
HYDRAULIC FACILITY MANAGEMENT AS PART OF THE INTEGRATED WATER RESOURCE MANAGEMENT IN THE AGUÉGUÉ COMMUNE

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ABSTRACT

Access to drinking water is a crucial need for the health of populations. In a context of population growth, households' water needs becoming higher the water resources that the district of Aguégúés possess could come up to those different needs. But the issue of drinking water supply remains forever. The objective of the present work is to make an inventory of used water springs and the way they are managed in Aguégúés. A methodology based on the documentary research and the works on the field allowed us to be aware that not only the access to drinking water is not ensured permanently but also the way of management of springs of water generate sanitary and environmental problems. The achievement of a strategy for a best management of water springs could alleviate people difficulties.

Keywords: Aguégúés, management, hydraulic works, GIRE.

1. INTRODUCTION

The issue of water has been the subject of several national and international meetings (E. Ogouwalé, 2006). Its sustainable management was debated at the Conference on the Environment and Sustainable Development in Rio de Janeiro in 1992. Indeed, water is an indispensable and essential resource for all human, animal and plant life, with a biological balance. nature, and human activities (ML Bouguerra, 2003). It is a limited, fragile and irreplaceable natural resource (P. Gélinas and H. Tremblay, 2004). It is the first natural element necessary for man because its lack causes the death of eight million people a year in the world, hence the need to manage it well (A.de Saint-Exupéry, 1938).

Because of its importance, which remains crucial, its integrated management as a means of solving water-related problems is the subject of international consensus (PAGIREBURKINA, 2003). So water management has become a priority for global organizations, for everyone, who is trying to provide solutions. It is the subject of several national and international meetings. The sustainable management of water was debated at the conference on sustainable environment in Rio de Janeiro in 1992. In execution of the recommendations of this conference, Benin drew up the national agenda 21 (1997) in which chapter 7 was devoted to the protection of freshwater resources in order to guarantee their availability and quality.

Similarly, under the ten-year development outlook 2006-2015 in relation to the MDGs and the Alafia 2025 vision, it makes the water resources management strategy an essential approach for several strategic objectives (PNE, 2010). This has led authorities at various levels to make

tangible efforts in the area of drinking water supply. These actions have made it possible to improve the drinking water supply situation in both rural and urban areas. The major advances noted are the equipping of towns and villages with modern hydraulic installations, the increase in the service rate for populations and the management of water services in urban areas (CREPA BENIN, 2008). In some rural localities, the drinking water supply model, represented by small works such as wells and boreholes, is tending to decline in favor of inter-village networks of complex works (R. Yélouassi, 2011). The supply of drinking water is then the subject of governance that is part of a sustainable development perspective, making the rural populations owners and managers of the equipment installed (G. Ogoronon, 2007). Water supply and sanitation in rural areas are therefore part of an intervention logic based on the involvement of local communities. This strategic choice is marked by community management of boreholes implemented with an increasingly decreasing participation of the deconcentrated services of the Directorate General of Hydraulics and a growing strengthening of local governance with regard to the sector.

In the municipality of Aguégués, water is considered a treasure and in order to ensure the proper functioning and sustainability of hydraulic structures, the construction of the latter must be accompanied by an effective management system, in the current context of Decentralization: Article 93 of Law No. 97-029 of January 15, 1999 on the organization of municipalities in the Republic of Benin stipulates that the municipality is responsible for the supply and distribution of drinking water. This means that the municipality is responsible for the management of hydraulic structures. Admittedly, integrated management and water supply in both urban and rural areas have been the subject of several studies (L. Odoulami, 1999; D. Koumassi, 2009; H. Yamongbè, 2011), but uncertainties seem to remain as to taking gender into account in the management of hydraulic structures in both urban and rural areas. The choice of this theme makes it possible to know the constraints linked to the management of these structures in order to make proposals for their better management in the said municipality. Several questions underlie this research: what are the existing hydraulic structures in the municipality of Aguégués? Does the management of these structures fit into the context of integrated water resources management? Are the actors or users developing methods or practices that can contribute to better management of the hydraulic structures at their disposal?

2. MATERIALS AND METHODS

This research aims to analyze the management mode of hydraulic equipment / structures in the context of Integrated Water Resources Management in the municipality of Aguégués. In order to achieve the set objectives, several data were used. These data are both qualitative and quantitative. As this research is mixed in nature, four data collection techniques were used. This is documentary research which uses a reading form, semi-structured interviews with an interview guide tool, administration of questionnaires with its questionnaire tool and direct observation which uses an observation grid as an observation tool. The basic unit of the sample for this research is the household. Indeed, two methods were used to constitute the research sample: on the one hand, the reasoned choice which made it possible to identify and select the wise men, the notables and the resource persons and on the other hand, the random choice which was applied to the selection of household members. The sample was determined by the probabilistic method in

proportion to the size of the households on the basis of a number of criteria. Indeed, the people questioned are at least eighteen (18) years old and sixty (60) years old at most. The target groups are made up of the targeted households in the municipality, the elderly, elders and notables, health workers, SONEB agents, resource persons involved in the governance of water resources in the municipality (technicians and engineers of DG-Eau, of the Departmental Directorate of Water of Ouémé-Plateau, NGOs working in the field, farmers and fountains). The sample was determined from the size of each arrondissement, including each household. A total of 153 households were interviewed. The information collected from the questionnaires developed was analyzed manually. The first step is to differentiate the questions into two sub-groups: the questions whose answers can be the subject of statistical analysis and those whose answers need to be summarized. In fact, the processing of data and information was done on the basis of manual analysis and codification; which allowed us to have a database for the production of tables and graphs with the help of Excel and Word 2010 software. The method used to analyze the modes of local governance of water resources is the SWOT model (Strengths, Weaknesses, Opportunities and Threats). It made it possible to identify the internal and external physical, human and socio-economic factors that influence the local governance of water resources in the municipality of Aguégoués.

The lakeside town of Aguégoués, with an area of one hundred and three (103) km², is located southwest of the Ouémé department between 6 ° 20 'and 6 ° 39' north latitude and 2 ° 22 'and 2 ° 36 east longitude. The commune of Aguégoués is a set of islets of alluvial accumulation housed in the lower part of the Ouémé river, which is submerged by floods for three to five months a year. The municipality of Aguégoués is limited:

- To the north by the municipalities of Dangbo and Akpro-Missérété;
- To the south by Lake Nokoué and the municipality of Sèmè-Podji;
- To the east by the lagoon and the city of Porto-Novo;
- And to the west by Lake Nokoué and the lakeside commune of Sô-Ava.

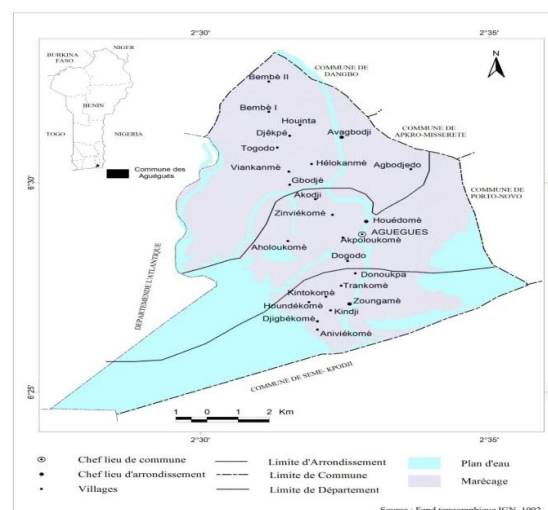


Figure 1 shows the situation of the municipality of Aguégué.

Source: Conception Babadjidé C. L., IGN, 1992

During the last census in 2013, the town had 44,562 inhabitants (RGPH-4, 2013). Water is a commodity, like air, as essential to human life. The villagers are ready to make a major financial contribution to ensure a local source of drinking water. The modes of consumption and production of water generally undergo numerous and important transformations, thus clearly changing the place of this resource in the economic and social system (B. Hounmènou, 2006). The determinants of human traits are the demographic statistics and the activities developed in the study area.

3. RESULTS AND DISCUSSION

3.1. Inventory of the drinking water supply

The water resources identified in the districts of the municipality of Aguégué are essentially made up of atmospheric water, surface water and groundwater. In terms of underground water resources, we can see the water access structures made up of AEVs, PEAs, Fountains, and traditional boreholes and wells. Figure 2 shows the spatial distribution of the hydraulic structures listed in the municipality of Aguégué.

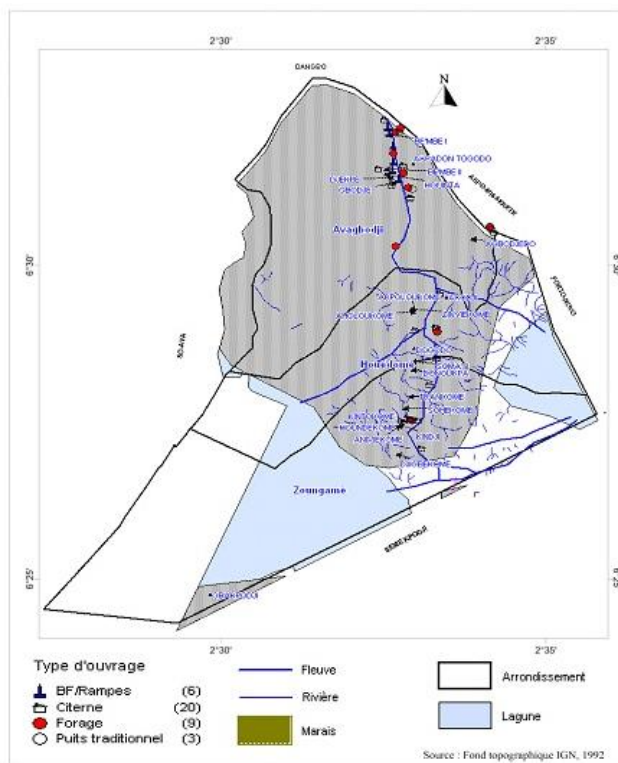


Figure 2: Spatial distribution of water points in the municipality of Aguégués

Source: Conception Babadjidé C. L., IGN, 1992

The analysis in Figure 1 shows that the municipality's water resources are unevenly distributed across the districts. Across the municipality, the summaries for 2011 show an unequal distribution of water points in Aguégués. Six (06) boreholes, one (01) AEV in addition to the sources at Vakon. SONEB only installed running water supply systems in two districts, namely Zoungamè and Houédomè, which can be explained by the poor distribution policy for hydraulic structures and by the geographical position of certain districts of the common. These hydraulic structures are an important source of supply in rural areas. Most of this equipment is installed as part of the actions of PADEAR-IDA-DANIDA and the Directorate General of Water.

3.1.1. Water resources in the municipality of Aguégués

The water supply for the populations of the municipality of Aguégués is provided by:

Groundwater (which is essentially identified within the framework of this research by the groundwater access structures: boreholes, AEVs, etc.);

Surface water (which takes into account rivers, streams, undeveloped bodies of water, swamps, ponds and ponds, etc.);

Atmospheric water (which takes into account rainwater, water from cisterns, etc.);

These waters are mainly used to meet the domestic needs of the populations and to ensure the development of agricultural activities.

• Groundwater

Groundwater is collected using several types of hydraulic works. These are wells (modern and traditional); Village Water Adductions (AEV), standpipes and private water towers. Plate 1 shows some underground water points in the town of Aguégués.



Plate 1: AEV installed in the town of Aguégués

Shooting: Babadjidé, 2020

- The National Water Company of Benin (SONEB)

Created by decree 2003-203 of June 12, 2003 and starting its activities on January 2, 2004 following a split of the water branch and the electricity branch of the former. Société Béninoise d'Electricité et d'Eau (SBEE) which was created by ordinance No. 73-18 of February 1973; SONEB is a national public industrial and commercial establishment, having the public service mission of production and distribution of drinking water throughout the country.

Thanks to the boreholes carried out in the Aguégués, SONEB ensures distribution over a large area of the municipality (two of the three districts in the study area). Thus, water, sold at a price of 198 F CFA per cubic meter for domestic uses between 0 and 5 m³ without VAT and at 415 F CFA per cubic meter above 5 m³ with VAT, comes mainly from groundwater. (DPE / SONEB, 2005). Indeed, 45% of households in the municipality are subscribed to the SONEB network. Plate 2 shows an installation by SONEB in the town of Aguégués.



Plate 2: Equipment of the SONEB in the municipality of Aguégués

Shooting: Babadjidé, 2020

The majority of the population uses water from SONEB and that of the river, AEV, boreholes, cisterns for their needs. This situation shows that access to SONEB water is difficult in the municipality of Aguégués; the site is also not conducive to the installation of said structures. This is explained by the fact that the cost of subscribing to SONEB is very high for the population, which is predominantly agricultural, and that the SONEB network does not cover the entire municipality. It should be noted that its extension is very limited in the municipality. Despite the high cost of the SONEB water basin when purchased at points of sale, some residents want it to be extended in their locality to alleviate the problems associated with the supply of drinking water.

□ Boreholes equipped with manual pumps

A borehole is a small-diameter underground water collection structure (generally 15 to 40 cm); closed, it protects the water against surface pollution but requires systematic maintenance of the pump. These works are installed by NGOs, the town hall and by the community itself through contributions. The water distribution at the standpipes (public sources and private connections) is conditioned by a pumping system that sends the water back to a large reservoir called a water tower. They are of two types: foot pumps and manual pumps distributed throughout the town. These pumps mainly supply the populations. There are six boreholes (06) distributed in the three districts of the municipality of Aguégués. Photo 1 shows a Borehole equipped with a Human Motor Pump (FPMH).



Photo 1: Borehole equipped with Human Motricity Pump in the town of Aguégués

Shooting: Babadjidé, 2020

Photo 1 shows a borehole equipped with a hand pump in the town of Aguégués. These boreholes are indeed the solution adopted in this municipality when the population to be served reaches 250 inhabitants.

□ AEV

Village water supplies are systems made up of a water tower, a generator, standpipes and pipes for the delivery and distribution of water (A. Tamou, 2009).

They are hydraulic structures that alleviate the pain of the populations (less physical effort) but their very exorbitant cost does not allow the local authorities to install several. In fact, under normal conditions, this type of structure constitutes a source of drinking water in the same way as the water supplied by SONEB. In total in the commune of Aguégués there is only one AEV and a few sources in Vakon.

□ Supply from boreholes

Two subgroups stand out. The first is made up of those who only use well water for their domestic needs and the second is made up of those who buy well water for consumption and use well water for other household purposes.

□ Atmospheric waters

The populations adopt some archaic methods for collecting rainwater. These fall on the roofs and on the ground are distributed on the one hand in the cisterns, the jars allocated for gutters, basins and on the other hand in the water table. Cisterns are installed in public schools to collect water through gutters, rainwater from roofs. As for the jars and basins, they are placed next to the rooms with small gutters for collecting water from the roof. Uncollected rainwater is drained into the flood plains through water collectors to fill the water table. This precipitation can be linked to several events (tornadoes, monsoons, etc.). As a result, the same annual total can reflect completely different realities in space and time over the years (Gnélé, 2005).

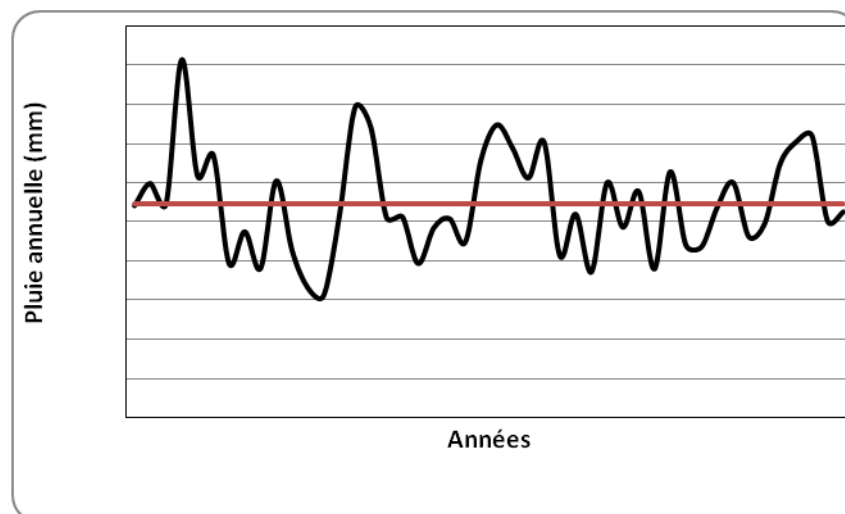


Figure 2 shows the interannual change in rainfall from 1965 to 2010 in Les Aguégues.

Source: ASECNA 2012, field data 2020

The analysis of Figure 2 reveals that over the study period, the average rainfall is around 1093 mm. The maximum annual height recorded during this period is 1824 mm for the year 1968 (the wettest year), while the minimum value is 623mm recorded in 1977.

On the whole, the rainiest years are successively 1968; 1979, 1980; 1988; 1991 and 2008. During these years, the rivers experienced exceptional high water levels, in the same way the water tables were well supplied; while the years 1977, 1983; 1992; 1994 and 1998 are the least rainy.

This leads us to remember that the years that are above the average, that is to say the wet years, lead to a significant flow responsible for soil erosion in the town.

□ **Surface water**

They are mainly used by people living near swamps, rivers, streams and lowlands. These are exposed to factors that contaminate the water. They are mostly located in an unhealthy environment and the water they contain is therefore contaminated from its origin and is the vector of several diseases for those who consume it.

Tables I and II show the distribution of water points in the municipality of Aguégues and according to each arrondissement.

<i>Municipality: AGUEGUES</i>													
<i>Borough</i>	Installation village of the main water tower	AEV number	AEV type	AEV financing	Population served	Energy	Date in Service	Number of BF	Nb B P	Management mode	Volume (m ³)	Network length (m)	Observations
<i>Avagbodji</i>	<i>Houinta</i>	1E+07	AEV		12151	Solaire	31/12/1990	6	0	Directe	40	1899	9 Functional valves and 5 faulty
<i>Summary of the Municipality:</i>			1		12151		6	0		40	1899		1

Source: BDI / DG-eau / DDMEE 2011

The analysis of Table I reveals, in terms of VNA facilities in the commune, that only the Avagbodji district has them.

Table II: Situation of water points in the municipality of Aguégues on December 31, 2011

Village	Population	Besoins en PE	Total EPE équipés	Total EPE Fonction	Breakdown rate (PM not included)	Service rate	Number of functional structures by type						Total number of AEV	Total number of PEA	Nb EPE of BF and Ramps faulty	Nb FPM out of order	Nb PM down
							FPM	FCP	PM	SA	Nb BF	PEA					
Total Commune :	34 027	137	36	36	0,00%	14,60%	5				7	1		0			

Source: BDI / DG-eau / DDMEE 2011

BF = Borne Fontaine, PEA: Autonomous water station, PE: Water point, 1PE gives water to 250 hbts, 1EPE = 1PE, AEV = Adduction d'Eau Villageoise, FPM = 1PE, PM = 1PE, AEV = Nb of BF, BF = 2PE, PEA = 4PE, EPE = Equivalent Water Point, FCP = Borehole Against Well, SA = Furnished Source, FPM = Borehole equipped with Human Motricity Pump, PM = Modern Well

3.1.2. Uses by type of water resources

The inhabitants of the commune of Aguégues use water resources for various purposes.

Use of surface water

The African peasant is powerless to retain, to preserve, to use with precaution the rainwater which falls on his land for the benefit of crops, to put it in reserve for disposal during periods of dry seasons (Chleq et al., 1997). People living near rivers use river water in some households for all domestic purposes while others use it only for washing.

Use of atmospheric water

Rainwater is used in household activities, namely: laundry, bathing, cooking and drinking.

Of the 153 households surveyed, 76% of households do not have a cistern to collect rainwater. In addition, in the town, some individuals sell water to alleviate the pain of the population and increase their financial income by building cisterns to supply the inhabitants who are far from the Bornes Fontaines.

Use of groundwater

Of the 153 households surveyed, 105 households use unimproved sources (traditional cisterns and wells, etc.) to meet needs such as: drinking, cooking, washing and washing, ie a percentage of 68%.

On the other hand, 30% of households use the improved water sources (AEV, FPM, SONEB, PM and Bornes Fontaines) for drinking and cooking; likewise others use it for economic reasons.

□ Agricultural use

The primary sector is poorly developed in the municipality of Aguégués. It brings together, on the one hand, predominantly rain-fed agricultural activities and, on the other, livestock farming. Fishing is mainly practiced in the town of Aguégués given the nature of the environment (mainly hydromorphic).

2.2. Management of water resources in the municipality of Aguégués

Several reasons are at the root of the unequal water infrastructure in the municipality of Aguégués. These concern: the politicization of this association, the lack of monitoring in relation to the cost of water, the poor planning and maintenance of the infrastructure and especially the insufficiency of repair workers, the lack of a contract between managers and the town hall. And finally, repeated breakdowns and abandoned structures. It was from this experience that the leasing system appeared and implemented in the municipality. And many improvements have been made to the management of hydraulic structures from then until now. Thus, several players are involved in the management of hydraulic structures in the municipality of Aguégués. These are the State, the Town Hall, the Farmer, the Operator, the Fontainier, the SONEB, the populations or water users, the private sector and development partners. Several modes of water resource management exist in the municipality of Aguégués. They relate respectively to:

□ Individual management

Individual management is that carried out by individuals, private individuals. The privately managed structures are the direct private connections (taps at home or at the service) of the SONEB, the specific connections of the AEVs.

These water points are equipped with a volumetric meter located inside the concessions, the household or the service benefiting from this water point must be subscribed to the water service and pay the bills according to a periodicity fixed in the subscription contract.

Individual management is also observed at the PEA level because in the municipality of Aguégués, all PEA are private. The owners of PEAs sell water and, according to them, the price of water must cover operating and maintenance costs and allow the renewal of equipment in order to ensure the sustainability of the structures. Thus, they sell the water to the people, make a profit and the rest maintain the structure.

□ Management by a committee

It is the oldest form of management of village waterworks. It is still applied today in the municipality of Aguégués. This management relates to public water points serving non-subscribed residents. These are the public fountains of AEV and SONEB. It is also observed at the level of simple structures such as FPMs, modern wells and certain developed springs.

With regard to SONEB, an entire village can subscribe through the manager or representative of his committee to a fountain equipped with a meter which is then installed in the village; the water is sold and the person in charge pays the bill, in the event of non-payment of the bill, the contract is terminated by SONEB.

FPMs, standpipes and AEVs are often managed by Water Point Management Committees (CGPE) at village and district level. These committees are responsible for the operation, upkeep and maintenance of the structures at the same time as the financial charges. Thus, they make someone responsible for the sale of water, and another person for fundraising sales per day or per week, depending on the village. The latter, paid at a flat rate, report at the village and district level.

The proceeds received from the sale would be paid to the Local Credit Union of Crédit Agricole et Mutuelle (CLCAM) and will be used for the maintenance of works, the construction of other works, and any profits are used for the construction of social infrastructure. -community according to the respondents.

However, this community-based management method has revealed its limits in the town of Aguégués. The fact is that the drinking water consumers who are the beneficiaries do not show any real interest in the appropriation of the management of water structures; they do not get involved and only the heads of the committees manage the water points in questionable conditions confirmed 95% of respondents; hence, this mode of management is nowadays confronted with enormous difficulties of misuse of funds, which lead to the abandonment of the structures and cause a shortage of water, which means that today, the management is gradually moving to management by delegation.

Management by delegation

Gradually and under the authority of the central power, the town hall becomes the contracting authority for the realization of all these village hydraulic works; DG-Eau, through its deconcentrated services, only plays the role of advising, monitoring, controlling and supporting to a successful end.

After the completion of the works, the town hall has the competence and responsibility to delegate the management of the work to a legal or natural person.

Thus, depending on the location of the water point and the context, the municipality of Aguégués chooses the type of delegation that it considers best for each water point: delegation to a representative of the community or delegation to a private operator.

Delegation to a representative of the community

Thus, in the municipality of Aguégués, more and more for new water points, a single delegatee is chosen by the municipality on a proposal from the community. This person signs a management delegation contract with the municipality comprising precise specifications that describe the responsibilities of both parties. The delegatee has the choice and the responsibility to be assisted by one or more people whom he chooses within the community, hence, often the choice of

women for the sale of water and men for the sale of water. fundraising. This management method is observed at the level of the new FPMs and certain Bornes Fontaines (BF).

In the case of the old water points, the committees are also gradually giving way to delegates. A member of the new management committee is often designated as delegatee by the community because it is assumed that the latter has the required experience and profile.

It is important to notify that delegation to a member or representative of the community is suitable for simple works, located in small localities which cannot be of interest to a private person because of the profitability of the operation.

Delegation to a private operator

The municipality of Aguégués also has the competence and the power to delegate the management of one or more simple or complex water points to a private delegatee. This situation is often observed and concerns structures located in areas of high human concentrations. In this case, the delegatee must have a legal personality and is often selected in the context of a call for competition or in the launch of a tender dossier. This is the case with Avagbodji's AEV in the Aguégués. The management of the Avagbodji EVA was entrusted to the NGO GAVODUL which is based in Bonou, it was she who won the market at the town hall level and the farmer would be a hydraulics technician.

This delegatee recruited a standpost manager, vendors at the standpipes, one fundraiser per day. According to the specifications, this company pays 80F / m³ / month to the town hall as renewal and audit fee and 75F / m³ / month for the municipal budget. Thus, major expenses (over 50,000F) are covered by the town hall and small repairs costing less than 50,000F are taken into account by the farmer.

3.3. Different modalities of access to water in Aguégués

In the commune of Aguégués, water is bought in places and is also obtained free of charge, depending on the sources of supply and the perception of the populations.

Access by purchase

Water from SONEB, DG-eau (AEV, FPM and sometimes a few modern wells and improved springs) and those from private PEAs are sold to households at different prices. These tariffs generally incorporate the following charges:

- The maintenance and upkeep costs of the pump: wear parts, parts and labor for repairs;
- The type and cost of the energy used;
- The municipal fee: maintenance tour of the repairman, parts and labor for major repairs;
- The maintenance and repair costs of the superstructure;
- The personnel costs of the delegatee;

- The benefit of the delegatee within the framework of a delegation to a private operator.

In the case of simple structures, the main factor influencing the price of water is the size of the population to be served. In the case of small localities with low populations, the costs of maintenance and the slightest repair weigh heavily on the user.

Pumps that are poorly installed, poorly repaired or boreholes with defects are also factors that increase the cost of water according to the resource persons questioned.

Thus, in general, in the commune of Aguégués, the selling price of water varies between 10 and 40 FCFA for the 25L container and between 15 and 50 FCFA for the 33 L basin depending on the aforementioned sources of supply. .

However, according to 98% of the households questioned, SONEB water is the most expensive, private subscribers all claim that their prices are too high, which means that the sale of this water is excessively expensive and is within the reach of 'a minority.

Free access

The water of the river and of other watercourses and undeveloped sources are open and free of charge. This is explained by the fact that they are natural sources of water that do not undergo any maintenance or development, it does not require any financial investment, which makes its quality questionable.

3.4. Diagnostic analysis of hydraulic infrastructure management

The SWOT analysis model applied to the results obtained from this research made it possible to determine the strengths, weaknesses, opportunities and threats of the management of the hydraulic infrastructures available in the studied sector.

3.4.1. Internal factors

They present the strengths and weaknesses of local governance of water resources in the municipality of Aguégués.

• Strengths

The municipality of Aguégués has significant water resources which, better managed, will enable it to meet its medium and long-term needs. It periodically organizes with the contribution of the wise men and the village chiefs not served in water points, especially in drinking water, meetings to discuss the hydraulic problems encountered by the inhabitants: this is the fundamental role of the Communal Water and Sanitation Unit. ensures. These water resources generate jobs and financial income for the locality.

According to the Integrated Data Base (BDI) of decentralization, it is the responsibility of the municipalities to engage in a regional planning process in order to ensure the best living conditions for the entire population. To do this, they must start from the real needs of the

population for hydraulic infrastructures, which implies in-depth knowledge of the water supply situation on the municipal territory (PADEAR, 2008).

Different groups of users (farmers, pastoralists, communities, environmentalists) can influence strategies for the management and development of water resources. This brings additional benefits, as savvy users apply local self-regulation to issues such as water conservation and protection of surface water sources much more effectively than regulation and centralized oversight can achieve (AERAMR , 2010).

• Weaknesses

The water resources of the municipality of Aguégués, despite their availability on the territory, present weaknesses. The Pluriannual Water and Sanitation Program carried out in 2009 three (03) FPM in the municipality of Aguégués;

Among the fountain managers interviewed, some confided that before, the water management committees held general assemblies to inform the population of the activities they carry out, but with the town hall which has become the contracting authority, nothing more. is not made for this purpose. The population is no longer informed of the actions carried out by the town hall.

The filling of water bodies and the vagaries of the weather affect surface and underground water sources. Also, the farmers in exercise have a little required professional qualification with notables and users who do not know their role in the governance of water resources.

Most of the water structures installed in the municipality are FPM and AEV. The population often suffers from a lack of water due to the fact that some fountains or farmers go to the fields or go about their personal occupations, thus taking the key to the water structure. The members of the Water Point Management Committees (CGPE) squander the revenue from the sale of water and no longer make payments to CLCAM. It has also been observed for three years that no payment has been made by most of the simple works existing in the town.

3.4.2. External factors

The local governance of water resources in the municipality of Aguégués presents opportunities and threats.

• Opportunities

The municipality has many assets to better manage the water resources at its disposal. Surveys carried out in the municipality have shown that the population of Aguégués is interested in the problems they encounter in the governance of water resources. When a water point is down, the wise and notables express the need from the base, that is to say to the council of the water management committee which in turn will inform the town hall which will notify the management of Hydraulics or SIS

for the construction or renovation of the work. While the work is being carried out, the population, without being invited, actively participates in the construction. From now on, the

issue of water governance concerns both the authorities and the population; "Since the municipality works for the population, it feels more and more concerned by its actions and supports it" (CST / Aguégúés). Also, a water manager said:

"The well belongs to the whole village, if each household knows that it is this water that it must use, it must maintain it. The village water management association meets periodically to discuss issues concerning the management of the village water points "(D.I., water manager, 48 years old).

The annual report of the activities of the NGO-AERAMR underlines that in the context of the construction and renovation of certain hydraulic structures in certain districts of the Aguégúés that the population is increasingly involved in questions of the management of natural resources. water. During its multiple meetings, the population and local authorities were often present (AERAMR, 2010).

In general, the population of Aguégúés wants to work with the municipality, but in no way would like the price of a water container to increase and nevertheless demand the repair of broken down structures. It should be noted that the water point management committees have affirmed their willingness to work with the community but require that the people who will be in charge of the management of the new water points built and renovated by the NGOs be chosen from among their positions. respective localities.

□ Threats

Numerous environmental risks threaten the municipality's water resources. Several pressure factors act on these resources. Among other things, anthropogenic actions (human activities) and the management method used (the farmer's contract). Water resources are under increasing pressure from the populations who derive part of their income from them. There is little social mobilization around development programs linked to water resources and difficulties in accessing water points and hydraulic structures which regularly break down.

The lack of a clear and well-documented policy and / or strategy for the management of water potential (absence of resource management instruments and decision-making support tools) prevents local authorities and managers from water in their action in the municipality. Also, the lack of information and knowledge on sectoral principles and orientations and the protection of water resources at the level of local communities, the weak involvement of actors and users in decision-making also threatens the governance of resources. in water.

The local authorities have little knowledge of the water resources available in the municipality. Difficult access for populations to adequate drinking water supply and sanitation infrastructure, due to lack of investment, lack of technical and financial assistance to farmers and managers, ecosystem disruption due to the misuse of surface water sources also prevent the good governance of water resources in the municipality.

The private sector is not yet really involved in aspects related to water governance. This is due to the fact that the awareness and political will to promote the rational, equitable and accepted

management of water resources are quite recent. The involvement of all categories of actors can therefore only be gradual (GWP / AO, 2009).

While technical solutions exist to these weaknesses and threats and are well known, the operating and management conditions currently used throughout the municipality constitute serious threats to the protection and preservation of water resources. The obstacles linked to the weak capacity of local governance of water resources still persist. Nevertheless, the study offers solutions to ensure better local governance of water resources in the municipality of Aguégués.

4. CONCLUSION

The water resources management system in Benin and in particular in the commune of Aguégués has revealed many problems. The fairly enormous water potential in surface water, groundwater, and atmospheric water used by the populations of the municipality of Aguégués for their various needs is not being put to good use. However, the majority of the population finds it difficult to obtain drinking water. The lack of hydraulic infrastructure and poor distribution expose this municipality to an increased scarcity of water in the dry season. Also, the type of soil is an obstacle to the installation of hydraulic structures. The lack of effective participation and continuous training of the grassroots population does not promote rational management of water resources. In addition to these human and infrastructural problems, there are organizational issues. The distribution in the supply of water resources is a sad revelation. Faced with these findings, it is urgent to step up water management policies, in particular within the framework of IWRM in order to guarantee water resources for future generations. It will be necessary to reorganize the management of water resources on the one hand and to proceed with the rehabilitation of water points, an equitable distribution of hydraulic structures through the realization of FPM, AEV on the other hand. Also, a modernization of the FPM management system through electrical operation, the acquisition of new equipment or the drawing up of contracts with approved operators can enable them to make the entire system more efficient. Without the involvement of users in management policies, these associations formed will only be lost. Quality training is needed from experts in hydraulic structures, to technicians recruited locally in order to have good monitoring of water points and natural resources in the town. All this would be possible if the authorities at various levels work in synergy.

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