general tariff applied to trade, industry and public services consumptions should be reviewed in order to alleviate negative signs thereof. Thus, the following options should be considered:

- Implementation of a regular tariff vs. a tiered tariff with due implications on cross-subsidy;
- Review the General Tariff following the same principles adopted in the household tariff;
- Mitigate the effect of the fixed charge on the minimum consumption level through introduction of a differentiated fix tariff by water consumption groups;
- Define a subsidy policy, namely a consumption subsidy vs. a subsidy on connection cost;
- Consider new cross-subsidy options in order to reach more effectively the target groups.

6.3.4. Improvement of Secondary Water Supply Systems Services in the District Headquarters

The Challenge

Despite major effort and some progress in the recent years, the sector has been unable to put into practice the institutional framework for assuring the feasibility of the supply systems to the district headquarters and other towns and villages, the so-called Secondary Systems. The water supply in these secondary systems normally presents low profile due to its precariousness and low availability in investment mobilization, for example, to leverage the service coverage.

Developing Options

The purpose of this discussion is to identify integrated solutions towards universal water supply to ensure economic sustainability and adapting the service to conditions and dynamics of the secondary systems. Some options to consider:

- Prioritize the investment when seeking institutional models for the operation of the systems that facilitate local operators, technical and financial support systems and defining the role of the central, provincial and local governments.
- Consider at the district headquarters with operational systems that coverage targets be defined taking into account operational level of the systems.
- Create a model contract by standardizing management tools, such as service quality and respective tariff in order to boost efficiency during formalization and recruitment procedure of the private operators.

Scattered locations with difficulty in accessing water.

Difficulty in controlling meters.

6.3.5. The Development of a Public Urban Sanitation Service

The Challenge

Urban sanitation presents a low profile of service provision and low progress rhythm that at country level will not achieve MDG in sanitation sub-sector, as previously referred. This fact has a direct negative impact on production capacity and life quality of citizens, contributing to the high poverty index.

Although Water Policy and National Water and Urban Sanitation Strategy provide important guidelines however the conception and organization of municipal services are precarious and they are frequently limited to rainwater drainage issues in urban areas due to a weak institutional and legal framework.

Developing Options

The regulation of sanitation forced CRA to clearly positions its function within conceptual framework by formulating a document entitled "The Vision of CRA on

Collection of sludge in vans.

Emptying of latrine pits and septic tanks with the aid of a "Gulper".

Beira WWTP-Waste Water Treatment Plant.

Sanitation", which can be found in Annex 3 and it is based on aforementioned Government's political and strategic instruments. This vision was tentatively formulated for the period of 2025 as illustrated below.

dos instrumentos de política e estratégia do Governo, já mencionados. Esta visão é tentativamente formulada para o horizonte de 2025, como se ilustra a seguir.

Thus, in order to meet the challenge, it seems to be important to find integrated solutions which will ensure universal access to safe sanitation and hygienic conditions in an equitable, undiscriminating manner, by adapting the service to conditions and dynamics of urban development. An underlying principle is that the public sanitation service should encompass all sanitation solutions according to urbanization level and settlement of population, including alternative faecal sludge management options. Relevant options are as follows:

- Design Public Sanitation Service as a professional service based on corporate principles supported by a tariff structure subject to regulation;
- Consider the chain of sanitation service as a whole including the faecal sludge management in an integrated approach and should not only focuses on the contention of household sludge;
- Define the role of the private sector and local entrepreneurs and responsibility of the public sector in its facilitation;
- Improve technologies to be used in faecal sludge management services.

Beira WWTP-Waste Water Treatment Plant

Dumping at Maputo WWTP.

The 2025 CRA's Vision on Sanitation

Based on continuous investments policy in management and infrastructures, sanitation services in Mozambique have reached the large majority of urban population, particularly low-income population and it has created a high potential towards Universal Service:

- Open defecation was eliminated in major cities of the country and a faecal sludge management system was implemented in all urban centres;

- Urban Sanitation Services are conducted in a professional manner based on corporate principles and they are subject to a specific regulatory regime and with the recognised quality and public scrutiny;

- The sanitation tariff covers operational costs and maintenance of sanitation service chain up to its treatment. Costs of water treatment and sewage sludge and its disposal and environmental protection and equipment replacement as well as all infrastructure investment costs will continue to be secured by public subsidies.

- The management of the most sanitation services has reached a level of organization and sustainability that enables its integration with water supply management systems and/or in delegated management regimes.

annexes

CRA WATER AND SANITATION REGULATORY COUNCIL 2015

DEFINITION OF INDICATORS

1. Service Coverage

It is an indicator that aims to evaluate the access to water service by the population living in the assignment area. In terms of percentages, this indicator is obtained through total ratio of the population living in the served area through household connections or pubic standpipes divided by the total population living in the area intervened by the system. According to the average household in Mozambique, it is estimated that household connection supplies around 5.3 people and a public standpipe supplies around 500 people. The reference value established by this indicator is at least 60%.

2. Availability Average Period

This indicator evaluates water availability to consumers and is measured as being the availability average period of all Distribution Districts (CDs) of the system. The analysis of this indicator is based on water availability average period and should be associated to the pressure since consumers living outskirts the network usually receive less hours when compared to those living close to the CDs. The reference value established by this indicator is at least 16hours/day.

3. Average Response Time to Complaints

This indicator aims to assess the promptness on how customers' complaints and/or requests are dealt with by ERs. It is defined as the average response time to complaints submitted by customers in a determined period. The reference value for this indicator is at least 10 days.

4. Responded Complaints

This indicator aims to assess the level of care provided to consumers by the Company on responses to complaints submitted. The indicator is obtained in percentages terms through the ratio between the number of complaints responded divided by the total number of complaints received by the Company in a determined period of time. The reference value established by this indicator is at least 100%.

5. Invoicing based on Meter Reading

It evaluates performance of the Companies in terms of the issuing of invoices based on water volumes recorded in the consumers' meters. It is expressed in percentages and it is the ratio between the number of the invoiced connections based on meter reading divided by the total number of the recorded connections in the system. The reference value for this indicator is at least 85%.

6. Percentage of the Controlled Parameters

This indicator aims to evaluate the level of compliance by the companies on number of parameters of the actual water quality controlled, compared to the required number. The number of parameters to be controlled is set in the Regulatory Framework of each utility, with exception of Maputo/ Matola, where it is established in the Membership Contract. The reference value for this indicator is at least 80%.

7. Compliance of the Analysed Parameters

This indicator evaluates the result from analytical control of water quality provided by the water supply systems. It is defined in percentages through the ratio between the total number of analysis carried out to the treated water whose results are in compliance with Mozambican water quality standards for human consumption divided by the total number of the analysed samples. The reference value for this indicator is at least 100%.

8. Number of Employees per 1000/connections

his indicator aims to evaluate the labour efficiency and it corresponds to the proportion between the number of the full time employees of the Company and the total number of the operational connections multiplied by 1000. The reference value established by this indicator is at least 10 employees.

9. Non revenue water (total losses)

The indicator aims to evaluate the operational efficiency of the system as regards to technical and commercial losses, in other words, the percentage of water registered into the system and is not invoiced. The Smaller the indicator value, the better is the company performance. The reference value established by this indicator is around 35%.

10. Collection Rate

This indicator aims to evaluate the company's commercial efficiency as regards to its capacity to collect revenue from water sale. This indicator is defined in percentages where the ratio between total revenue collected from water sale is divided by total revenue invoiced in a certain period. The reference value established for collection rate indicator is at least 85%.

11. The Operational Costs Coverage Ratio

It is defined as ratio between operational revenue and adjusted operational costs of the company to cover its operational costs. This is obtained by percentage ratio between the invoiced amount and the amount of the operational costs in the period under review. The reference value established for this indicator is at least 1.15.

1. PERFORMANCE EVALUATION OF THE PRIMARY SYSTEMS - 2014

In chapter 5, it was developed an aggregated analysis on the progress of the service quality for the period 2009 to 2014 in the primary water supply systems of the major cities under FIPAG (Fund for Investments and Ownership of Water Supply Assets) management and AdeM (Maputo Water Utility).

This annex on 2014 performance evaluation report is based on the region and by BAQS (Service Quality Evaluation Bulletins) and IDER (Regulated Entities Performance Index) for each of the primary systems.

1.1. GREAT MAPUTO AREA

The Great Maputo Area encompasses the city of Maputo, Matola and Boane and it has been supplied by Water Supply System since 1999 under private management of Sociedade de Águas da Região de Maputo, S.A. through Concession Agreement signed with FIPAG for the period of 15 years.

The Concession Agreement ended on 30/11/2014 and was revised by FIPAG and AdeM under supervision of CRA and they agreed to extend the contract for an additional 5 years and it was approved by CRA under resolution nr. 06/2014, of November 25.

AdeM presented an overall performance of 60% in 2014 which was four points above its performance in 2013. This is a reflection of positive assessment on indicators, total coverage was 66% 2014, against 63% in 2013, percentage of invoice based on metre readings in 2014 was 76% against 73% in 2013 and compliance of the controlled parameters was 100% against 97% in 2013.

There was a slight improvement on Nonrevenue water of 46% in 2014 against 47% in 2013 and the operating costs coverage ratio dropped from 1.17 to 1.13 in 2014.

The following 2014 AdeM performance analysis was based on reference values or performance targets set in the Concession Agreement. Results are presented based on Service Quality Evaluation Bulletins (BAQS) and Regulated Entities Performance Index (IDER).

Summary of the Main Performance Indicators

Description	Maputo - Matota	
	2013	2014
Total population in the system area	2 079 852	2 130 123
Total coverage (%)	63%	66%
Availability average period (hr/day)	17	16
Non-revenue water (%)	47%	46%
Operating costs coverage ratio	1,17	1,13
Invoicing based on meter readings (%)	73%	76%
Compliance of the controlled parameters (%)	97%	100%

Table A - Summary of the Main Performance Indicators.

Great Maputo Water Utility

Water Supply System Profile – The system supplies Municipalities of Maputo, Matola, Boane and localities of Matola Rio and Belo Horizonte. To this end, it has (i) the Umbeluzi primary system comprised of superficial water collection and a treatment plant, and (ii) other small autonomous sub-systems, such as Catembe and Zona-Verde with underground water collection.

In the Umbeluzi system, after water been treated it is then transported to the distribution centres through a pipeline of about 80Km. The distribution network is about 1500Km long and it supplies a total of approximately 240 thousand connections.

Service Access – In 2014 the area covered by the system had more than two million inhabitants supplied by 228 thousand household connections and 383 public standpipes with a total coverage of 66%, corresponding to a good performance and positive trend when compared to 2013.

The availability average period was 16 hours and is equally qualified for a good performance; nevertheless, there is a negative trend in relation to 2013. It should be noted that the area supplied by the System, there are still critical zones (1) where the daily availability period is less than 4 hours. In some zones, private operators constitute an alternative supply source.

Operational Sustainability – The ER shows an unsatisfactory performance as far as non revenue water (total losses) is concerned, with 46%, despite showing a positive trend considering that the reference value. The collection rate was 94% and it increased in relation to 2013 and qualifying for a good performance.

The ratio number of employees per 1000 connections was 3 employees due to an increase in connections in 2013 and 2014, which qualifies for a good performance. The operating costs coverage ratio decreased from 1.17 in 2013 to 1.13 in 2014 which qualifies for an average performance with a negative trend. (See Table 1)

Customer Care Service – The ER registered an unsatisfactory performance in 2014 on complaints responses and in spite of positive trend, only 34% complaints were attended to. The average response time was 13 days showing an improvement that nullified by effect on number of complaints answered. Still on the same note on customer care service, the ER revealed a positive trend in the invoicing indicator based on meter readings that went from 73% in 2013 to 76% in 2014. However, the average performance still maintains.

Water Quality – The ER presented a good performance in this indicator once it controlled 100% of the 33 parameters as required by contractual obligation and it equally obtained 100% compliance.

Overall Performance Evaluation of the Maputo and Matola system through **Regulated Entities Performance Index (IDER)** – There was an improvement in overall **performance** for 2014 (see graph 1) with an increase of the indicator from 56% in 2013 to 60% in 2014 resulting an improvement in the **service quality** indicator which went from 67% to 75% while maintaining the **operational sustainability indicator** at 19% and the **financial and economic sustainability indicator** dropped from 91% in 2013 to 86% in 2014.

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[1] Matola A, Juba-sede, Jonas, Aldeia de Incala, Vila municipal de Bane, Minkadjuine, Maekuene e Mafalala, Katembe (Guaxene e Chali), Luis Cabral, Inhagoia, 25 de Junho – B, 1 Bagamoyo, Mahotas, Liberdade, George Dimitrov, All A.O. neighborhoods. Laulane, Bunhiça, Zona Verde, Ndlavela, Mussumbuluko, Tsalala, Sikwama, Mahlampsene, Tchumene 1 and 2, Mulotane and Matola Gare.

Performance Indicators	Reference Value	2013	2014	Evaluation	Trend 2013-2014
Service Access					
Total population in the system area		2 079 852	**2 130 123**		
Coverage by household connections (%)		54%	**55%**		
Coverage by standpipes (%)		9%	**9%**		
Total coverage (%)	V ≥ 60 %	63%	**66%**	🟢	⬆
Availability average period (hr/day)	V ≥16 hr/day	17	**16**	🟢	⬇
Sustainability					
Produced/treated volume (10³ m³)		73 523	**75 967**		
Invoiced volume (10³ m³)		39 110	**41 158**		
Non-revenue water (%)	V ≤ 35 %	47%	**46%**	🔴	⬆
Invoiced amount (10³ MZN) incl. VAT		1 146 250	**1 223 522**		
Total collection rate (%)	V ≥ 85 %	90%	**94%**	🟢	⬆
Number of employees per 1000/connections	V ≤ 10	3	**3**	🟢	➡
Operational costs (10³ MZN)		981 387	**1 084 428**		
Operating costs coverage ratio	V > 1,15	1,17	**1,13**	🟡	⬇
Customer Care					
Response to complaints (%)	V ≥ 100 %	12%	**34%**	🔴	⬆
Average complaint response time (days)	V ≤ 14 days	14	**13**	🟢	⬆
Invoicing based on meter readings (%)	V ≥ 85 %	73%	**76%**	🟡	⬆
Quality of the Treated Drinking Water					
Nr. of controlled parameters	33	33	**33**		
Percentage of controlled parameters (%)	V ≥ 80 %	100%	**100%**	🟢	➡
Compliances of the controlled parameters (%)	V = 100 %	97%	**100%**	🟢	⬆

Table 1 – BAQS - MAPUTO and MATOLA System

Legend:
🟢 Good performance
🟡 Average performance
🔴 Unsatisfactory performance

	2013	2014
IDER	56%	60%
ISEF	91%	86%
ISO	16%	19%
IQS	67%	75%
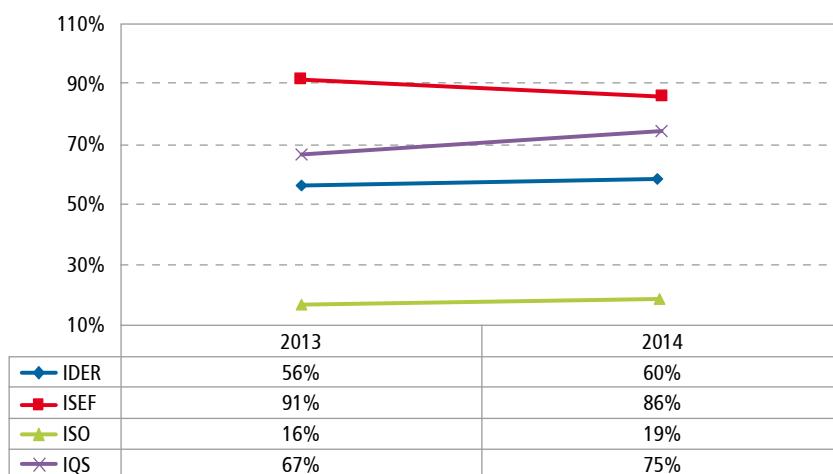
Graph 1 – IDER - MAPUTO and MATOLA System

Recommendations to the ER

✓ Efforts should be made to reduce water losses in order to guarantee an increase of water availability period and quantity to satisfy the increasing demand;

✓ They should reverse the growing operational costs;

✓ They should establish mechanisms to improve customer care service.

XAI-XAI Reservoir.

1.2. SOUTHERN REGION

The Southern Region is comprised of four Regulated Entities that corresponds to the same number of water supply systems under FIPAG public management, namely Xai-Xai, Chókwè, Inhambane and Maxixe.

In 2012, Regulatory Frameworks similar to concession agreement were signed with FIPAG within regulation framework for public service provision.

In general, ERs in the Southern Region have reported good performance in relation to the service provided reflected in the key indicators, namely the availability average period was maintained in four ERs for twenty-four hours per day, the quality of the treated drinking water in all ERs had compliance of the controlled parameters in terms of water quality standards for human consumption in 100%, except for Inhambane, where it had only 99%. All consumer consumptions were invoiced according to meter readings. Table B shows the evaluation data.

The following is the performance analysis by system based on reference values or performance targets established in the Regulatory Frameworks that can be found below. Results of analysis are based on the Service Quality Evaluation Bulletins (BAQS) and the Regulated Entities Performance Index (IDER).

Summary of the Main Performance Indicators

Description	Xai-Xai		ChóKwè		Inhambane		Maxixe	
	2013	2014	2013	2014	2013	2014	2013	2014
Total population in the system area	138 808	140 752	97 886	99 257	69 472	70 334	94 033	117 485
Total coverage (%)	100%	100%	100%	100%	100%	100%	100%	87%
Availability average period (hr/day)	24	24	24	24	24	24	24	24
Non-revenue water (%)	14%	23%	17%	19%	31%	34%	30%	30%
Operating costs coverage ratio	0,98	1,26	0,68	1,05	0,82	1,01	0,94	0,90
Invoicing based on meter readings (%)	100%	100%	99%	100%	100%	100%	99%	100%
Compliance of the controlled parameters (%)	100%	100%	91%	100%	100%	99%	100%	100%

Table B – Summary of the Primary Performance Indicators in the Southern Region

Xai-Xai System

Water Supply System Profile – The system is comprised of a primary system which supplies water to Xai-Xai City (through nine interconnected sub-systems) and three small isolated systems that supply water to localities of Julius Nyerere, Chicumbane and Chongoene. It uses underground water collection system and distribution is done through a network of 532 Km long which supply a total of 24 thousand connections approximately.

Service Access – In 2014 the area covered by the system had more than 140 thousand inhabitants served by 23 thousand household connections approximately and 52 public standpipes with a total coverage of 100% and it was qualified for a good performance for this indicator. The ER registered an availability average period of 24 hours per day, maintaining it on results obtained in 2013 and it was also qualified for a good performance. (See Table 2)

Operational Sustainability – The system has recorded 23% of non-revenue water (total losses) which reflects a negative trend in relation to 14% recorded in the previous year, nonetheless, it is qualified for a good performance and below the reference value of 35%. The ER total collection rate was 93%, 3 points below from results obtained in 2013, nonetheless a good performance when compared to the reference value of 85%. The number of employees per 1000 connections was maintained in 2014 with 5 employees and it was qualified for a good performance. The operational costs coverage ratio has recorded a significant increase from 0.98 in 2013 to 1.26 in 2014 and when compared to the reference value of 1.15 it was also qualified for a good performance.

Customer Care Service – As far as complaints responded. The ER has recorded a good performance by responding 100% of the complaints in an average response time of 3 days. In relation to the invoicing based on meter readings, the ER had a good performance and it maintained 100% as recorded in 2013.

Water Quality – The ER presented a good performance for having controlled the required 24 parameters as contractual obligation. All parameters were in compliance with water quality standards for human consumption.

Overall Performance Evaluation of the Xai-Xai system through the **Regulated Entities Performance Index (IDER)** – reveals that the system achieved the level of excellence on **overall performance** (see graph 2) went from 94% in 2013 to 100% in 2014. The overall performance growth is a result of a good performance of all individual indicators such as **financial and economic sustainability, service quality** and **operational sustainability.**

Performance Indicators	Reference Value	2013	2014	Evaluation	Trend 2013-2014
Service Access					
Total population in the system area		138 808	140 752		
Coverage by household connections (%)		81%	88%		
Coverage by standpipes (%)		24%	18%		
Total coverage (%)	V ≥ 60 %	100%	100%	🟢	➡️
Availability average period (hr/day)	V ≥16 hr/day	24	24	🟢	➡️
Sustainability					
Produced/treated volume (10^3 m³)		3 867	4 624		
Invoiced volume (10^3 m³)		3 320	3 578		
Non-revenue water (%)	V ≤ 35 %	14%	23%	🟢	⬇️
Invoiced amount (10^3 MZN) incl. VAT		68 087	77 179		
Total collection rate (%)	V ≥ 85 %	96%	93%	🟢	⬇️
Number of employees per 1000/connections	V ≤ 10	5	5	🟢	➡️
Operational costs (10^3 MZN)		69 411	61 098		
Operating costs coverage ratio	V > 1,15	0,98	1,26	🟢	⬆️
Customer Care					
Response to complaints (%)	V ≥ 100 %	100%	100%	🟢	➡️
Average complaint response time (days)	V ≤ 14 days	3	3	🟢	➡️
Invoicing based on meter readings (%)	V ≥ 85 %	100%	100%	🟢	➡️
Quality of the Treated Drinking Water					
Nr. of controlled parameters	24	24	24		
Percentage of controlled parameters (%)	V ≥ 80 %	100%	100%	🟢	➡️
Compliances of the controlled parameters (%)	V = 100 %	100%	100%	🟢	➡️

Table 2 – BAQS –XAI-XAI System

Legend:
- 🟢 Good performance
- 🟡 Average performance
- 🔴 Unsatisfactory performance

	2013	2014
◆ IDER	94%	100%
■ ISEF	69%	100%
▲ ISO	100%	100%
✳ IQS	99%	99%
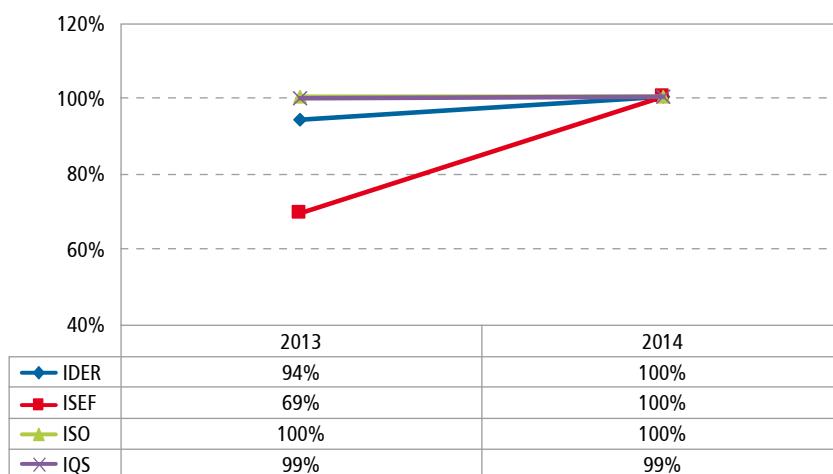
Graph 2 – IDER - XAI-XAI System

Recommendations to the ER

✓ Efforts should be made to reduce losses (non-revenue water) in order to reverse the negative trend.

✓ The collection rate shows a slight decrease and appropriate measures should be taken into account.

Chókwè System

Water Supply System Profile – The system is comprised of a primary system which supplies water to Chókwè City and eight isolated subsystems supplying to localities of Lionde, Massavasse, Conhane, Nwachicoloane, Mapapa, Hókwe, Xilembene and Guijá. These subsystems use underground water collection, except Xilembene and Hókwe that use surface water collection through a distribution network of 350 Km long.

Service Access – In 2014 the area covered by the system had more than 100 thousand inhabitants served by 17 thousand household connections and 43 public standpipes with a total coverage of 100%, qualifying for a good performance. In relation to the availability average period, the ER also recorded a good performance because it was able to maintain 24 hours per day as in 2013. (See table 3)

Operational Sustainability – The system recoded 19% in non-revenue water (total losses) which it qualifies for a good performance however, a negative trend compared with last year. As far as total collection rate, the ER maintained the level of 95% recorded in 2013, which qualifies for a good performance. And it also maintained 6 employees per 1000 connections in 2014. In relation to operational costs coverage ratio, the ER had a significant increase and the indicator was positioned at 1.05 against 0.68 of 2013 so, it was qualified for an average performance, since the reference value is 1.15, however with positive trend.

Customer Care Service – The ER recorded for an unsatisfactory performance, only 29% of complaints were attended to, which revealed a negative trend compared to 77% in 2013. In relation to response average time, the ER was able to maintain 5 days as it was recorded in 2013, so, it reflected a good

performance. Still on customer care service, the ER reached 100% of invoicing based on meter readings which represent a good performance.

Water Quality – In 2014 the ER presented a good performance for having controlled the required 24 parameters as contractual obligation. All parameters were in compliance with water quality standards for human consumption.

Overall Performance Evaluation of Chókwè system through the **Regulated Entities Performance Index (IDER)** – An improvement was recorded in **overall performance** for 2014 that was 93% against 75% of the previous year (see graph 3). The overall performance growth is a result of a good performance of all individual indicators, namely **financial and economic sustainability** that was increased from 54% to 77%, Service Quality from 68% to 94% and **Operational Sustainability** was maintained in 100%.

Performance Indicators	Reference Value	2013	2014	Evaluation	Trend 2013-2014
Service Access					
Total population in the system area		97 886	**99 257**		
Coverage by household connections (%)		82%	**88%**		
Coverage by standpipes (%)		24%	**22%**		
Total coverage (%)	**V ≥ 60 %**	100%	**100%**	🟢	➡
Availability average period (hr/day)	**V ≥16 hr/day**	24	**24**	🟢	➡
Sustainability					
Produced/treated volume (10^3 m^3)		2 370	**2 644**		
Invoiced volume (10^3 m^3)		2 031	**2 130**		
Non-revenue water (%)	**V ≤ 35 %**	17%	**19%**	🟢	⬇
Invoiced amount (10^3 MZN) incl. VAT		42 049	**48 854**		
Total collection rate (%)	**V ≥ 85 %**	95%	**95%**	🟢	⬇
Number of employees per 1000/connections	**V ≤ 10**	6	**6**	🟢	➡
Operational costs (10^3 MZN)		62 181	**46 622**		
Operating costs coverage ratio	**V > 1,15**	0,68	**1,05**	🟡	⬆
Customer Care					
Response to complaints (%)	**V ≥ 100 %**	77%	**29%**	🔴	⬇
Average complaint response time (days)	**V ≤ 14 days**	5	**5**	🟢	➡
Invoicing based on meter readings (%)	**V ≥ 85 %**	99%	**100%**	🟢	⬆
Quality of the Treated Drinking Water					
Nr. of controlled parameters	**24**	24	**24**		
Percentage of controlled parameters (%)	**V ≥ 80 %**	92%	**100%**	🟢	⬆
Compliances of the controlled parameters (%)	**V = 100 %**	91%	**100%**	🟢	⬆

Table 3 –BAQS – CHÓKWÈ System

Legend:
- 🟢 Good performance
- 🟡 Average performance
- 🔴 Unsatisfactory performance

	2013	**2014**
IDER	75%	93%
ISEF	54%	77%
ISO	100%	100%
IQS	68%	94%
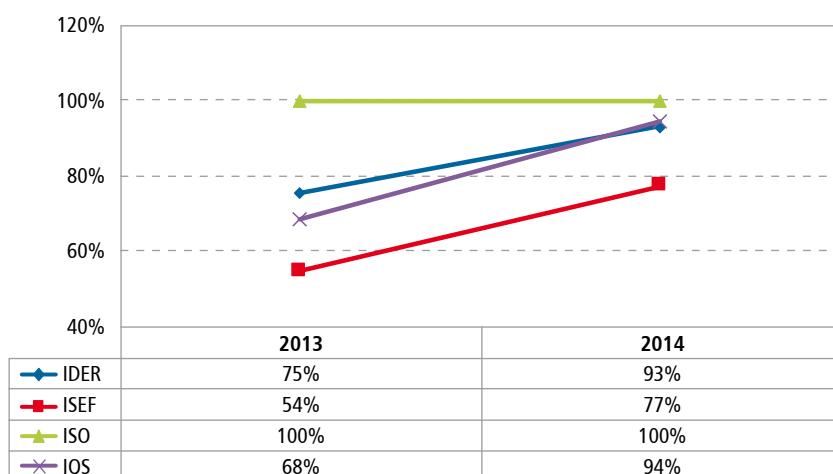
Graph 3 – IDER - CHÓKWÈ System

Recommendations to the ER

✓ Efforts should be made aiming to reduce the increase of water losses (non-revenue water);

✓ Improve operational costs coverage ratio;

✓ Create mechanisms to respond to all consumers' complaints.

Inhambane System

Water Supply System profile – The system is comprised of a primary system which supplies water to Inhambane City and one isolated underground subsystem which supplies water to Praia de Tofo. In the primary system, the water intake is from Guiúa River and followed by water treatment through slow filters at the same place and reinforced with three boreholes. The distribution network is about 270Km long.

Service Access – In 2014 the area covered by the system had more than 70 thousand inhabitants served by around 13 thousand household connections and 23 public standpipes with 100% of total coverage, qualifying for a good performance. In relation to an availability average period, the system maintained the 24 hours per day recorded in 2013, also qualifying for a good performance. (See Table 4)

Operational Sustainability – In 2014, the system registered 34% in non-revenue water (total losses) which qualifies for a good performance although with a negative trend in relation to 31% registered in the previous year As far as collection rate it maintained in 98% achieved in 2013, which qualifies for a good performance although with a slight negative trend. In relation to the number of employees per 1000 connections as it was in 2013, the ER maintained 7 employees per thousand connections which represent a good performance. In relation to operational costs coverage ratio it registered very significant increase from 0.82 in 2013 to 1.01 in 2014 which qualified for an average performance, when compared to the reference value of 1.15 with a positive trend.

Customer Care Service – As far as complaints responded, the ER had a good performance for having responded to all complaints, maintaining an average response time of 2 days which represented a good performance. In relation to invoicing based on metering readings, the ER had also a good performance maintaining the 100% registered in 2013.

Water Quality – The ER presented a good performance once it controlled the required 24 parameters as per contractual obligation and 99% of the controlled parameters were in compliance with water quality standards for human consumption which qualifies for a good performance.

Overall Performance Evaluation of the Inhambane system through **Regulated Entities Performance Index (IDER)** – The **overall performance** for 2014 reflects a slight decrease with an indicator at 83% (see graph 4). The service quality indicator dropped slightly from 99% in 2013 to 96% in 2014. The indicator for **operational sustainabilit**y dropped from 77% in 2013 to 65% in 2014 and the indicator for **financial and economic sustainability** increased from 54% in 2013 to 73% in 2014.

Performance Indicators	Reference Value	2013	2014	Evaluation	Trend 2013-2014
Service Access					
Total population in the system area		69 472	**70 334**		
Coverage by household connections (%)		90%	**98%**		
Coverage by standpipes (%)		26%	**16%**		
Total coverage (%)	**V ≥ 60 %**	100%	**100%**	🟢	➡️
Availability average period (hr/day)	**V ≥16 hr/day**	24	**24**	🟢	➡️
Sustainability					
Produced/treated volume (10^3 m³)		2 982	**3 450**		
Invoiced volume (10^3 m³)		2 021	**2 274**		
Non-revenue water (%)	**V ≤ 35 %**	31%	**34%**	🟢	⬇️
Invoiced amount (10^3 MZN) incl. VAT		47 733	**54 358**		
Total collection rate (%)	**V ≥ 85 %**	98%	**98%**	🟢	⬇️
Number of employees per 1000/connections	**V ≤ 10**	7	**7**	🟢	➡️
Operational costs (10^3 MZN)		58 559	**53 703**		
Operating costs coverage ratio	**V > 1,15**	0,82	**1,01**	🟡	⬆️
Customer Care					
Response to complaints (%)	**V ≥ 100 %**	100%	**100%**	🟢	➡️
Average complaint response time (days)	**V ≤ 14 days**	2	**2**	🟢	➡️
Invoicing based on meter readings (%)	**V ≥ 85 %**	100%	**100%**	🟢	➡️
Quality of the Treated Drinking Water					
Nr. of controlled parameters	**24**	24	**24**		
Percentage of controlled parameters (%)	**V ≥ 80 %**	100%	**100%**	🟢	➡️
Compliances of the controlled parameters (%)	**V = 100 %**	100%	**99%**	🟡	⬇️

Table 4 – BAQS – INHAMBANE System

Legend:
🟢 Good performance
🟡 Average performance
🔴 Unsatisfactory performance

	2013	2014
IDER	84%	83%
ISEF	54%	73%
ISO	77%	65%
IQS	99%	96%
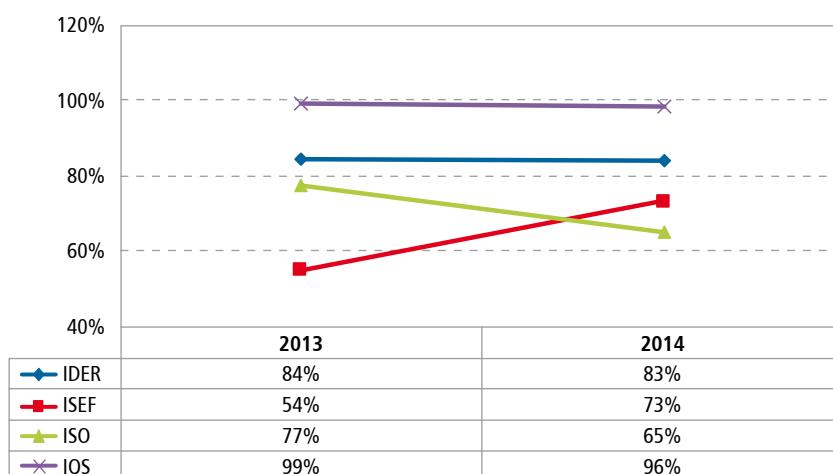
Graph 4 – IDER - INHAMBANE System

Recommendations to the ER

✓ Should control the level of losses (non-revenue water) that is increasing;

✓ Improve the operational costs coverage ratio;

✓ Improve the indicator on compliance of the controlled parameters up to 100%.

Maxixe System

Water Supply System Profile – The system uses surface water intake from Nhanombe River and is comprised of a primary system with a water treatment plant. After treatment the water is transported through a pipeline with 12 Km to the distribution center located at Maxixe city. center. The distribution network has more than 350 Km long.

Service Access – The area covered by the system has more than 120 thousand inhabitants supplied by 12 thousand household connections and 75 public standpipes with 87% of total coverage, with a decrease of 13% in relation to 2013. Although there was a negative trend in the coverage, the ER had good performance in this indicator when compared to the reference value of 60%. In terms of the availability average period, the ER had good performance because it maintained 24 hours per day like in 2013 (See Table 5).

Operational Sustainability – In 2014, the system registered 30% in non-revenue water (total losses) reflecting the same level as the previous year, but with positive trend, qualifying for a good performance when compared with the reference value of 35%. As far as the total collection rate, the ER has shown to be more efficient by collecting more than 99%, of the invoiced amount in 2014, which qualifies for a good performance, with reference value of 85%. Considering that the number of employees per 1000 connections revealed a positive trend with 7 employees per 1 000 connections in 2014 against 8 registered in 2013, which reveals a good performance when compared to the reference value of 10. Finally, the operational costs coverage ratio was 0.90 in 2014 with negative trend, when compared to 0.94 in 2013, the situation that qualifies for an unsatisfactory performance by the ER.

Customer Care Service – The indicator on complaints responded was 100% in 2014, when compared to 92% registered in 2013 which qualifies for a good performance. The average response time to consumer complaints was 2 days, against 1 day of the previous year, that apart from negative trend, it qualifies for a good performance. The indicator invoicing based on meter readings present a positive trend of 100% against 99% of 2013 which represent a good performance.

Water Quality – In 2014, the ER has controlled the required 24 parameters as per contractual obligation. All parameters were in compliance with water quality standards for human consumption.

Overall Performance Evaluation of the Maxixe system through **Regulated Entities Performance Index (IDER)** – it reveals that in 2014 the ER maintained the **overall performance** indicator at 87% (See graph 5). This level resulted in a decrease on **financial and economic sustainability** indicator which went from 65% to 60%, while maintaining the indicator on **operational sustainability** at 81% and the indicator for **service quality** at 99%.

Performance Indicators	Reference Value	2013	2014	Evaluation	Trend 2013-2014
Service Access					
Total population in the system area		94 933	117 485		
Coverage by household connections (%)		61%	55%		
Coverage by standpipes (%)		42%	32%		
Total coverage (%)	V ≥ 60 %	100%	87%	🟢	⬇
Availability average period (hr/day)	V ≥16 hr/day	24	24	🟢	➡
Sustainability					
Produced/treated volume (10^3 m³)		2 106	2 273		
Invoiced volume (10^3 m³)		1 477	1 599		
Non-revenue water (%)	V ≤ 35 %	30%	30%	🟢	⬆
Invoiced amount (10^3 MZN) incl. VAT		38 059	41 313		
Total collection rate (%)	V ≥ 85 %	99%	99%	🟢	⬆
Number of employees per 1000/connections	V ≤ 10	8	7	🟢	⬆
Operational costs (10^3 MZN)		40 587	46 156		
Operating costs coverage ratio	V > 1,15	0,94	0,90	🔴	⬇
Customer Care					
Response to complaints (%)	V ≥ 100 %	92%	100%	🟢	⬆
Average complaint response time (days)	V ≤ 14 days	1	2	🟢	⬇
Invoicing based on meter readings (%)	V ≥ 85 %	99%	100%	🟢	⬆
Quality of the Treated Drinking Water					
Nr. of controlled parameters	24	24	24		
Percentage of controlled parameters (%)	V ≥ 80 %	100%	100%	🟢	➡
Compliances of the controlled parameters (%)	V = 100 %	100%	100%	🟢	➡

Table 5 – BAQS - MAXIXE System

Legend:
🟢 Good performance
🟡 Average performance
🔴 Unsatisfactory performance

	2013	2014
IDER	87%	87%
ISEF	65%	60%
ISO	81%	81%
IQS	99%	99%
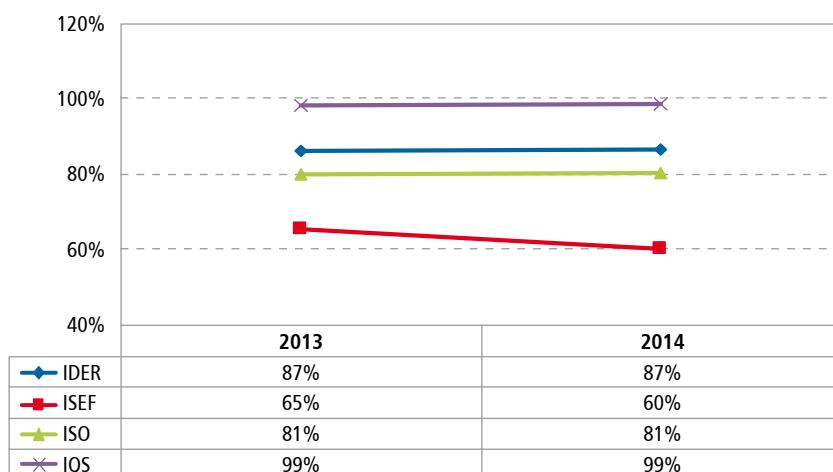
Graph 5 – IDER - MAXIXE System

Recommendations to the ER

✓ Should reverse the negative trend revealed in service access indicator;

✓ Efforts should be made to reverse the decrease revealed in the operational costs coverage ratio.

Nicoadala boreholes - Operational Area of QUELIMANE.

1.3. CENTRAL REGION

The Central Region is comprised of four Regulated Entities corresponding to four water supply systems under FIPAG public management, namely Beira and Dondo, Manica, Tete and Moatize and Quelimane.

In 2012, Regulatory Frameworks were signed with FIPAG, documents like assignment agreement on issues related to the regulation on public service provision.

In the Central Region there was differentiated behavior by the ER. The Tete and Manica Systems registered an improved trend in the performance. Contrary to the remaining systems of the Central region, the Quelimane and Manica systems demonstrated a decrease in overall performance, as per table C.

As for Beira and Quelimane systems, the availability average period indicator registered high decrease. Regarding the compliance of the controlled parameters, despite the improvement in relation to 2013, the indicator continues to show a negative deviation in relation to the reference value. The costs coverage ratio also shows improvement across the board.

The performance analysis by system based on reference values or performance targets established in the Regulatory Frameworks can be found below. Results of analysis are based on Service Quality Evaluation Bulletins (BAQS) and Regulated Entities Performance Index (IDER).

Summary of the Main Performance Indicators

Description	Beira - Dondo		Manica		Tete		Quelimane	
	2013	2014	2013	2014	2013	2014	2013	2014
Total Population in the system area	579 228	593 129	382 000	396 546	252 220	263 317	257 646	236 176
Total Coverage (%)	90%	90%	61%	66%	89%	93%	61%	71%
Availability Average Period (hr/day)	24	18	24	21	22	22	22	18
Non-revenue water (%)	25%	34%	33%	21%	34%	27%	32%	35%
Operating costs coverage ratio	1,25	1,48	0,91	0,96	1,00	1,60	0,57	1,19
Invoicing based on meter readings (%)	98%	98%	94%	100%	94%	97%	90%	95%
Compliance of the Controlled parameters (%)	62%	67%	11%	59%	68%	87%	100%	60%

Table C - Summary of the Main Performance Indicators in the Central Region

Beira and Dondo Systems

Water Supply System Profile – The system uses surface water intake from Púngue River at Dingue-Dingue Plant and the water is pumped to Mutua Water Treatment Plant and transported through a pipeline of about 120Kms. The system has a distribution network of about 825Kms. long that serves a total of around 53 thousand connections in the municipalities of Beira, Dondo and Vila Mafambisse.

Service Access – In 2014 the area covered by the system had more than 590 thousand inhabitants supplied by 47 thousand household connections and 567 public standpipes which constituted a total coverage of 90%, the same level achieved in 2013, qualifying for a good performance when compared with the reference value of 60%. The availability average period indicator decreased from 24 to 18 hours/day, however it is still being considered a good performance when compared with the reference value of 16 hours/day (See Table 6).

Operational Sustainability – The system registered 34% in non-revenue water (total losses) although there was an increase of 9% in relation to 2013 which still represents a good performance. As far as the number of employees per 1000 connections, it maintained 6 employees registered in 2013, which corresponds for a good performance. The total collection rate decreased in relation to 2013 from 90% to 73% in 2014, reflecting an unsatisfactory performance. The operational costs coverage ratio was 1.48 which qualifies for a good performance and positive trend in relation to the previous year.

Customer Care Service – In relation to the complaints responded, the company only had 73% of the complaints received which is qualified for an unsatisfactory performance. The average response time was 5 days registered in 2013, which means a good performance. The invoicing indicator based on metering readings, it also indicates good performance maintaining the value of 98%.

Water Quality – 80% of parameters as per contractual obligation were verified, which corresponds to the reference value that qualifies for a good performance. Only 67% of the controlled parameters were in compliance with water quality standards for human consumption, although with positive trend, it represents an unsatisfactory performance.

Overall Performance Evaluation of the Beira and Dondo system through **Regulated Entities Performance Index (IDER)** – which reveals that the system decreased a lot in its **overall performance** (see graph 6) with a result of 46% in 2014 against 68% in 2013 due to the weak development of the 3 indicators, **service quality** indicator decreased from 37% in 2013 to 32% in 2014, the **financial and economic sustainability** indicator from 100% in 2013 to 46% in 2014 and the o**perational sustainability** indicator from 100% in 2013 to 65% in 2014.

Performance Indicators	Reference Value	2013	2014	Evaluation	Trend 2013-2014
Service Access					
Total population in the system area		579 228	593 129		
Coverage by household connections (%)		43%	42%		
Coverage by standpipes (%)		47%	48%		
Total coverage (%)	V ≥ 60 %	90%	90%	🟢	➡️
Availability average period (hr/day)	V ≥16 hr/day	24	18	🟢	⬇️
Sustainability					
Produced/treated volume (10³ m³)		11 744	13 242		
Invoiced volume (10³ m³)		8 760	8 689		
Non-revenue water (%)	V ≤ 35 %	25%	34%	🟢	⬇️
Invoiced amount (10³ MZN) incl. VAT		249 596	246 866		
Total collection rate (%)	V ≥ 85 %	90%	73%	🔴	⬇️
Number of employees per 1000/connections	V ≤ 10	6	6	🟢	➡️
Operational costs (10³ MZN)		199 835	167 002		
Operating costs coverage ratio	V > 1,15	1,25	1,48	🟢	⬆️
Customer Care					
Response to complaints (%)	V ≥ 100 %	100%	73%	🔴	⬇️
Average complaint response time (days)	V ≤ 14 days	5	5	🟢	➡️
Invoicing based on meter readings (%)	V ≥ 85 %	98%	98%	🟢	➡️
Quality of the Treated Drinking Water					
Nr. of controlled parameters	24	26	19		
Percentage of controlled parameters (%)	V ≥ 80 %	72%	80%	🟢	⬆️
Compliances of the controlled parameters (%)	V = 100 %	62%	67%	🔴	⬆️

Table 6 – BAQS – BEIRA and DONDO Systems

Legend:
- 🟢 Good performance
- 🟡 Average performance
- 🔴 Unsatisfactory performance

	2013	2014
IDER	68%	46%
ISEF	100%	46%
ISO	100%	65%
IQS	37%	32%
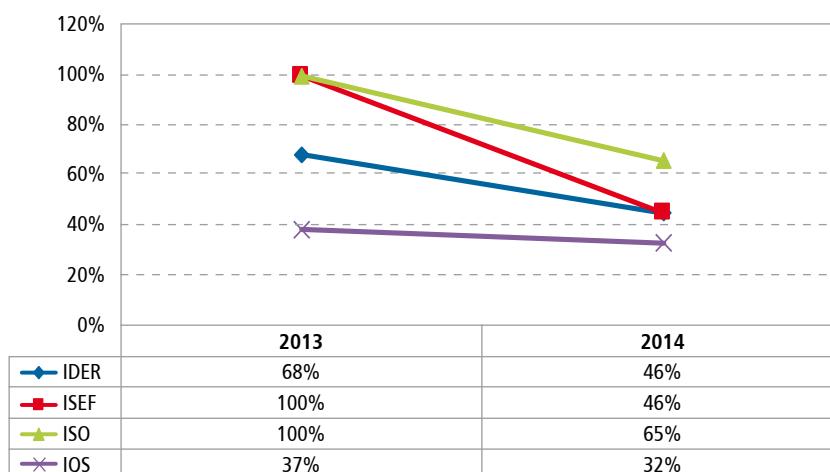
Graph 6 – IDER - BEIRA and DONDO Systems

Recommendations to the ER

✓ Should adopt measures to improve collections;

✓ Should create mechanism to respond to all complaints;

✓ Should create procedures to ensure the control of all contractual required parameters and increase its compliance;

✓ Should control negative trend of non revenue water (total losses).

Quelimane System

Water Supply System Profile – The system uses underground water intake from two underground water sources one in Licuari and another in Nicoadala. In Licuari the water intake consists of 5 boreholes which have high level of iron contents that led to the construction of water treatment plant (WTP). In Nicuadala the water intake consists of 6 boreholes. The system has also 3 pipelines with 109 Kms long and serving a total of 17 thousand connections. Along the way, the second pipeline has several bypasses that supply some industries and settlements such as: Licuari, Nicoadala, Namuinho, Fabrica de Cerâmica, Domela camp, Health Center, residential areas of former freedom fighters, Sagrada Familia and Institute of Health Sciences.

Service Access – The area covered by the system has more than 236 thousand inhabitants supplied by 16 thousand household connections and 164 public standpipes with a total coverage of 71%, qualifying for a good performance and with positive trend when compared to 2013. The availability average period reduced from 22 hours/day to 18 hours/day, however it qualifies for a good performance when compared with the reference value of 16 hours/day (See Table 7).

Operational Sustainability – The system has recorded 35% of non-revenue water (total losses), which reflects a negative trend in relation to 32% in 2013 which correspond for a good performance and below the reference value of 35%. The total collection rate was 75% showing reduction in relation to 96% registered in 2013, which qualifies for an unsatisfactory performance. The number of employees per 1000 connections has improved to 8 employees, presenting slight reduction in relation to 2013. In relation to the operational costs coverage ratio, the ER registered improvements in 2014

with 1.19 against 0.57 in 2013 which qualifies for a good performance.

Customer Care Service – The ER responded 73% of the complaints received, which qualifies for an unsatisfactory performance and with negative trend. The average response time was 10 days equal to the previous year and below the reference value. The invoicing based on metering readings, was 95% maintaining a good performance and positive trend.

Water Quality – The ER controlled 72% of the required parameters as per contractual obligation which qualifies for an unsatisfactory performance. Only 60% of the controlled parameters were in compliance with water quality standards for human consumption, which qualified for an unsatisfactory performance and negative trend.

Overall Performance Evaluation of the Quelimane system was through **Regulated Entities Performance Index (IDER)** – reveals a decrease in the **overall performance** from 47% in 2013 to 40% in 2014 resulting from general decrease of the remaining indicators. **Financial and economic sustainability** in 2014 was 39% against 54% in 2013, the **Operational sustainability** was 62% in 2014 against 73% in 2013 and **Service quality** decreased from 30% in 2013 to 28% in 2014.

Performance Indicators	Reference Value	2013	2014	Evaluation	Trend 2013-2014
Service Access					
Total population in the system area		257 646	236 176		
Coverage by household connections (%)		29%	36%		
Coverage by standpipes (%)		32%	35%		
Total coverage (%)	V ≥ 60 %	61%	71%	🟢	⬆
Availability average period (hr/day)	V ≥16 hr/day	22	18	🟢	⬇
Sustainability					
Produced/treated volume (10^3 m³)		3 427	4 017		
Invoiced volume (10^3 m³)		2 323	2 597		
Non-revenue water (%)	V ≤ 35 %	32%	35%	🟢	⬇
Invoiced amount (10^3 MZN) incl. VAT		59 975	66 039		
Total collection rate (%)	V ≥ 85 %	96%	75%	🔴	⬇
Number of employees per 1000/connections	V ≤ 10	9	8	🟢	⬆
Operational costs (10^3 MZN)		106 140	55 601		
Operating costs coverage ratio	V > 1,15	0,57	1,19	🟢	⬆
Customer Care					
Response to complaints (%)	V ≥ 100 %	86%	73%	🔴	⬇
Average complaint response time (days)	V ≤ 14 days	10	10	🟢	➡
Invoicing based on meter readings (%)	V ≥ 85 %	90%	95%	🟢	⬆
Quality of the Treated Drinking Water					
Nr. of controlled parameters	24	13	17		
Percentage of controlled parameters (%)	V ≥ 80 %	64%	72%	🔴	⬆
Compliances of the controlled parameters (%)	V = 100 %	100%	60%	🔴	⬇

Table 7 – BAQS – QUELIMANE System

Legend:
🟢 Good performance
🟡 Average performance
🔴 Unsatisfactory performance

	2013	**2014**
IDER	47%	40%
ISEF	54%	39%
ISO	73%	62%
IQS	30%	28%
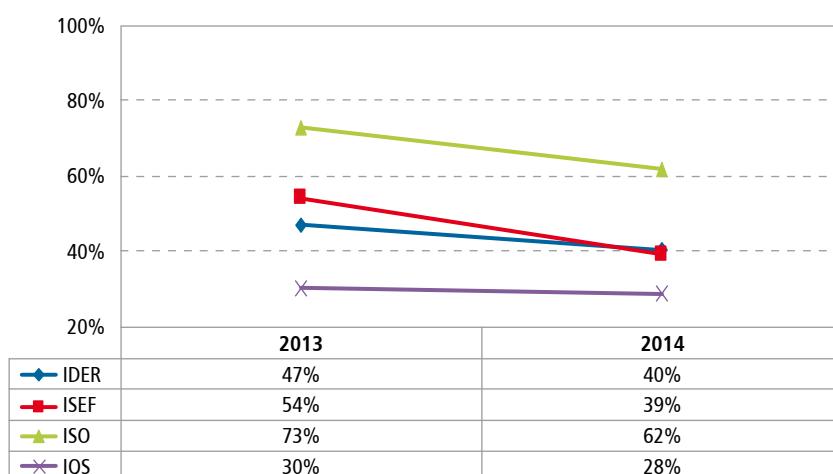
Graph 7 – IDER - QUELIMANE System

Recommendations to the ER

✓ Should improve the collection which revealed a strong decrease;

✓ Should create mechanisms to respond to the complaints within the established period;

✓ Efforts should be made to increase the compliance of the controlled parameters;

✓ Should control the negative trends of non-revenue water (total losses).

Tete and Moatize System

Water Supply System Profile – The system is comprised of a main system with four sub-systems, namely Tete-antiga, Matundo, Chingodzi and Moatize. It also aggregates another three small systems, namely Canongola, Npadwé and Degué. The Tete-antiga water intake from Nhartanda Valley which is underground flow of Zambeze River through twelve boreholes. The water intake Matundo/ Chingodzi system is from the Rovúbwè riverbank which is tributary of Zambeze River through nine boreholes. The water intake of Moatize system is from a boreholes field located in Chibata at the Rovúbwè riverbank of approximately eight Kms. upstream of Matundo/Chingodzi borehole. The pipeline has 26,5Kms long and it serves approximately a total of 31 thousand connections.

Service Access – The area covered by the system has more than 260 thousand inhabitants supplied by 30 thousand household connections and 173 public standpipes which represented a total coverage of 93% in 2014, qualifying for a good performance and positive trend for this indicator. In relation to the availability average period, the ER had 22 hours/day, since 2013, which is above the reference value of 16 hours/day and was qualified for a good performance. (See Table 8)

Operational Sustainability – The ER presents a good performance in relation to non revenue water (total losses) which was 27%, showing major recovery when compared to the 34% registered in 2013. The total collection rate was 75% in 2014 against 100% obtained in 2013, qualifying for an unsatisfactory performance. In relation to the ratio of the number of employees per 1000 connections, in 2014, the ER had a good performance for this indicator, reducing 6 employees per thousand connections. The operational costs coverage ratio was 1.60 which

qualifies for a good performance when compared with the reference value of 1.15.

Customer Care Service – The year under review, the indicator on complaints response had an unsatisfactory performance for having responded only 50% of all complaints received. The average response time was 5 days although it proved to be a good performance and a negative trend. Still on customer care, the company registered high level of invoicing based on metering readings of 97% which qualifies for a good performance and positive trend when compared to 94% of 2013.

Water Quality – The ER verified 92% of the required parameters as per contractual obligation which qualifies for a good performance. It registered a positive trend in relation to the compliance of the controlled parameters which was 87% against 68% of the previous year, which qualifies for an average performance.

Overall Performance Evaluation of Tete and Moatize systems through **Regulated Entities Performance Index (IDER)** – which reveals an improvement in the **Overall performance** for 2014 (see graph 8) which was around 66% against 51% of the previous year and it was highly influenced by improvement of the following indicators, **Service quality** indicator which was 58% in 2014 against 35% in 2013 and by the **Operational sustainability** indicator which was 92% in 2014 against 65%. However, the **Financial and economic sustainability** indictor decreased and it was 46% against 72% of 2013.

Performance Indicators	Reference Value	2013	2014	Evaluation	Trend 2013-2014
Service Access					
Total population in the system area		252 220	**263 317**		
Coverage by household connections (%)		56%	**60%**		
Coverage by standpipes (%)		33%	**33%**		
Total coverage (%)	**V ≥ 60 %**	89%	**93%**	🟢	⬆
Availability average period (hr/day)	**V ≥16 hr/day**	22	**22**	🟢	➡
Sustainability					
Produced/treated volume (10³ m³)		9 054	**9 080**		
Invoiced volume (10³ m³)		6 016	**6 667**		
Non-revenue water (%)	**V ≤ 35 %**	34%	**27%**	🟢	⬆
Invoiced amount (10³ MZN) incl. VAT		128 503	**144 467**		
Total collection rate (%)	**V ≥ 85 %**	100%	**75%**	🔴	⬇
Number of employees per 1000/connections	**V ≤ 10**	7	**6**	🟢	⬆
Operational costs (10³ MZN)		129 087	**90 194**		
Operating costs coverage ratio	**V > 1,15**	1,00	**1,60**	🟢	⬆
Customer Care					
Response to complaints (%)	**V ≥ 100 %**	77%	**50%**	🔴	⬇
Average complaint response time (days)	**V ≤ 14 days**	3	**5**	🟢	⬇
Invoicing based on meter readings (%)	**V ≥ 85 %**	94%	**97%**	🟢	⬆
Quality of the Treated Drinking Water					
Nr. of controlled parameters	**24**	16	**22**		
Percentage of controlled parameters (%)	**V ≥ 80 %**	66%	**92%**	🟢	⬆
Compliances of the controlled parameters (%)	**V = 100 %**	68%	**87%**	🟡	⬆

Table 8 – BAQS – TETE and MOATIZE Systems

Legend:
🟢 Good performance
🟡 Average performance
🔴 Unsatisfactory performance

	2013	2014
◆ IDER	51%	66%
■ ISEF	72%	46%
▲ ISO	65%	92%
✕ IQS	35%	58%
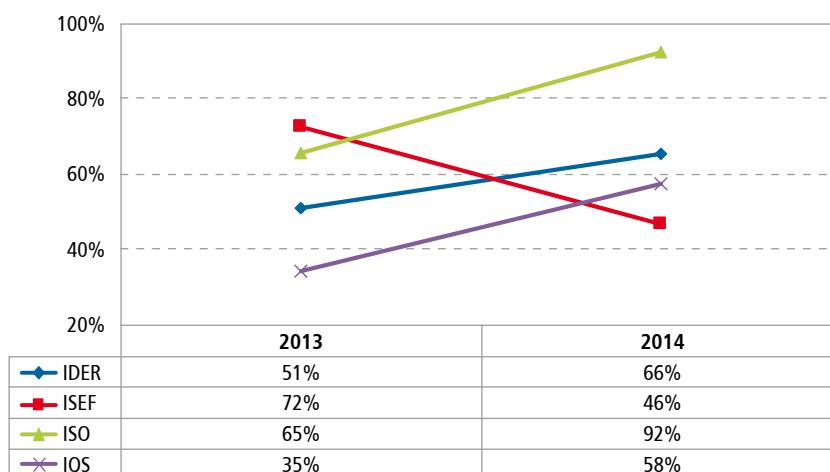
Graph 8 – IDER - TETE and MOATIZE Systems

Recommendations to the ER

✓ Should increase collection;

✓ Should create mechanisms to increase the number of responses to the complaints;

✓ Efforts should be made to increase the compliance of the controlled parameters

Manica System

Water Supply System Profile – The water intake is from Chicamba dam located at 47Kms. away from Chimoio city. The system has three main pipelines. The first pipeline has 37km long and it transports water from Chicamba water treatment plant to Chimoio. The second one with 44Kms long that transports water from Chicamba to Manica with two bypasses feeding Bandula and Messica reservoirs. The third pipeline with 20Kms long, from Chimoio to Gôndola.

Service Access – The area covered by the system has three municipalities of Manica, Chimoio and Gôndola, in total it has more than 395 thousand inhabitants supplied by 37 thousand household connections and 135 public standpipes with a total coverage[2] of 66% in 2014, against 61% of the previous year which qualified for a good performance, when compared to the reference value of 60%. The availability average period was 21 hours/day, which translate into a good performance, however with a negative trend in relation to 24 hours registered in 2013 (See table 9).

Operational Sustainability – The ER registered a good performance as far as non revenue water (total losses) which was 21% in 2014 against 33% in 2013. The total collection rate registered in 2014 was 80%, far less than 92% of 2013, qualifying for an unsatisfactory performance when compared to the reference value of 85%. In relation to the ratio of number of employees per 1000 connections in 2014, the ER registered 5 employees reducing the number of 2013 that registered 6 employees, which qualifies for a good performance, considering the reference value of 10 employees per 1000 connections. The operational costs coverage ratio was at 0.96

which qualifies for an unsatisfactory performance notwithstanding with a positive trend.

Customer Care Service – In 2014, the ER has responded 100% of the complaints received. In relation to the indicator on average response time to the complaints maintained 5 days achieved in 2013. Still on customer care, the company improved the level of invoicing based on metering readings, having achieved 100% which qualifies for a good performance in customer care.

Water Quality – The Company verified 80% of the required parameters as per contractual obligation, which means good performance. However, only 59% of the controlled parameters were in compliance with water quality standards for human consumption, which qualifies for an unsatisfactory performance.

Overall Performance Evaluation of Manica system through **Regulated Entities Performance Index (IDER)** – it reveals that there was an improvement in its **Overall performance** for 2014 with 49%, against 48% in 2013 which was mostly influenced by improvement of the indicator **Operational sustainability** that in 2014 was 100% against 69% in 2013. The **Financial and economic sustainability** indicator registered a decrease having been fixed in 13% against 61% in 2013. The **Service quality** indicator has registered a slight improvement having been fixed in 32% in 2014, against 31% in 2013.

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[2] Total coverage data published in 2013 were not correct, so they were corrected in 2014.

Performance Indicators	Reference Value	2013	2014	Evaluation	Trend 2013-2014
Service Access					
Total population in the system area		382 000	**396 546**		
Coverage by household connections (%)		42%	**49%**		
Coverage by standpipes (%)		19%	**17%**		
Total coverage (%)	**V ≥ 60 %**	61%	**66%**	🟢	⬆
Availability average period (hr/day)	**V ≥16 hr/day**	24	**21**	🟢	⬇
Sustainability					
Produced/treated volume (10³ m³)		7 369	**6 890**		
Invoiced volume (10³ m³)		4 903	**5 417**		
Non-revenue water (%)	**V ≤ 35 %**	33%	**21%**	🟢	⬆
Invoiced amount (10³ MZN) incl. VAT		106 496	**118 918**		
Total collection rate (%)	**V ≥ 85 %**	92%	**80%**	🔴	⬇
Number of employees per 1000/connections	**V ≤ 10**	6	**5**	🟢	⬆
Operational costs (10³ MZN)		117 379	**123 680**		
Operating costs coverage ratio	**V > 1,15**	0,91	**0,96**	🔴	⬆
Customer Care					
Response to complaints (%)	**V ≥ 100 %**	100%	**100%**	🟢	➡
Average complaint response time (days)	**V ≤ 14 days**	5	**5**	🟢	➡
Invoicing based on meter readings (%)	**V ≥ 85 %**	94%	**100%**	🟢	⬆
Quality of the Treated Drinking Water					
Nr. of controlled parameters	**24**	11	**19**		
Percentage of controlled parameters (%)	**V ≥ 80 %**	41%	**80%**	🟢	⬆
Compliances of the controlled parameters (%)	**V = 100 %**	11%	**59%**	🔴	⬆

Table 9 - BAQS – MANICA System

Legend:
- 🟢 Good performance
- 🟡 Average performance
- 🔴 Unsatisfactory performance

	2013	2014
IDER	48%	49%
ISEF	61%	13%
ISO	69%	100%
IQS	31%	33%
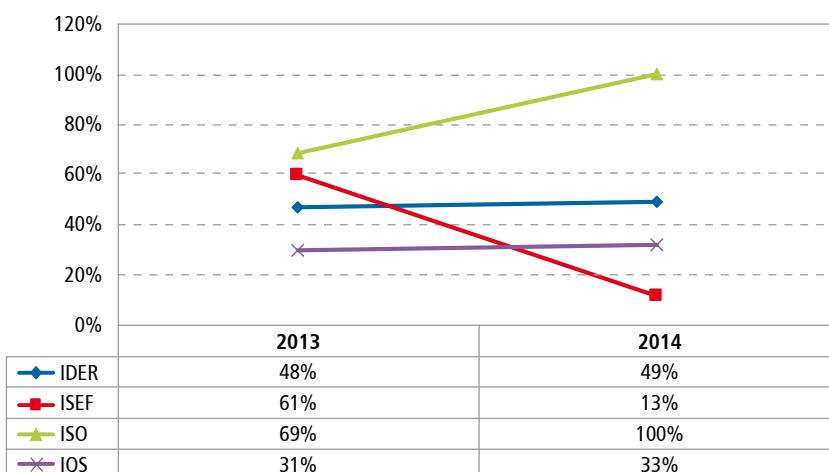
Graph 9 - IDER – MANICA System

Recommendations to the ER

✓ Efforts should be made to improve the collection rate;

✓ They should improve the operational costs coverage ratio;

✓ They should increase the percentage of the controlled parameters and their compliances.

Nacala Water treatment plant (ETA) – NACALA Operational Area

1.4. NORTHERN REGION

The Northern Region has 6 ERs equal to the same number of water supply systems under FIPAG public management, namely, Nampula, Nacala, Angoche, Lichinga, Cuamba and Pemba.

Within the extension of QGD, the management of the ERs of Lichinga, Cuamba, Nacala and Angoche was transferred to FIPAG through Ministerial Diploma nº 178/2009, while general terms for private management are under discussion, systems are in refurbishment and expansion in order to improve their functionality.

Regulatory Frameworks like the concession agreement were signed with FIPAG in 2012 on issues related to public service provision.

In general, the Northern Region ERs has an unsatisfactory performance. An analysis of the indicators reveals that all systems except Pemba, the service coverage is below the reference value. The availability average period also shows some variations and with exception of Nacala and Pemba, all values are in accordance with contractual requirements.

As far as sustainability indicators, Angoche, Nacala and Cuamba, they all present unsatisfactory or average performances. With an exception of Angoche, hence the compliance indicator on parameters is so reduced. The indicator on invoicing based on metering readings is the one that presents best performance.

Summary of the Main Performance Indicators

Description	Nampula		Pemba		Nacala	
	2013	2014	2013	2014	2013	2014
Total Population in the system area	559 982	576 221	158 064	161 541	245 078	252 185
Total Coverage (%)	67%	50%	89%	84%	55%	32%
Availability Average Period (hr/day)	12	17	18	15	15	12
Non-revenue water (%)	33%	32%	31%	30%	29%	47%
Operating costs coverage ratio	0,90	1,28	0,86	1,19	0,64	0,94
Invoicing based on meter readings (%)	95%	97%	98%	96%	95%	94%
Compliance of the Controlled parameters (%)	52%	74%	65%	83%	77%	75%

Description	Angoche		Lichinga		Cuamba	
	2013	2014	2013	2014	2013	2014
Total Population in the system area	106 838	109 936	184 290	184 290	102 306	106 807
Total Coverage (%)	34%	38%	27%	29%	19%	18%
Availability Average Period (hr/day)	23	21	20	19	17	16
Non-revenue water (%)	43%	42%	33%	24%	35%	29%
Operating costs coverage ratio	0,66	0,74	1,00	1,29	0,47	0,64
Invoicing based on meter readings (%)	99%	100%	99%	100%	95%	99%
Compliance of the Controlled parameters (%)	96%	99%	33%	40%	22%	12%

Table C - Summary of the Main Performance Indicators in the Northern Region

Nampula System

Water Supply System Profile – The system uses surface water from the dam of Monapo River dam. After being treated in a conventional water treatment plant, the water is pumped into high reservoir and then is pumped again into the Distribution Center located in the city center. The total length of the two section of the pipeline is 10 Km, and it has a distribution network of 440 Km long.

Service Access – In 2014 the area covered by the system had 576 thousand inhabitants supplied by 29 thousand household connections and 268 public standpipes with a total coverage of 50%, corresponding to an average performance and a negative trend when compared to 2013. In relation to the availability average period, the ER had 17 hours/day, which qualifies for a good performance and positive trend. In the area served by the System there are still critical zones where the daily availability time is less than 4 hours, namely Muhavire, expansion of Muhala, Military Zone and the Murrapaniua residential area and is due to scarcity of water in the dam of Monapo river, which require a precise operational management of water distribution network. (See table 10)

Operational Sustainability – In 2014, the ER had a good performance as far as non-revenue water (total losses) which was 32% with positive trend in relation to 2013. The total collection rate was 86% which qualifies for a good performance however below 88% achieved in 2013. The ratio number of employees per 1000 connections, the ER registered an average of 7 employees per 1000 connections reflecting a good performance. The operational costs coverage ratio increased from 0.90 in 2013 to 1.28 in 2014 qualifying for a good performance.

Customer Care Service – The indicator on complaints response was 37% in relation to complaints presented in 2014, maintaining an unsatisfactory performance and worsened by a negative trend once it was not able to overcome the 48% verified in 2013. The average response time was 5 days that qualifies for a good performance. The percentage of the invoices based on metering readings, was 97% corresponding to a good performance.

Water Quality – in 2014, the ER controlled an average of 88% of the required 24 parameters as per contractual obligation, qualifying for a good performance. From the controlled parameters, 74% were in compliance with water quality standards for human consumption.

Overall Performance Evaluation of the Nampula system through **Regulated Entities Performance Index (IDER)** – reveals that the system has improved in its **Overvrall performance** and it was 51% in 2014 against 43% in 2013 (see graph 10), that was influenced by improvement in the indicators **Service quality** which was 28% in 2014 against 26% in 2013. The **Operational sustainability** was 73% in 2014, against 69% in 2013. As far as the **Financial and economic sustainability** indicator there was an improvement from 44% in 2013 to 78% in 2014.

Performance Indicators	Reference Value	2013	2014	Evaluation	Trend 2013-2014
Service Access					
Total population in the system area		559 982	576 221		
Coverage by household connections (%)		25%	27%		
Coverage by standpipes (%)		41%	23%		
Total coverage (%)	V ≥ 60 %	67%	50%	🟡	⬇
Availability average period (hr/day)	V ≥16 hr/day	12	17	🟢	⬆
Sustainability					
Produced/treated volume (10³ m³)		6 965	9 149		
Invoiced volume (10³ m³)		4 674	6 194		
Non-revenue water (%)	V ≤ 35 %	33%	32%	🟢	⬆
Invoiced amount (10³ MZN) incl. VAT		119 859	157 299		
Total collection rate (%)	V ≥ 85 %	88%	86%	🟢	⬇
Number of employees per 1000/connections	V ≤ 10	7	7	🟢	➡
Operational costs (10³ MZN)		133 611	123 372		
Operating costs coverage ratio	V > 1,15	0,90	1,28	🟢	⬆
Customer Care					
Response to complaints (%)	V ≥ 100 %	48%	37%	🔴	⬇
Average complaint response time (days)	V ≤ 14 days	5	5	🟢	➡
Invoicing based on meter readings (%)	V ≥ 85 %	95%	97%	🟢	⬆
Quality of the Treated Drinking Water					
Nr. of controlled parameters	24	20	21		
Percentage of controlled parameters (%)	V ≥ 80 %	83%	88%	🟢	⬆
Compliances of the controlled parameters (%)	V = 100 %	52%	74%	🔴	⬆

Table 10 – BAQS –NAMPULA System

Legend:
🟢 Good performance
🟡 Average performance
🔴 Unsatisfactory performance

	2013	2014
IDER	43%	51%
ISEF	44%	78%
ISO	69%	73%
IQS	26%	28%
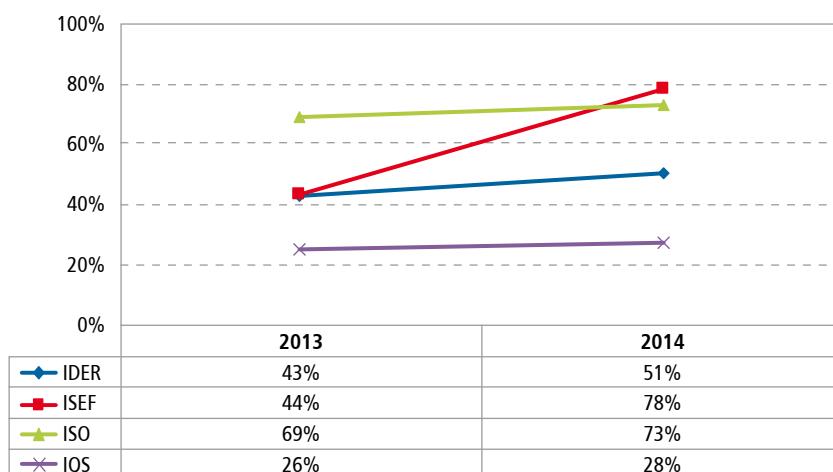
Graph 10 - IDER –NAMPULA System

Recommendations to the ER

✓ Efforts should be made to increase coverage rate;

✓ Diligences should be made to reverse the negative trend on collection rate;

✓ Adopt more efficient procedures on how to deal with complaints;

✓ Ensure that all controlled parameters be in compliance with the required QR.

Pemba System

Water Supply System Profile – The system uses underground water intake from Metuge well´s field and it supplies water to Municipality of Pemba and villages of Metuge, Nangue, Mieze and Murrebue, located across the pipeline with 42Km long. The system has a water treatment plant to remove the iron and disinfection of the water. The system has a distribution network of 285Km long.

Service Access – In 2014 the area covered by Pemba system had more than 161 thousand inhabitants supplied by 14 thousand household connections and 121 public standpipes with a total coverage of 84%, corresponding to a good performance, however with a negative trend when compared to 2013. The availability average period was 15 hours, against 18hours/day in 2013, which indicate an average performance. (See Table 11)

Operational Sustainability – In 2014, the ER had a good performance as far as non-revenue water (total losses) which was 30%, and it was found that water losses is stabilizing in relation to the previous year where it was 31%. In turn, the total collection rate was 100%, which presents a good performance. The ratio number of employees per 1000 connections, the ER maintained a good performance of 2013, with an average of 7 employees per 1000 connections. In relation to the operational costs coverage ratio has increased from 0.86 in 2013 to 1.19 in 2014 which represents a good performance.

Customer Care Service – The ER registered an unsatisfactory performance as far as complaints response at 79% of the complaints presented by consumers that were attended to. The average response time was 5 days corresponding to a good performance. The percentage of invoices based on metering readings was 96%, where the ER qualifies for a good performance in this indicator.

Water Quality – From 2013 to 2014, the percentage of the 24 controlled parameters as per contractual obligations where 64% to 84% with a positive trend. From the controlled parameters, 83% were in compliance with water quality standards for human consumption.

Overall Performance Evaluation of the Pemba system through the **Regulated Entities Performance Index (IDER)** – The system reveals an improvement in its **Overall performance** (see graph 11) that was 62% in 2014 against 39% in 2013, which was influenced by improvement in all indicators. The **Service quality** indicator was 40% in 2014, against 31% in 2013. The **Operational sustainability** indicator was at 81% in 2014 against 77% in 2013. The indicator for **Financial and economic sustainability** was from 0% in 2013 to 93% in 2014.

Performance Indicators	Reference Value	2013	2014	Evaluation	Trend 2013-2014
Service Access					
Total population in the system area		158 064	161 541		
Coverage by household connections (%)		48%	46%		
Coverage by standpipes (%)		41%	37%		
Total coverage (%)	V ≥ 60 %	89%	84%	🟢	⬇
Availability average period (hr/day)	V ≥16 hr/day	18	15	🟡	⬇
Sustainability					
Produced/treated volume (10^3 m³)		4 017	3 890		
Invoiced volume (10^3 m³)		2 756	2 742		
Non-revenue water (%)	V ≤ 35 %	31%	30%	🟢	⬆
Invoiced amount (10^3 MZN) incl. VAT		72 128	72 018		
Total collection rate (%)	V ≥ 85 %	94%	100%	🟢	⬆
Number of employees per 1000/connections	V ≤ 10	7	7	🟢	➡
Operational costs (10^3 MZN)		83 667	60 644		
Operating costs coverage ratio	V > 1,15	0,86	1,19	🟢	⬆
Customer Care					
Response to complaints (%)	V ≥ 100 %	54%	79%	🔴	⬆
Average complaint response time (days)	V ≤ 14 days	5	5	🟢	➡
Invoicing based on meter readings (%)	V ≥ 85 %	98%	96%	🟢	⬇
Quality of the Treated Drinking Water					
Nr. of controlled parameters	24	15	20		
Percentage of controlled parameters (%)	V ≥ 80 %	64%	84%	🟢	⬆
Compliances of the controlled parameters (%)	V = 100 %	65%	83%	🔴	⬆

Table 11 – BAQS – PEMBA System

Legend:
- 🟢 Good performance
- 🟡 Average performance
- 🔴 Unsatisfactory performance

	2013	2014
IDER	39%	62%
ISEF	0%	93%
ISO	77%	81%
IQS	31%	40%
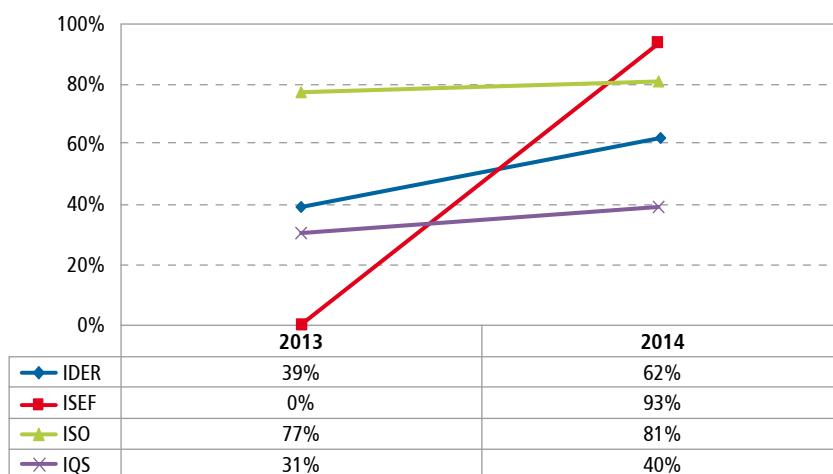
Graph 11 – IDER – PEMBA System

Recommendations to the ER

✓ Efforts should be made to improve availability average period which registered a negative trend in 2014;

✓ Adopt more efficient procedures to deal with complaints from consumers;

✓ Ensure that all controlled parameters should be in compliance with the required QR.

Nacala System

Water Supply System Profile – The system uses surface water intake from lagoon of Muecula river at Nacala Dam. The water is treated at conventional water treatment plant with total capacity of 360m3/hour. The water is then transported through a pipeline of 30 Km long, passing through a pressure tower. Insight the city, there are three distribution centers with a storage capacity of 4.000 m3. The network has a total of 68Km long. This system is comprised of small satellite systems namely M'Paco, Mutuzi and Naherengue, built at the end of 2007.

Service Access – In 2014 the area covered by the system had more than 252 thousand inhabitants supplied by 8 thousand household connections and 75 public standpipes with a total coverage of 32%, corresponding to an unsatisfactory performance. In relation to the availability average period, the company had 12 hours/day, against 15hours/day in 2013, which qualified for an average performance. In the area served by the System there are still critical zones (1) where the daily availability time is less than 4 hours. (See Table 12)

Operational Sustainability – The ER registered an unsatisfactory performance and negative trend as far as non-revenue water (total losses) which was 47%. The total collection rate was 73%, reflecting an unsatisfactory performance with negative trend in 2013. The ratio number of employees per 1000 connections was 10 employees which qualified for good performance. In relation to operational costs coverage ratio, the ER increased from 0. 64 in 2013 to 0.94 in 2014, even though, it maintained an unsatisfactory performance.

Customer Care Service – The ER registered a significant increase in the percentage of the complaints response from 32% in 2013 to 72% in the year under review, however, maintaining an unsatisfactory performance. The average response time was 5 days and qualified for a good performance. The percentage of the invoicing based on metering readings was 94% equivalent to a good performance.

Water Quality – The ER controlled an average of 75% of the required parameters as per contractual obligation which qualifies for an average performance, however, with positive trend in relation to 2013. From the controlled parameters, 75% were in compliance with water quality standards for human consumption, which qualified for an unsatisfactory performance.

Overall Performance Evaluation of the Nacala system through **Regulated Entities Performance Index (IDER)** – reveals that the system had high decline in its **Overall performance** (see graph 12) which was 17% in 2014 against 36% of the previous year. The decline of the overall performance is the reflex of the decrease in all indicators. The **Financial and economic sustainability** registered 0% in 2013 increasing to 10% in 2014. The **Operational sustainability** was 78% in 2013 and dropped to 16% in 2014, and the **Service quality** indicator decreased to 20% in 2014 against 23% of 2013.

Performance Indicators	Reference Value	2013	2014	Evaluation	Trend 2013-2014
Service Access					
Total population in the system area		245 078	252 185		
Coverage by household connections (%)		18%	17%		
Coverage by standpipes (%)		37%	15%		
Total coverage (%)	V ≥ 60 %	55%	32%	🔴	⬇
Availability average period (hr/day)	V ≥16 hr/dia	15	12	🟡	⬇
Sustainability					
Produced/treated volume (10³ m³)		2 464	4 040		
Invoiced volume (10³ m³)		1 682	2 131		
Non-revenue water (%)	V ≤ 35 %	29%	47%	🔴	⬇
Invoiced amount (10³ MZN) incl. VAT		42 967	48 059		
Total collection rate (%)	V ≥ 85 %	83%	73%	🔴	⬇
Number of employees per 1000/connections	V ≤ 10	12	10	🟢	⬆
Operational costs (10³ MZN)		66 665	51 364		
Operating costs coverage ratio	V > 1,15	0,64	0,94	🔴	⬆
Customer Care					
Response to complaints (%)	V ≥ 100 %	32%	72%	🔴	⬆
Average complaint response time (days)	V ≤ 14 dias	5	5	🟢	➡
Invoicing based on meter readings (%)	V ≥ 85 %	95%	94%	🟢	⬇
Quality of the Treated Drinking Water					
Nr. of controlled parameters	24	20	18		
Percentage of controlled parameters (%)	V ≥ 80 %	56%	75%	🟡	⬆
Compliances of the controlled parameters (%)	V = 100 %	77%	75%	🔴	⬇

Table 12 – BAQS – NACALA System

Legend:
- 🟢 Good performance
- 🟡 Average performance
- 🔴 Unsatisfactory performance

	2013	2014
IDER	36%	17%
ISEF	0%	10%
ISO	78%	16%
IQS	23%	20%
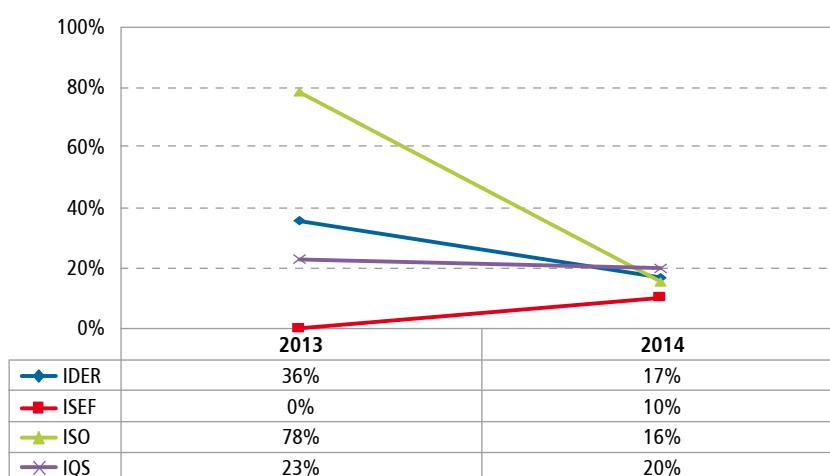
Graph 12 – IDER – NACALA System

Recommendations to the ER

✓ Efforts should be made to increase total coverage, namely through reduction of total losses;

✓ Should improve the collection in order to reverse the negative performance;

✓ Efforts should be made to continue to recover operational costs coverage;

✓ Efforts should be made to take care on all complaints presented;

✓ Ensure that all contractual required parameters be analyzed and according to the water quality standards in force.

Angoche System

Water Supply System Profile – The system uses groundwater intake from three boreholes built nearby Malatane lagoon and it serves Municipality of Angoche through a distribution pipeline of 40 Km long.

Service Access – In 2014 the area covered by the system had more than 110 thousand inhabitants supplied by almost 3 thousand household connections and 52 public standpipes with a total coverage of 38%, corresponding to an unsatisfactory performance that has been maintained since 2012. In relation to the availability average period it was 21 hours/day, which qualifies for a good performance.

Operational Sustainability – The ER had an average performance as far as non-revenue water (total losses) of 42%. In relation to the ratio of the number of employees per 1000 connections, the ER had a good performance for this indicator, reducing from 12 employees in 2013 to 10 employees in 2014 The total collection rate was from 83% in 2013 to 100% which translated into a good performance. In relation to the operational costs coverage ratio increased from 0.66 in 2013 to 0.74 in 2014 which translated into an unsatisfactory performance.

Customer Care Service – For this indicator on complaints response, the ER maintained the percentage of 100% and average response time to the complaints was 5 days, which qualifies for a good performance. It also happened in relation to the invoicing based on metering readings with 100%.

Water Quality – The ER controlled 100% of water quality parameters in the year under review, having verified a positive trend. The compliance of the controlled parameters was 99%, and also registered a positive trend and good performance. (See table 13)

**Overall Performance Evaluation** of the Angoche system through **Regulated Entities Performance Index (IDER)** – reveals that the system has been registering an improvement in its **Overall performance** (see graph 13) that was 66% in 2014 against 49% in 2013. The overall performance improvement is the sign of growth in the remaining indicators. The **Financial and economic sustainability** was 16% in 2013 to 54% in 2014. The **Operational sustainability** increased from 25% in 2013 to 35% in 2014. As far as **Service quality** indicator, there was also an increase from 74% in 2013 to 87% in 2014.

Performance Indicators	Reference Value	2013	2014	Evaluation	Trend 2013-2014
Service Access					
Total population in the system area		106 838	**109 936**		
Coverage by household connections (%)		12%	**14%**		
Coverage by standpipes (%)		22%	**24%**		
Total coverage (%)	**V ≥ 60 %**	34%	**38%**	🔴	⬆
Availability average period (hr/day)	**V ≥16 hr/day**	23	**21**	🟢	⬇
Sustainability					
Produced/treated volume (10^3 m³)		659	**644**		
Invoiced volume (10^3 m³)		338	**375**		
Non-revenue water (%)	**V ≤ 35 %**	43%	**42%**	🔴	⬆
Invoiced amount (10^3 MZN) incl. VAT		7 680	**7 238**		
Total collection rate (%)	**V ≥ 85 %**	83%	**100%**	🟢	⬆
Number of employees per 1000/connections	**V ≤ 10**	12	**10**	🟢	⬆
Operational costs (10^3 MZN)		11 702	**9 791**		
Operating costs coverage ratio	**V > 1,15**	0,66	**0,74**	🔴	⬆
Customer Care					
Response to complaints (%)	**V ≥ 100 %**	100%	**100%**	🟢	➡
Average complaint response time (days)	**V ≤ 14 days**	5	**5**	🟢	➡
Invoicing based on meter readings (%)	**V ≥ 85 %**	99%	**100%**	🟢	⬆
Quality of the Treated Drinking Water					
Nr. of controlled parameters	**24**	22	**24**		
Percentage of controlled parameters (%)	**V ≥ 80 %**	92%	**100%**	🟢	⬆
Compliances of the controlled parameters (%)	**V = 100 %**	96%	**99%**	🟡	⬆

Table 13 - BAQS – ANGOCHE System

Legend:
- 🟢 Good performance
- 🟡 Average performance
- 🔴 Unsatisfactory performance

	2013	2014
IDER	49%	66%
ISEF	16%	54%
ISO	25%	35%
IQS	74%	87%
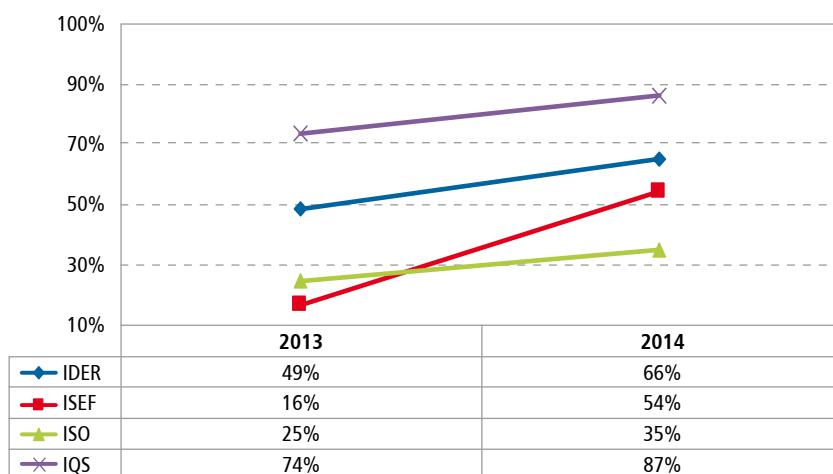
Graph 13 – IDER – ANGOCHE System

Recommendations to the ER

✓ Efforts should be made to expand the distribution network in order to improve the coverage without reducing the availability average period;

✓ They should introduce measures to reduce water losses;

✓ They should continue to improve the operational costs coverage ratio;

Lichinga System

Water Supply System Profile – The system supplies water to Lichinga Municipality through water intake from Locomue lagoon. The transport is by gravity through a pipeline of 3,5Kms long up to water pumping station EB1, and from there the water is pumped to EB2 water treatment plant where it is treated by using chlorine.

Service Access – In 2014 the area covered by the system had more than 184 thousand inhabitants supplied by 5 thousand household connections and 49 public standpipes with a total coverage of 29%, corresponding to an unsatisfactory performance but with a slight positive trend when compared to 2013. The access to drinking water will improve with the implementation of the NPTWSSP[3] project. The availability average period was 19hours/day, and is classified as a good performance. (See table 14).

Operational Sustainability – The ER had a good performance as far as non-revenue water (total losses) of 24% with positive trend. The ratio number of employees per 1000 connections was 9 employees registering a decrease in relation to 2013, which qualifies for a good performance. The total collection rate increased to 91% which indicate good performance. In relation to the operational costs coverage ratio increased from 1.00 in 2013 to 1.29 in 2014 with a positive trend and it was qualified as good performance.

Customer Care Service – In relation to complaints response, there were only 78% complaints that were attended to and that corresponded to an unsatisfactory performance. In relation to average response time to complaints, this indicator maintained the average time of 4 days which correspond to a good performance. On customer care, the company registered good performance in relation to the percentage of the invoicing based on metering readings which was 100%.

Water Quality – The ER controlled an average of 40% of the required parameters as per contractual obligation in the year under review which was qualified as an unsatisfactory performance. From the controlled parameters, only 40% were in compliance with water quality standards for human consumption and was also qualified as unsatisfactory performance.

Overall Performance Evaluation of the Lichinga system through the **Regulated Entities Performance Index (IDER)** – it reveals that the system registered an improvement in the **Overall performance** (see graph 14) that was 60% in 2014 against 33% of the previous year. The improvement in overall performance was due to the growth of the remaining indicators. The **Financial and economic sustainability** was from 0% in 2013 to 100% in 2014. The **Operational sustainability** was 69% in 2013 and increased to 100% in 2014. As far as the **Service quality** indicator there was an increase from 23% in 2013 to 24% in 2014.

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[3] NPTWSSP – Niassa Provincial Towns Water Supply and Sanitation Project, financed by ADB and GoM

Performance Indicators	Reference Value	2013	2014	Evaluation	Trend 2013-2014
Service Access					
Total population in the system area		184 290	184 290		
Coverage by household connections (%)		14%	16%		
Coverage by standpipes (%)		13%	13%		
Total coverage (%)	V ≥ 60 %	27%	29%	🔴	⬆
Availability average period (hr/day)	V ≥16 hr/day	20	19	🟢	⬇
Sustainability					
Produced/treated volume (10³ m³)		1 408	1 303		
Invoiced volume (10³ m³)		929	985		
Non-revenue water (%)	V ≤ 35 %	33%	24%	🟢	⬆
Invoiced amount (10³ MZN) incl. VAT		32 053	22 430		
Total collection rate (%)	V ≥ 85 %	72%	91%	🟢	⬆
Number of employees per 1000/connections	V ≤ 10	10	9	🟢	⬆
Operational costs (10³ MZN)		31 908	17 416		
Operating costs coverage ratio	V > 1,15	1,00	1,29	🟢	⬆
Customer Care					
Response to complaints (%)	V ≥ 100 %	75%	78%	🔴	⬆
Average complaint response time (days)	V ≤ 14 days	4	4	🟢	➡
Invoicing based on meter readings (%)	V ≥ 85 %	99%	100%	🟢	⬆
Quality of the Treated Drinking Water					
Nr. of controlled parameters	24	8	10		
Percentage of controlled parameters (%)	V ≥ 80 %	33%	40%	🔴	⬆
Compliances of the controlled parameters (%)	V = 100 %	33%	40%	🔴	⬆

Table 14 - BAQS – LICHINGA System

Legend:
- 🟢 Good performance
- 🟡 Average performance
- 🔴 Unsatisfactory performance

	2013	2014
IDER	33%	60%
ISEF	0%	100%
ISO	69%	100%
IQS	23%	24%
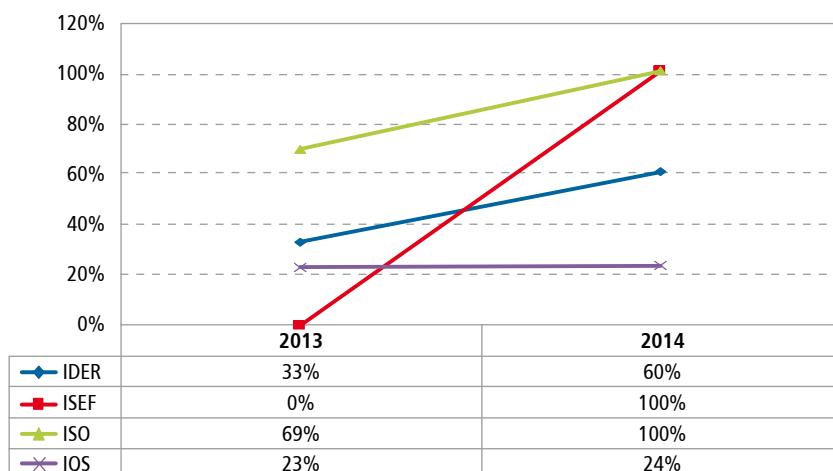
Graph 14 – IDER – LICHINGA System

Recommendations to the ER

✓ Efforts should be made to improve water access and water production to increase the total coverage without impeding the availability average period;

✓ All complaints presented by consumers should be taken care without compromising the average response time;

✓ Efforts should be made to improve the control of water quality as well as its treatment within rehabilitation project framework of NPTWSSP where the system is targeting.

Cuamba System

Water Supply System Profile – The system supplies water to Cuamba Municipality and water intake is from Metucué dam located at altitude of 80m above the Municipality level. The water is transported to the water treatment plant located in the city, through a pipeline of 35Kms long.

Service Access – In 2014 the area covered by the system had more than 106 thousand inhabitants supplied by 1,5 thousand household connections and 23 public standpipes with a total coverage of 18%, corresponding to an unsatisfactory performance and is expected to improve with the implementation of the NPTWSSP[4] project. In relation to the availability average period, it was 16hours/day, one hour less in relation to 2013, qualifying for a good performance, but a negative trend. (See table 15)

Operational Sustainability – The ER registered good performance as far as non-revenue water (total losses) 29% against 35% of the previous year. The total collection rate was 100%. In relation to the ratio number of employees per 1000 connections that was 17 employees in 2014, the ER registered an unsatisfactory performance when compared with the reference value of 10. In relation to the operational costs coverage ratio, it has increased from 0.47 in 2013 to 0.64 in 2014 which indicate an unsatisfactory performance but with a positive trend. As far as total collection rate, it was 100%, corresponding to a good performance.

Customer Care Service – The ER registered an unsatisfactory performance in the complaint response indicator and having responded only 73% of all complaints received. The average response time was 3 days like in 2013 and it was qualified for a good performance. The percentage of the invoicing based on metering readings was 99% with a good performance and positive trend.

Water Quality – in 2014, the percentage of the controlled parameters was 26% of the required 24 parameters as per contractual obligations. From the controlled parameters, only 12% were in compliance with water quality standards for human consumption, which qualified for an unsatisfactory performance. The low results verified in this indicator becomes a concerning issue, since the public health can be compromised.

Overall Performance Evaluation of the Cuamba system through the **Regulated Entities Performance Index (IDER)** – reveals an improvement in the **Overall performance** (see graph 15) that was 41% in 2014 against 34% in the previous year. The improvement in overall performance is a result of an increase on **Operational sustainability** from 46% in 2013 to 69% in 2014, and by maintaining the remaining indicators, **Financial and economic sustainability** in 54% and **Service quality** indicator in 20%.

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[4] NPTWSSP – Niassa Provincial Towns Water Supply and Sanitation Project, financed by ADB and GoM

Performance Indicators	Reference Value	2013	2014	Evaluation	Trend 2013-2014
Service Access					
Total population in the system area		102 306	**106 807**		
Coverage by household connections (%)		8%	**8%**		
Coverage by standpipes (%)		11%	**11%**		
Total coverage (%)	V ≥ 60 %	19%	**18%**	🔴	⬇
Availability average period (hr/day)	V ≥16 hr/day	17	**16**	🟢	⬇
Sustainability					
Produced/treated volume (10^3 m³)		391	**384**		
Invoiced volume (10^3 m³)		255	**274**		
Non-revenue water (%)	V ≤ 35 %	35%	**29%**	🟢	⬆
Invoiced amount (10^3 MZN) incl. VAT		5 551	**5 738**		
Total collection rate (%)	V ≥ 85 %	100%	**100%**	🟢	➡
Number of employees per 1000/connections	V ≤ 10	19	**17**	🔴	⬆
Operational costs (10^3 MZN)		11 758	**9 018**		
Operating costs coverage ratio	V > 1,15	0,47	**0,64**	🔴	⬆
Customer Care					
Response to complaints (%)	V ≥ 100 %	65%	**73%**	🔴	⬆
Average complaint response time (days)	V ≤ 14 days	3	**3**	🟢	➡
Invoicing based on meter readings (%)	V ≥ 85 %	95%	**99%**	🟢	⬆
Quality of the Treated Drinking Water					
Nr. of controlled parameters	24	8	**6**		
Percentage of controlled parameters (%)	V ≥ 80 %	22%	**26%**	🔴	⬆
Compliances of the controlled parameters (%)	V = 100 %	22%	**12%**	🔴	⬇

Table 15 – BAQS - CUAMBA System

Legend:
- 🟢 Good performance
- 🟡 Average performance
- 🔴 Unsatisfactory performance

	2013	2014
IDER	34%	41%
ISEF	54%	54%
ISO	46%	69%
IQS	20%	20%
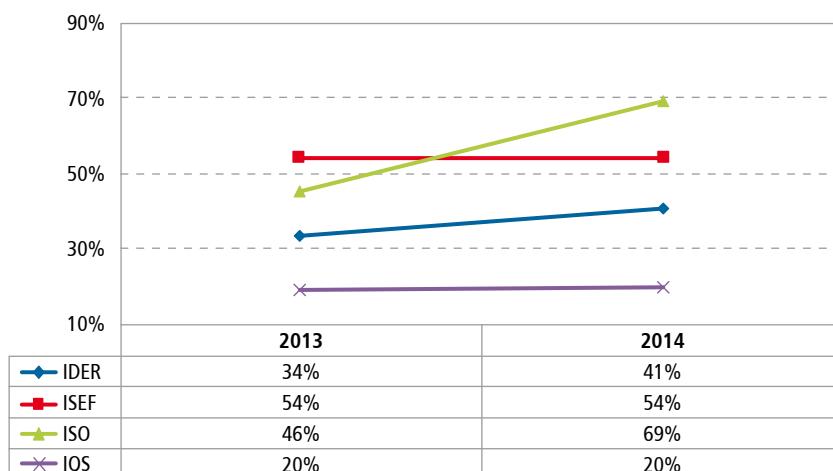
Graph 15 – IDER – CUAMBA System

Recommendations to the ER

✓ The planned investments should take into account the current needs of the system by giving priority to production capacity to increase the number of connections and consequently total coverage and availability;

✓ Attention should be given to decrease of the operating costs coverage indicator, in order to reverse such trend;

✓ There is a need to attend all complaints presented without compromising average response time;

2. SUMMARY OF THE MAIN PERFORMANCE SYSTEMS

The summary of the performance evaluation of each main system can be found in the Table E below which was already presented in Chapter 3. From this we are not only gaining insight on performance of each system, but we are also establishing a comparison between them on quality of the service based on BAQS.

As shown, only Xai-Xai system reveals that indicators fall within the scope of the reference values.

From evaluated indicators, the water quality is the one that raise major concern because it may cause impact on public health. Only 3 ER revealed compliance in water quality parameters within the reference values.

Table F shows the result of the evaluation based on IDER, which allows for an integrated assessment of the various indicators and consequent overall view of the ERs performance.

The IDER is based on a methodology[5] which allows to incorporate specific features and conditions of each ER as a result of socio-economic dynamics and dimensions in which it operates, taking into account the quantity of connections, as shown in Table F, where ERs are clustered as follows:

I. Regulated Entities with more than 50.000 connections;

II. Regulated Entities with 50.000 – 10.000 connections;

III. Regulated Entities with less than 10.000 connections.

Overall Evaluation of the Service Quality - 2014

Indicators	Reference Value	Maputo/Matola	Xai-Xai	Chókwe	Inhambane	Maxixe	Beira/Dondo	Manica	Tete	Quelimane	Nampula	Nacala	Angoche	Pemba	Lichinga	Cuamba
ACCESS TO THE SERVICE																
- Coverage	V ≥ 60 %	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟡	🔴	🔴	🟢	🔴	🔴
- Availability average period	V ≥ 16 hr/day	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟡	🟢	🟡	🟢	🟢
SUSTAINABILITY OF COMPANIES																
- Non-revenue water	V ≤ 35 %	🔴	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟡	🟢	🔴	🟡	🟢	🟢	🟢
- Invoice Collection ratio	V ≥ 85 %	🟢	🟢	🟢	🟢	🟢	🔴	🔴	🔴	🔴	🟢	🔴	🟢	🟢	🟢	🟢
- No. of employees per 1000 connections	V ≤ 10	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟡	🟡	🟢	🟢	🔴
- Operational cost coverage ratio	v > 1,15	🟡	🟢	🟡	🟡	🔴	🟢	🔴	🟢	🟢	🔴	🔴	🔴	🔴	🔴	🔴
CUSTOMER CARE SERVICE																
- Complaints responded to	V = 100 %	🔴	🟢	🔴	🟢	🟢	🔴	🟢	🔴	🔴	🔴	🔴	🟢	🔴	🔴	🔴
- Average response time to complaints (days)	V ≤ 14 days	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢
- Invoicing based on meter readings (%)	V ≥ 85 %	🟡	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢
WATER QUALITY																
- Percentage of the controlled parameters	V ≥ 80 %	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟡	🟢	🟡	🟢	🟢	🔴	🔴
- Compliance of parameters	V = 100 %	🟢	🟢	🟢	🟡	🟢	🔴	🔴	🔴	🔴	🔴	🔴	🟡	🔴	🔴	🔴

Legend:
🟢 Good performance
🟡 Average performance
🔴 Unsatisfactory performance

Table E – Summary of the Main Performance Systems.

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[5] The methodology for calculating IDER was shown in Chapter 3.

As per table F (Ranking) it allows to visualize the result of ER´s performance evaluation through IDER and its place in the ranking, taking into account the previously established clusters.

As shown, Maputo system is the only one in the cluster with more than 50.000 connections, and the only ER ranked as large. In 2014 Maputo was classified as group B with a performance level of 60%.

In the cluster between 50.000 and 10.000 connections, Xai-Xai stands out with a performance level of 100% and Chókwè with 93%, both classified as group A+, followed by Maxixe and Inhambane with a performance level of more than 80% and classified as group A.

In the cluster with less than 10.000 connections, ranked as small, only two have shown a performance level of over 50%, Angoche and Lichinga, classified as group B. The ER with the lowest performance level of 17% was classified as group C.

Ranking - ER

Ranking	ER	IDER 2014	Classification	Colour
Large companies with more than 50.000 connections				
1˚	Maputo	60%	B	
Medium sized companies with 50.000 - 10.000 connections				
1˚	Xai-Xai	100%	A+	
2˚	Chókwè	93%	A+	
3˚	Maxixe	87%	A	
4˚	Inhambane	83%	A	
5˚	Tete	66%	B	
6˚	Pemba	62%	B	
7˚	Nampula	51%	B	
8˚	Manica	48%	C	
9˚	Beira	46%	C	
10˚	Quelimane	40%	C	
Small companies with less than 10.000 connections				
1˚	Angoche	66%	B	
2˚	Lichinga	60%	B	
3˚	Cuamba	41%	C	
4˚	Nacala	17%	C	

Legend:

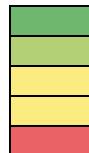|	
Group A+:	IDER 90 - 100%
Group A:	IDER 80 - 90%
Group B+:	IDER 70 - 80%
Group B:	IDER 50 - 70%
Group C:	IDER 0 - 50%

Table F – Summary of the ER Performance Evaluation - IDER.

3. PERFORMANCE EVALUATION OF THE SECONDARY SYSTEMS- 2014

As mentioned in Chapter 1, Decree nr.18/2009 of 13 May, that broadens the mandate of CRA on regulation of all Secondary Water Supply Systems and Wastewater Drainage, that started with the process of inquiry of these Systems, whose assets management was transferred through the Decree nr. 19/2009 of 13 May to AIAS.

So, the Regulatory Agreement was signed between CRA and AIAS on 21 October 2011. The Agreement establishes terms and conditions for regulation of the Secondary Systems while safeguarding that each system should have its own Regulatory Framework that will allow the regulation of its services be according to its specific conditions.

Table G shows the 132 secondary systems transferred to AIAS. However, up to date, only 2 of those signed the QR by the end of 2011, namely Ilha de Moçambique and Mocímboa da Praia. From these, only Ilha de Moçambique has a service provider since 2012 and its performance evaluation started in 2013 and like the primary systems detailed in this annex for 2014 period.

The operation of Ilha de Moçambique system was assigned to FIPAG in 2012 according to a Memorandum of Understanding with AIAS and its operation was formally ended over to FIPAG in 2014. Table H outlines the performance of Ilha de Moçambique system that still facing major difficulties in the operation and management as shown by the respective indicators.

The operation of Mocímboa da Praia system remains under Local Authorities since its management has not yet been outsourced for private operator management, which makes performance evaluation unfeasible.

These two systems are undergoing rehabilitation and expansion through WASIS project and it is expected to improve service provision in the near future.

List of Public Water Supply Systems

Provinces	Niassa	Cabo Delgado	Nampula	Zambézia	Tete	Manica	Sofala	Inhambane	Gaza	Maputo
Cities		Montepuez	Ilha de Moçambique	Mocuba Gurue					Chibuto	
Villages and small Towns	Metangula Marrupa Mandimba Insaca Unango Chimbonila Malanga Maúa Mavago Metarica Mecula Muembe Massangulo Nipepe	Mocimboa da Praia Chiúre Ibo Macomia Mueda Ancuambe Balama Mecúfi Meluco Muidumbe Namuno Palma Nangade Metuge Quissanga	Monapo Ribaue Namapa Malema Mutuali Meconta Namialo Nametil Moma Mossuril Murrupula Nacala-a-Velha Rapale Nacarôa Lalaua Mecurubi Memba Liupo Muecate	Alto Molocue Milange Chinde Luabo Maganja da Costa Morrumbala Namacurra Pebane Gilé Ile Inhamssunge Lugela Mopeia Namarroi Nicoadala	Ulongue Songo Namayabue Ulongue Luenha Chifunde Furancungo Fíngoe Tsangamo Zumbo Manje Mphende	Catandica Machipanda Messica Guro Chitobe Macossa Espungabera Sussundenga Nhacolo	Gorongosa Marromeu Buzi Caia Inhaminga Nhamatanga Chemba Chibabava Machanga Marringué Muanza	Massinga Vilankulo Nova Mambone Homofne Inharrime Inhassoro Morrumbene Quissico Funhalouro Jangamo Panda Mabote	Bilene Macia Mandlakazi Praia do Bilene Eduardo Mondlane Chilembene Caniçado Chigubo Mabalane Massagena Manssingir Chongoene	Namaacha Manhiça Magude Xinavane Marracuene Bela-Vista Moamba Ressano Garcia

Table G - List of Secondary Water Supply Systems.

Performance Evaluation of the Ílha de Moçambique system.

As it can be seen on Table H, the system shows an unsatisfactory performance. Service coverage is largely reduced and the volume of non-revenue water is very high. The absence of information on the quality of water is particularly negative and should be corrected.

Summary of the Performance Evaluation for Ílha de Moçambique System

Description	Ilha de Moçambique	
	2013	2014
Total Population in the system area	52 975	53 655
Total Coverage (%)	22%	27%
Availability Average Period (hr/day)	12	12
Non-revenue water (%)	62%	43%
Operating costs coverage ratio	1,06	1,00
Invoicing based on meter readings (%)	47%	59%
Compliance of the Controlled parameters (%)	–	–

Table H – Summary of the Performance Evaluation for the Ilha de Moçambique System

Ilha de Moçambique System

Water Supply System Profile – the system is comprised of a well field of 3 boreholes for underground water intake located at the mainland and 160mm diameter PVC pressure pipeline with 3 kms long; an intermediate high reservoir with the capacity of 110m³ which is supplied by gravity to a 24km pipeline; there is a distribution network that is supplied by a Distribution Center located at the Island and is made of two semi buried reservoirs with a capacity of 150 m³ each.

Service Access – in 2013 the area served by the system had more than 53 thousand inhabitants supplied by around 1,2 thousand domestic connections and 20 public standpipes, with a total coverage of 27%, reflecting an unsatisfactory performance which is expected to improve by the rehabilitation in progress under WASIS[6] Project. In relation to the availability average period, the ER registered 12 hours per day, however on alternate days, every two days in each of the four zones (see Table 16).

Operational Sustainability – the ER registered an average performance of 43% in relation to non-revenue water (total losses). The total collection rate was 66% and decreased when compared to 94% in 2013. In relation to ratio number of employees per 1000 connections, the ER had unsatisfactory performance, with an average of 21 employees per 1000 connections with a positive trend in relation to 2013 with 35 employees. As far as operating costs coverage ratio was 1.00 that revealed a negative trend in relation to 2013 and reflecting unsatisfactory performance.

Customer Care Service – the ER has shown a good performance where the indicator, response complaints was maintained in 100% in 2014. The average response time decreased from 5 to 3 days which qualifies for a good performance and a positive trend. The percentage of the invoicing based on metering readings increased from 47% to 59% registering unsatisfactory performance, but a positive trend.

Water Quality – the water quality parameters were not controlled in 2014 and therefore the compliance was considered to be invalid because whenever parameters are not controlled by operators are considered to be non-compliance.

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[6] Water Services and Institutional Support (WASIS) Project

Performance Indicators	Reference Value	2013	2014	Evaluation	Trend 2013-2014
Service Access					
Total population in the system area		52 975	53 655		
Coverage by household connections (%)		4%	14%		
Coverage by standpipes (%)		18%	13%		
Total coverage (%)	V ≥ 60 %	22%	27%	🔴	⬆
Availability average period (hr/day)	V ≥8 hr/day	12	12	🟢	➡
Sustainability					
Produced/treated volume (10^3 m³)		451	411		
Invoiced volume (10^3 m³)		169	218		
Non-revenue water (%)	V ≤ 30 %	62%	43%	🟡	⬆
Invoiced amount (10^3 MZN) incl. VAT		1 542	4 328		
Total collection rate (%)	V ≥ 100 %	94%	66%	🔴	⬇
Number of employees per 1000/connections	Undefined	35	21	🔴	⬆
Operational costs (10^3 MZN)		3 511	4 336		
Operating costs coverage ratio	V > 1,10	1,06	1,00	🔴	⬇
Customer Care					
Response to complaints (%)	V ≥ 100 %	100%	100%	🟢	➡
Average complaint response time (days)	V ≤ 10 days	5	3	🟢	⬆
Invoicing based on meter readings (%)	V ≥ 85 %	47%	59%	🔴	⬆
Quality of the Treated Drinking Water					
Nr. of controlled parameters	Undefined	0	0		
Percentage of controlled parameters (%)	V ≥ 100 %	0%	0%	🔴	➡
Compliances of the controlled parameters (%)	Undefined	0%	0%	🔴	➡

Table 16 – Ilha de Moçambique System BAQS

Legend:
🟢 Good performance
🟡 Average performance
🔴 Unsatisfactory performance

Recommendations to the ER

✓ Efforts should be made to increase the coverage rate;

✓ Provisions should be made to recover the collection rate which decreased significantly in 2014;

✓ Control mechanisms should be implemented to sustain the increase in operational costs;

✓ A loss recovery program should be implemented to increase water availability to customers;

✓ Urgently conditions should be created for water quality control even they have to use other laboratories operating in other cities of the region.

4. PERFORMANCE EVALUATION OF THE DRAINAGE SYSTEMS FOR WASTEWATER/SANITATION

Table H shows sanitation systems whose assets are managed by AIAS in accordance with the Decree nr. 8/2009 of 13 May and published by Ministerial Diploma nr. 237/2010 as mentioned earlier.

However, the implementation of QR at Beira and Quelimane cities started in 2012 and 2014 respectively, CRA has not yet started the Regulation and is limiting on monitoring visits and data analysis generated and reported by Beira Autonomous Sanitation Services (SASB) and Quelimane Municipal Sanitation Company (EMUSA) in terms of the respective QR signed with two Municipalities.

In relation to the Sanitation and in cooperation partnership with WUSP, CRA and local City Council have drafted Regulatory Framework proposal called

Transitional Regulatory Framework (QRT) to organize sanitation services and tariff definition applicable to Maputo City Sanitation System,

as per General Regulatory Agreement approved by the Resolution of the Water Regulatory Board nr. 1/2011 of 17 November.

Furthermore, CRA submitted Memorandum of Understanding between Water Regulatory Council and Maputo Municipal Council that defines terms and conditions for sanitation regulation services in Maputo that should form as basis for future deliberations.

List of Public Drainage Wastewater Systems

Province	Niassa	Cabo Delgado	Nampula	Zambézia	Tete	Manica	Sofala	Inhambane	Gaza	Maputo
Cities	Lichinga Cuamba	Pemba Montepuez	Nampula Nacala Angoche Ilha de Moçambique	Quelimane Mocuba Gurue	Tete	Chimoio Manica	Beira Dondo	Inhambane Maxixe	XaiXai Chókwé Chibuto	Maputo Matola Boane
Villages and small towns	Metangula Marrupa Mandimba Insaca Unango Chimbonila Malanga Maúa Mavago Metarica Mecula Muembe Massangulo Nipepe	Mocimboa da Praia Chiúre Ibo Macomia Mueda Ancuambe Balama Mecúfi Meluco Muidumbe Namuno Palma Nangade Metuge Quissanga	Monapo Ribaue Namapa Malema Mutuali Meconta Namialo Nametil Moma Mossuril Murrupula Nacala-a-Velha Rapale Nacarôa Lalaua Mecurubi Memba Liupo Muecate	Alto Molocue Milange Chinde Luabo Maganja da Costa Morrumbala Namacurra Pebane Gilé Ile Inhamssunge Lugela Mopeia Namarroi Nicoadala	Ulongue Songo Namayabue Ulongue Luenha Chifunde Furancungo Fíngoe Tsangamo Zumbo Manje Mphende	Catandica Machipanda Messica Guro Chitobe Macossa Espungabera Sussundenga Nhacolo	Gorongosa Marromeu Buzi Caia Inhaminga Nhamatanga Chemba Chibabava Machanga Marringué Muanza	Massinga Vilankulo Nova Mambone Homofne Inharrime Inhassoro Morrumbene Quissico Funhalouro Jangamo Panda Mabote	Bilene Macia Mandlakazi Praia do Bilene Eduardo Mondlane Chilembene Caniçado Chigubo Mabalane Massagena Manssingir Chongoene	Namaacha Manhiça Magude Xinavane Marracuene Bela-Vista Moamba Ressano Garcia

Table H – Summary of Sanitation Systems to be integrated into QGD

# 5. GENERAL CONCLUSIONS ABOUT PERFORMANCE OF THE WATER SUPPLY SYSTEMS

In general terms, the performance of ERs registered a slight progress throughout 2014 when compared to 2013 as shown in Table I.

However, it is important to highlight some considerations:

- The Maputo/Matola system has shown improvement in terms of overall performance which was influenced by an improvement in the service quality ratio. Only the economic and financial sustainability indicator has shown a slight decrease.

- At the level of ERs under FIPAG management, the Southern Region is the one with positive trend, where Xai - Xai system registered 100% in all indicators and remaining systems registered an improvement in the economic and financial evaluation and with consequent impact on the overall evaluation. In the Central Region only Beira system registered a decrease in overall performance, influenced by a significant decrease in the economic and financial sustainability and operational sustainability indicators. The remaining systems registered an average performance although with an overall positive trend. In the Northern Region, although systems registered

a positive trend in overall performance, only Nacala system as shown opposite trend. Overall performance continues to demand corrective measures on various levels namely assessment of data quality.

- There is a need to improve data quality that in some systems has been barely addressed and creation of mechanisms that allow effective control of data associated to the operation and management of the systems.

- Due to its relevance and impact, outlined in unsatisfactory performance of the water quality indicator still remains well below to the recommended, therefore FIPAG should pay more attention to this indicator so that each ER should develop necessary efforts for its improvement, either in quantity of parameters to be controlled as well as number of compliances.

- Although there was a positive trend in general terms in the performance, it is essential that all ERs should continue to make efforts for continuous and consistent improvement based on the implementation of the best practices.

Regions	Year	Overall Performance		Economic and Financial Sustainability		Operational Sustainability		Service Quality	
		2013	2014	2013	2014	2013	2014	2012	2014
Maputo	Maputo	56%	60%	91%	86%	16%	18%	67%	75%
Southern	Xai-Xai	94%	100%	69%	100%	100%	100%	99%	99%
	Chókwè	75%	93%	54%	77%	100%	100%	68%	94%
	Inhambane	84%	83%	54%	73%	77%	65%	99%	96%
	Maxixe	87%	87%	65%	60%	81%	82%	99%	99%
Central	Beira	68%	46%	100%	46%	100%	65%	37%	32%
	Manica	48%	49%	61%	13%	69%	100%	31%	32%
	Tete	51%	66%	72%	46%	65%	92%	35%	58%
	Quelimane	47%	40%	54%	39%	73%	62%	30%	28%
Northern	Nampula	43%	51%	44%	78%	69%	73%	23%	20%
	Lichinga	33%	60%	0%	100%	69%	100%	23%	24%
	Cuamba	34%	41%	54%	54%	46%	69%	20%	20%
	Nacala	36%	17%	0%	10%	78%	16%	23%	20%
	Angoche	49%	66%	16%	54%	25%	35%	74%	87%
	Pemba	39%	62%	0%	93%	77%	81%	31%	40%

Table I – General Conclusions – Performance Evaluation of the Water Supply System

CRA WATER AND
SANITATION
REGULATORY
COUNCIL 2015

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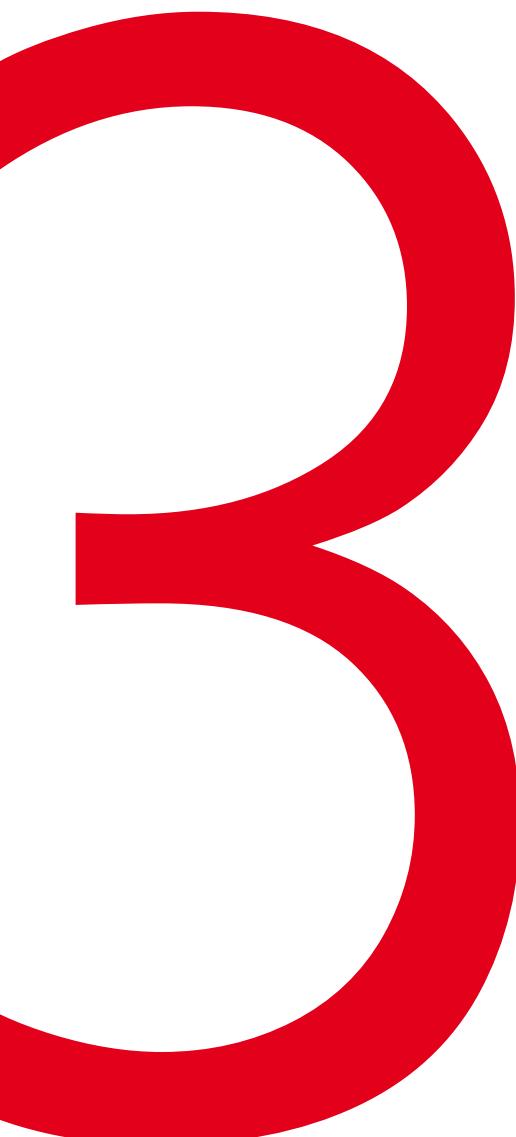
CRA's VISION ON SANITATION

1. THE PURPOSE OF THE DOCUMENT

The Decree No. 18/2009 of 13 May expands CRA´s mandate on public water supply systems and drainage of wastewater, i.e. urban sanitation systems based on gradual principles and diversified solutions according to complex conditions and specific nature of each system.

On other hand, the Decree No. 23/2011 of 8 June, revises CRA's specific assignments and defines regulatory instruments that include regulation of all public water supply and sanitation systems.

The subsector is guided by the government guidelines, namely Water Policy of 2007 and National Urban Water and Sanitation Strategy (ENASU) of 2011.

This document aims to:

- Define and clarify the role of regulation in developing urban sanitation services through Water Policy and National Urban Water Sanitation Strategy;
- Establish guidelines that guide CRA to exercise regulation services in a consistent and sustainable and responsible manner in order to ensure adequate and fair services that are economically viable and based on a vision for future development of the subsector;
- Define the vision of the Regulator in relation to Sanitation.

2. BACKGROUND AND GUIDELINES OF THE URBAN SANITATION SUBSECTOR

2.1. Diagnosis of the Current Situation

The urban sanitation has not been developed significantly since 1990s, despite initiatives and investments to improve the institutional framework, especially in recent years. The country will not achieve targets of the Millennium Development Goals for this subsector, which is contrary to what happens in the urban water supply sector.

Although there are good sectorial policies, a diagnosis of the situation may identify as main causes of obstacles to the development, namely:

- The sector presents a low profile and low rate of progress, that may be the cause and result of less priority;
- Institutional responsibilities are not clearly defined, although it is recognised that the institutional framework and the nature of sanitation services are complex and multifaceted;
- Weak harmonization of roles between agents and the involved authorities;
- Organization and sustainability of services do not received adequate consideration.

The ENASU represents Government's initiative to introduce new dynamics on urban sanitation and its implementation will require additional measures.

2.2. Main guidelines of the ENASU

The following statements and guidelines are from ENASU. Some main concepts such as Universal Service should be understood in the context of "towards universal service" as the recommendation of the best international practices in defining the development guidelines post 2015 period, associated to commitments of the Millennium Development Goals (MDGs).

On the other hand, the Strategy summary citation does not follow the order and format of statements but its text contents, as follows:

- Attaining Universal Service.

The universal service of urban sanitation is to be achieved by 2025, to improve health and living conditions of the population, unleashing human capacity for productive and social use and reducing significantly urban poverty. Under these terms, Sanitation includes the entire set of mechanisms, services and technologies that constitute the process of disposal of the human excreta and wastewater and its removal, transport, treatment and final disposal;

- Strategic Statements (Citation from ENASU);
- Design and manage urban sanitation as a process that starts by disposal of excreta and wastewater to its treatment and final disposal.

– Ensure availability and continuity of public sanitation services at affordable prices to consumers, that includes:

– Promotion of good hygienic practices and the use and improvement of latrines;

– Technical assistance and facilitation on funding of latrines construction;

– Collection, transport, disposal and treatment of septic sludge;

– Maintenance and management of sewage and drainage networks;

– Protection of the environment against negative effects of polluting effluents.

● Plan and invest in an integrated manner on sanitation in urban and peri-urban areas and explicitly include sanitation in all urban development plans.

● Whenever possible, ensure that in urban centres, there should be a guarantee on minimum conditions of operation and maintenance of water services, investment in sanitation should be at least 50% of the investment held in water supply.

● Sanitation services by its nature are linked to the place where they are provided. Local authorities are managers on the ground and they are the ones who have competence to manage these services.

● Municipalities and local authorities have the primary role in the processes of decision making on provision of the sanitation services in their areas of jurisdiction with support of the general framework established by the government.

● An effective urban sanitation service can only be provided with active participation of all relevant stakeholders, from communities to public and private service providers and local authorities. The role of the local governments is essential to ensure effective coordination and collaboration of stakeholders.

● The operation, maintenance and management of sanitation systems in urban areas should be done by autonomous entities such as a municipal service, municipal company or through management contract with a private company operating on corporate principles in order to create better conditions for sustainability.

● Develop regulatory framework on sanitation according to the level of service autonomy.

● Regulatory institutions and/or competent authorities should establish a sanitation rate or tariff to cover operational costs, maintenance and management of services.

● Introduce a sanitation rate to be charged on water bills, to finance the operation and maintenance of the public sanitation service, according to the standard and quality of the service to be provided and the level of autonomy of the responsible entity. This rate will not be applicable to the social tariff of domestic consumption.

● Incorporate gradually in all urban areas a sanitation rate into water bills for domestic consumption above the social rate and a systematic transfer of these funds to local sanitation authorities.

● Introduce necessary legal instruments for more effective regulation of sanitation service in peri-urban areas served by primary and secondary systems through delegation of CRA's powers to local agents.

● Strengthen the development of adequate solutions and levels of service for low-income population groups at technological and tariff levels through collaboration among regulatory bodies, water supply assets management and local governments.

● Develop business packages for local agents and promotion of integrated service provision, construction and emptying of latrines, solid waste collection, maintenance of local drainage systems and protection against erosion.

- Implement capacity building training programs in a large scale on sanitation service provision for local private sector.

- Establish a programme to strengthen and incorporate services for emptying latrines and septic tanks by private sector and community based organizations.

3. CRA'S VISION ON URBAN SANITATION

3.1. Basic Principles

- The access to adequate and safe sanitation is a human right to be complied through Progressive Realization Principle, which recognizes that attaining human right access to water and sanitation can be carried out through series of improvements in phases;

- The promotion of equitable and non-discriminatory access to improved sanitation for all by paying due attention to issues on gender and disability;

- The approach on urban sanitation is essentially done in an integrated manner as a whole, either in planning or service provision. The management of faecal sludge, covering the majority of urban population should be especially considered.

- In defining responsibilities and competences should respect the Principle of Subsidiary. Thus, it is necessary to look on problems from the most relevant perspective to each situation, this is, from bottom to top as well as from top to bottom;

- All citizens have the right to sanitation services at fair prices in accordance with professional and efficient standards of the sectorial policy on separation of functions, provision of autonomous services and participation by both private sector and local entrepreneurs by applying pragmatically to the specific conditions of each urban centre;

- It is necessary to define and establish the concept of "Public Sanitation Service", whether this service is performed by wastewater collectors or local sanitation solutions: such as latrine or septic tank, in the concept of the chain of services from containment of excreta to its treatment and final disposal;

- For effective regulation, it is essential that provision of sanitation services must be autonomous (and verifiable), with identification of revenue and expenditures, in order to define the quality, type, cost and rate of services, as well as protection of consumers' rights, in accordance with the ENASU and competences of local authorities;

- The process of organizing services should be well considered and should be agreed on a transitional regulatory regime in a progress process that ensures transparent management of services and associated resources;

- The needs of peri-urban areas and low-income groups are met through a market-based approach, focused on users' preferences and by adopting a strategy of cross-subsidisation based on high-income users. The financing of sanitation services will depend on a combination of direct subsidies and progress rate;

- The sanitation rate will preferably be implemented according to water consumption and will be included in the water invoice, respecting the levels and quality of service provided to users, the quality of the management services and creating a potential cross-subsidisation to relief sanitation management costs for low-income users who have already direct costs to certain services. Thus, in accordance with sectorial guidelines, the sanitation rate will not be initially applied to consumers with water consumption equal to or less than 10m³/month.

3.2. The 2025 Vision

- Based on continuing investment policy in management and infrastructures sanitation services in Mozambique have reached the majority of urban population, particularly the low-income population and it has created high potential Towards Universal Service;

- Open defecation was eliminated in major cities and a faecal sludge management system was implemented in all urban centres;

- Urban sanitation services are conducted in a professional manner based on corporate principles and they are subject to a specific regulatory regime and with recognized quality and public scrutiny;

- The sanitation tariff covers the operational costs and maintenance of sanitation service chain up to its treatment. The costs of water treatment and sewage sludge and its disposal and environmental protection and equipment replacement as well as all infrastructure investment costs will continue to be secured by public subsidies;

- The management of the most sanitation services has reached to a level of organization and sustainability that facilitate its integration of water supply management systems and/or delegated management regimes.

CRA, May 2014.

Part of the wall of FIPAG facilities, executed in 2008 by the artist NAGUIB.

www.cra.org.mz