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# Mozambique Public investment in water and sanitation sector and the targets of the SDG6

Manuel Salvador da Conceição Rebelo<sup>1</sup>

## *Abstract*

Many developing countries may not reach targets of providing access to safe water sources and sanitation services for all by 2030. Access to these services is a fundamental requirement for the well-being of individuals and the development of nations. A little over half of Mozambique's population has access to safe water sources. In contrast, access to sanitation services has not kept pace with the progress made in water access. In this article, based on data from the General State Account of Mozambique, which includes the description of annual investment made by the Government and using the results of the Household Budget Surveys, it is shown that if the average percentage values of public investment of 2009 to 2021 be the same in the following years in the water and sanitation sector it will not reach the goals of sustainable objective number 6 in 2030.

*Key words: Mozambique, SGD6, Access to water and Sanitation, Public Investment*

## **1. Introduction**

Access to safe water sources and sanitation services is a fundamental requirement for the well-being of individual (Minh, 2011) and, in general, for the economic growth of nations (World Bank, 2022). The absence or reduced access to these services contributes to the spread of pathogens that cause different types of disease (Ferreira et al, 2021), especially in urban informal settlements that developed as a result of unplanned urbanization process (Victor et al, 2022).

Ensuring universal availability and sustainable management safe water and sanitation services by 2030 is a sustainable development objective. The sustainable development objectives were adopted by the United Nations in 2015. The United Nations (UN) considers that for the achieving this objective requires large investments in adequate infrastructure, mainly in developing countries, where there is a significant historical delay in this field.

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The progress made in accessing safe water sources at the global level is evident, inspiring and can help mobilize more and new financing. Data show that 91% of the global population has access to a source of safe drinking water (UNWater, 2017). On the contrary, access to sanitation services is advancing but at a slow pace, that is, 3.6 billion people do not have access to sanitation services and 8% of the total defecates in the open space and a large part of this percentage are from Sub-Saharan Africa region (World Bank, 2022). There are also substantial differences in access to these services between urban and rural areas.

Although the coverage rate does not capture elements such as quality and services delivery, Mozambique has made little progress in access to water and sanitation compared to other African countries with similar income (Victor, 2022). And it is the urban areas where the country has the highest rates. The latest Survey on Mozambique Family Budgets (IOF2019/20) shows that a little more than half of the population (55.7%) has access to a source of safe water for consumption and less than half (31%) use safe sanitation services, such as the use of sewage network. This is a trend, which according to Minh (2011) is common place to developing countries.

Access to safe water and sanitation services is determined by the investment that is made in infrastructure (Ferreira et al, 2021). For example, relatively recent data indicated that the total world population using improved sanitation infrastructure in 2017 was 68% (UNWater, 2017) and this is a progress resulting from investment in infrastructure.

There is an immediate positive or negative relationship between the rate of coverage of water and sanitation services and the growth of public expenditure in these areas. Annamraju et al (2001) has recorded that in the first decade of this century, developing countries spent between 1 and 3% of their national budgets on water and sanitation services and this was considered as inadequate to reach the millennium goals.

Although public expenditure by developing countries was classified as inadequate for the goals of universal access to water and sanitation services (Annamraju et al, 2001), UNWater (2017) had registered a growth of 4.9% which was also pointed out as being insufficient to achieve the sustainable development objectives. For example, according to UNICEF (2019), Mozambique has allocated in 2019, 2.5% of the Annual State Budget to the water and sanitation sector, representing 0.5% of GDP, and with the majority directed to urban infrastructure and that sustains the trend of imbalance that occurs between urban versus rural coverage rates.

In this article, using data from the General State Account (2009 to 2021) and from the Mozambique Family Budget Surveys, we seek to understand whether the current pace of state budget allocations to the water sector still guarantee the achievement of the objective of sustainable development n° 6 by 2030.

## **2. Methodology and Materials**

Two methods were used to carry out this article: literature review and data analysis from the Mozambique General State Account (CGE) and from Family Budget Survey (IOF). The literature was identified on the internet based on the search engine Google and Google Scholar. The search words used were: “water and sanitation and Sub-Saharan Africa”, “Access to Water and Sanitation and Mozambique”. Data on the General State Account are for the years between 2009 and 2021 and are available on the Ministry of Economy and Finance (MEF) website. The CGE is a government document that shows the budget and financial execution and simultaneously presents the results of each of the economic years, allowing an understanding of the distribution of public investment, that is, which sectors are absorbing the highest percentages of investment and vice versa.

In this article, the data collected refer to the distribution of public investment by the different sectors, including those considered by the Government as “priority” for national development.

In addition to the CGE data, information on “financial execution of the investment budget” contained in the “Annual Water Sector Performance Assessment Reports” prepared by the National Directorate of Water and Sanitation of the Ministry of Public Works and Housing in 2013 was also used to 2017, which were available on the organization website.

Data from the CGE and the Annual Water Sector Performance Assessment Reports are useful to understand the origin, evolution and trends of investment in this sector. Data on access to water and sanitation were extracted from the Household Budget Surveys (IOF) (Table 1). The IOF (formerly known as *Inquérito aos Agregados Familiares* - IAF), which is one of the oldest data surveys carried out by the National Institute of Statistics (INE), is “a continuous and integrated survey of households, by sampling that collects, among others, data on expenditure and income of households residing in the country”. (INE, 2020).

**Table 1: IAFs/IOFs carried out and the number of households covered**

	<b>IAF- 1996/07</b>	<b>IAF- 2002/03</b>	<b>IOF- 2008/09</b>	<b>IOF- 2014/15</b>	<b>IOF- 2019/20</b>
Number of households interviewed	8289	8727	10832	11592	13656

Prepared by the author based on data from IOFs

All the data collected are presented in tables and comparisons are made to answer the question that this article proposes to investigate: if at the current pace of state budget allocations for the water sector, can Mozambique guarantee access to water and sanitation for all by 2030?

In the following section, as a way of looking for answers to the formulated question, the rates of access to water and sanitation services are first compared and the trends in investment expenditure of CGE in these two domains are analyzed.

### **3. Investment Expenditure Made in the Water Sector and Sanitation Services in Mozambique**

Water and sanitation occupy a central place in the development policies of the Government of Mozambique. The Government's Five-Year Plans (PQG) are the main planning instruments used to promote the country's socio-economic development and prepared with the participation of various governance institutions at different territorial scales. Every 5 years, and following the electoral calendar, five-year plans are drawn up. These plans are operationalized with national, provincial and territorial annual plans and the Annual State Budget (OGE) is the main instrument of action and intervention that guarantees the achievement of the objects of the plans. All areas of state responsibility and intervention receive annual budget allocations, which are not uniform but vary depending on national priorities. Priority areas are those that receive the largest budget allocations and are defined in the PQG. Sectors such as education, health, water and sanitation always have priority in the allocation of the annual budget.

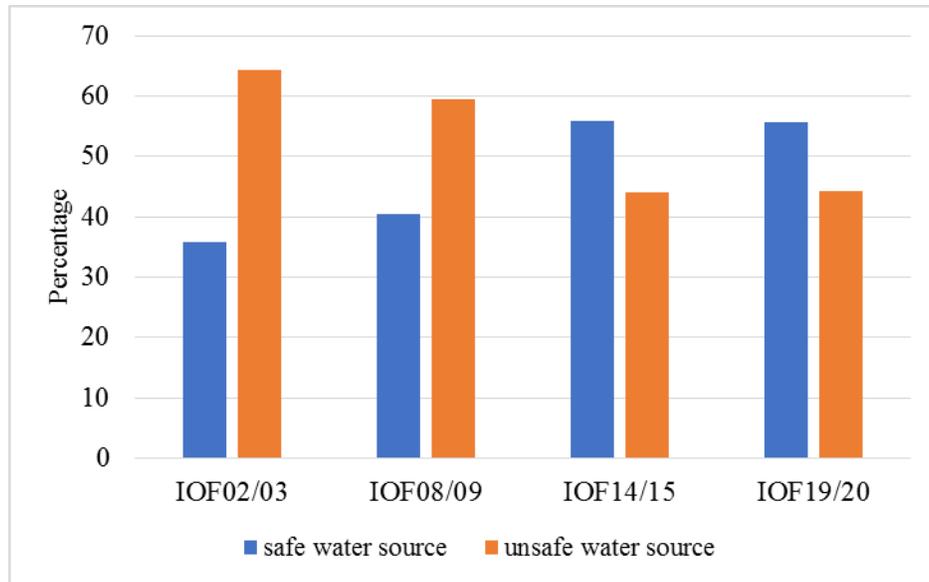
Access to water and sanitation, long before the formulation of the millennium development goals and the sustainable development goals, is within the “infrastructure” area in the OGE in Mozambique, which is an area identified as a priority in the national development plans by for this reason, the Government has invested and continues to invest in increasing the coverage rate

and in associated infrastructures considered critical and the IOFs data allow us to capture the progress achieved.

As a signatory to the Sustainable Development Agenda, Mozambique has formulated the following objectives for Sustainable Development Goal No. 6: i) Achieve universal and equitable access to safe and affordable water for all by 2030”; and ii) “Achieve access to adequate and equitable sanitation and hygiene for all and eliminate the practice of open defecation, with special attention to the needs of women and girls and those in vulnerable situations by 2030”.

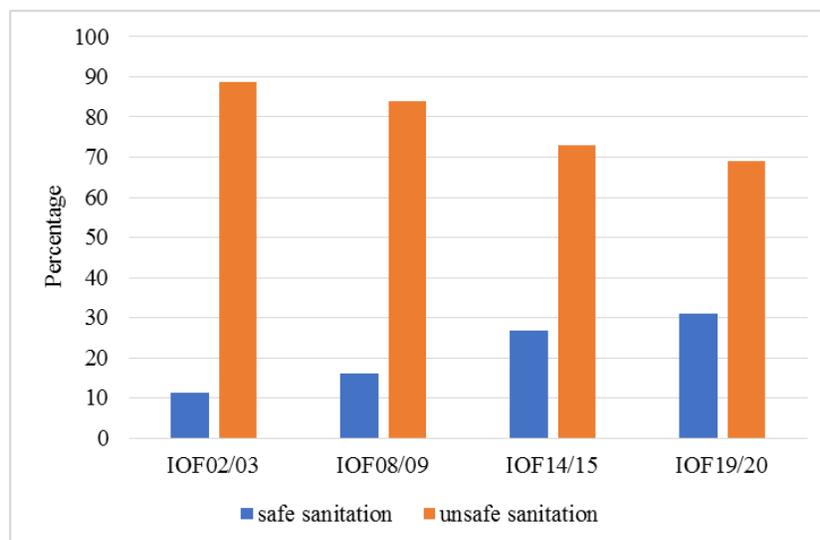
Despite the advances made, national statistics indicate that in relation to water, the coverage rate is increasing at a fast pace, but it is slow in sanitation services, that is, more than half of the total population does not have access to this service. The statistics generated by the IOFs show that in 2002/2003 more than half (64.2%) of the country's population used water for consumption from an unsafe source (water from an unprotected well, spring water, water from a river, lake, pond, rain water). This feature has been reversed. Currently, more people have gained access to water from a safe source. The latest IOF (IOF2019/20) shows that 55.7% of the population has access to a safe source of water (piped water, water from the fountain/public tap, water from the borehole/well with hand pump, water from the protected well without hand pump) and 44.3% continue to use unsafe water sources (Fig 1).

When analyzing the growth pattern of the coverage rate in Mozambique, two scenarios emerge: the first, from 2002 (IOF2002/03) to 2014 (IOF2014/15) where the growth was approximately 5% observed in each of the surveys carried out. In the second scenario, which coincides with the announcement of the Sustainable Development Goals in 2015, between the two surveys carried out (IOF2014/15 and IOF2019/20) the growth of the coverage rate was much slower, that is, a few tenths, very far from the 1 percentage point.



**Figure 1: Access to safe and unsafe water sources in %, according to IOFs**

In sanitation, access has made very slow progress and one of the reasons may be associated with the fact that Mozambique has unplanned informal settlements and a dispersed population in rural areas. Data from the IOF (2002/2003) indicated that only 11.2% of the population had access to safe sanitation services (in-house flush toilet, outside flush toilet, non-flush toilet, improved latrine and improved traditional latrine). The most recent data generated by the IOF2019/2020 indicate that about 31% of the population has access to a safe sanitation service (Fig. 2). This is one of the fastest growing percentages in recent years, approximately 5% (from 2014/15 to 2019/20).



**Figure 2: Access to safe and unsafe sanitation, according to IOFs (%)**

The question that arises is whether it is possible to find arguments that explain the trends in water coverage rates and sanitation services in the General State Budget (CGE)? It is evident that access to water improves with new household connections, construction and rehabilitation of standpipes and small water supply systems. While access to sanitation increases with the construction of improved latrines and improved traditional latrines in rural and urban areas with connections to sewers and septic tanks. Water and sanitation services as public goods, in Mozambique, the Government has a responsibility to guarantee access to these services. In the water and sanitation sector, although the private sector can intervene, this mission is the responsibility of three state institutions, namely AIAS<sup>2</sup>, FIPAG<sup>3</sup> and DNAAS.

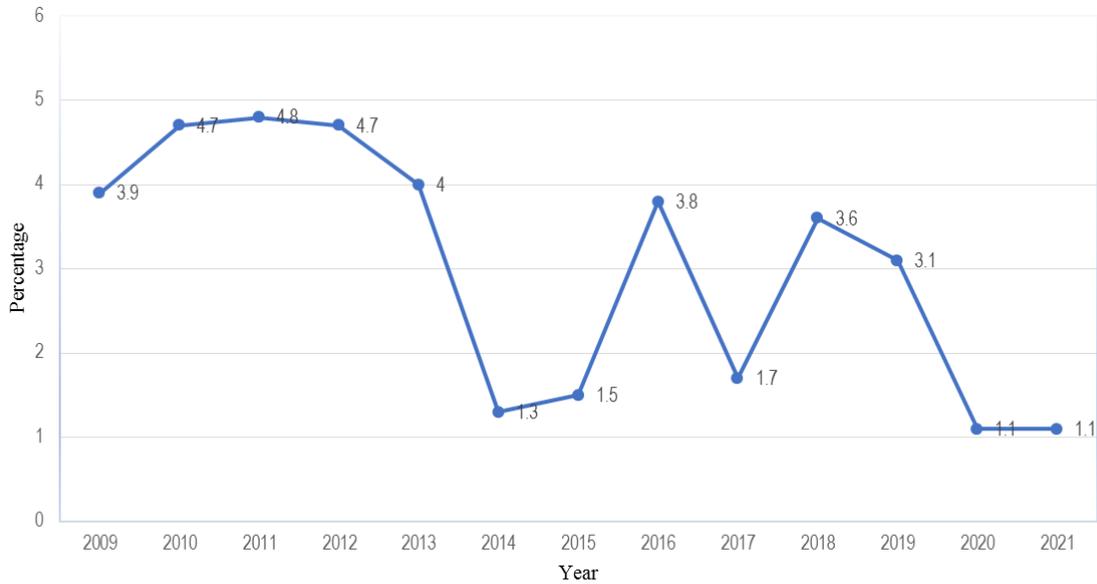
The analysis carried out on the budget allocations allows us to obtain an idea of the trend of public investment in the water and sanitation sector and to formulate a possible answer to the question posed. The reports produced by DNASS show that from 2009 to 2017 more than 70% of the Investment Budget came from sources outside the State Budget (contributions from cooperation partners from various countries and multilateral financial organizations such as the World Bank). This percentage reached 91% in 2017.

Based on the CGE, it is noted that the public investment made for the expansion of water and sanitation infrastructure to increase the coverage rate is very variable and inconstant, that is, the analysis of the data indicates that between 2009 and 2013 this area absorbed an average of 4% of total public investment. During these years, a constant and balanced pattern of transfers from the OGE to the sector has been observed. On the contrary, from 2014 to 2021 the average is lower, around 3% of total public investment, and with minimum percentage values that reach only 1.1%. This last period is inconstant and with very sharp fluctuations, for example in 2016 the allocations to the sector reach a maximum value of 3.8% of total public investment and in the following year there is a sharp reduction to 1.1%. More recently, in the latest budgets (2020 and 2021) the percentage allocated to the sector is 1.1%, which is the lowest value observed in the entire period of this analysis (Fig. 3)

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<sup>2</sup> The Water and Sanitation Infrastructure Administration (AIAS) is the entity responsible for managing the heritage and public investment program in water supply and wastewater sanitation infrastructure in smaller cities, such as towns and districts outside the jurisdiction of FIPAG (CRA, 2016).

<sup>3</sup> FIPAG is the body responsible for managing public water supply services in the country's large cities. It is the entity responsible for attracting and managing investments for the development of infrastructure in Mozambique's main cities and for promoting a strong partnership between the public and private sectors (CRA, 2016).



**Figure 3: Transfers from the CGE to the water and sanitation sector between 2009-2021 (%)**

There is a pattern that emerges which shows a positive relationship between the increase in access to water and sanitation with the transfers made by the OGE for investment in water. This increase was sometimes marked and other times quite low. The absolute and relative values of the OGE show that:

- Between 2009 and 2013, the volume of investment in this sector was the highest recorded until 2021 (Figure 2). The effects of this investment can probably explain the reduction in the population without access to a safe water source and the increase in the population with access to sanitation services that was captured by the IOF2014/2015;
- The slow growth in the coverage rate that occurred after 2015 is somehow related to the investment made in that period, which was quite reduced when compared to the previous period (2009 to 2013);
- The years between 2014 and 2020 were those with inconstant public investments and frequent fluctuations, with the lowest minimum values observed throughout the period (2009 to 2021) and it is also the period in which the water and sanitation coverage rate grew very little.

#### **4. Discussion and conclusion**

In this section the main results are discussed. The discussion is based on a synthesis of indicators that make it possible to establish the relationship between public investment in the water and sanitation sectors from 2009 to 2021 with the rate of access to these services, and also to project from the trends of current investment whether it will be possible to reach the water and sanitation SDGs target in 2030.

Table 2 summarizes the results of this article. With it, it is possible to observe that the average value of public investment carried out in the period between 2009 and 2013 was 4.42%. In this same period, the average rate of water coverage was 15.4% and 13.6% in terms of access to sanitation services. This rate is the highest recorded to date. In contrast, in the period between 2015 and 2018 the average value of public investment in these two domains was 2.65%. During this period, the access to water access coverage rate was negative (-0.2%), that is, it did not grow, despite the increase in the country's total population. From 2020 to 2021, investment in the water and sanitation sector is around 1.1%, which is the lowest value in the entire period (2009 to 2021). If this last percentage not increase, the access rate will continue to be negative, that is, a large part of the population will be without access to water and sanitation.

**Table 2: Relationship between investments made in the water and sanitation sector (in %/Year and period)**

Indicators	Year												
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Public Investment in the water and Sanitation Sector (%)	3.9	4.7	4.8	4.7	4	1.3	1.5	3.8	1.7	3.6	3.1	1.1	1.1
Access to Water (%)	40.5% (IOF2008/09)					55.9% (IOF2014/15)					55.7% (IOF2019/20)		
Access to Sanitation in % (IOF)	16% (IOF2008/09)					29.6% (IOF2014/15)					31% (IOF2019/20)		
Average public investment in each period (%)	4.42					2.65							
Difference in water access rates between IOFs 2008/09 - 2014/15 and 2014/15 - 2019/20 (%)	15.4					-0.2							
Difference in sanitation access rates between IOFs 2008/09 - 2014/15 and 2014/15 - 2019/20 (%)	13.6					1.4							

Source: prepared by the author based on data from the CGE and IOFs

The data presented in this table show that if the average investment observed in the period 2009 to 2013 of about 5.5% had been maintained in the period between 2015 and 2018, access to safe water sources would have reached 71% of the population and if the same investment value were held at least constant for the years ahead, Mozambique could reach the access to water for all one year earlier than the target set by the United Nations. In the case of sanitation, the scenario is

more complex, if the country maintains an average investment observed in the period between 2009 and 2013 of 13.6%, only in 2043 will the entire population have access to safe sanitation services. For all people to have access to safe water sources in Mozambique by 2030, and in order to accelerate the pace, the country must allocate 10 to 12% of public investment to the water sector. This figure increases to around 20% for sanitation. This will be a big challenge for a country that has many basic services to provide for all population.

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