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EVALUATION OF THE HYGIENE, SANITATION AND WATER SUPPLY SYSTEM IN SCHOOLS IN THE MASANGA -MBILA NEIGHBORHOOD IN THE MONT-NGAFULA COMMON

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I. INTRODUCTION

In Kinshasa, many elementary school lack latrines, hand-washing facilities and drinking water supply systems. This creates an environment that is not conducive to educational development and contributes to low academic performance and even dropout, especially among girls experiencing their first menstrual period. With the aim of making the school environment healthy, in 2015 a Wash (Sanitation) program was created in collaboration with the Ministry of Public Health and the Ministry of Primary, Secondary and Initiation to New Citizenship Education (MEPS-INC) currently the Ministry of Primary, Secondary and Technical Education (MEPST), the national "Ecole et Village Assainis" program in which UNICEF and the NGO OXFAM are partners. This program provides access to drinking water for the entire population, community mobilization against water-borne diseases, and awareness-raising about dirty hands and, in particular, the five critical hand-washing moments. Cholera having become endemic in the Kinshasa region, partners such as Unicef and Oxfam GB have supported certain schools, but the situation is not at all a success, as very few schools have been reached, and even some schools that have benefited from this funding have subsequently experienced maintenance problems, and the infrastructure has fallen into disrepair.

This program did not cover the schools in the Masangambila district in the commune of Mont-Ngafula, so we're going to carry out an evaluation of the schools to assess their level of hygiene.

II. ENVIRONMENT, MATERIALS AND METHODS

2.1. Study environment: the masanga-mbila district

2.1.1. PRESENTATION OF THE MASANGA-MBILA DISTRICT

2.1.1.1. Geographical and administrative location

The Masanga-Mbila district is built on the hill of Ngafula (the name of the oldest grouping chief in the city-province of Kinshasa).

Map 1 Quartier Masanga-Mbila in the Commune of Mont-Ngafula

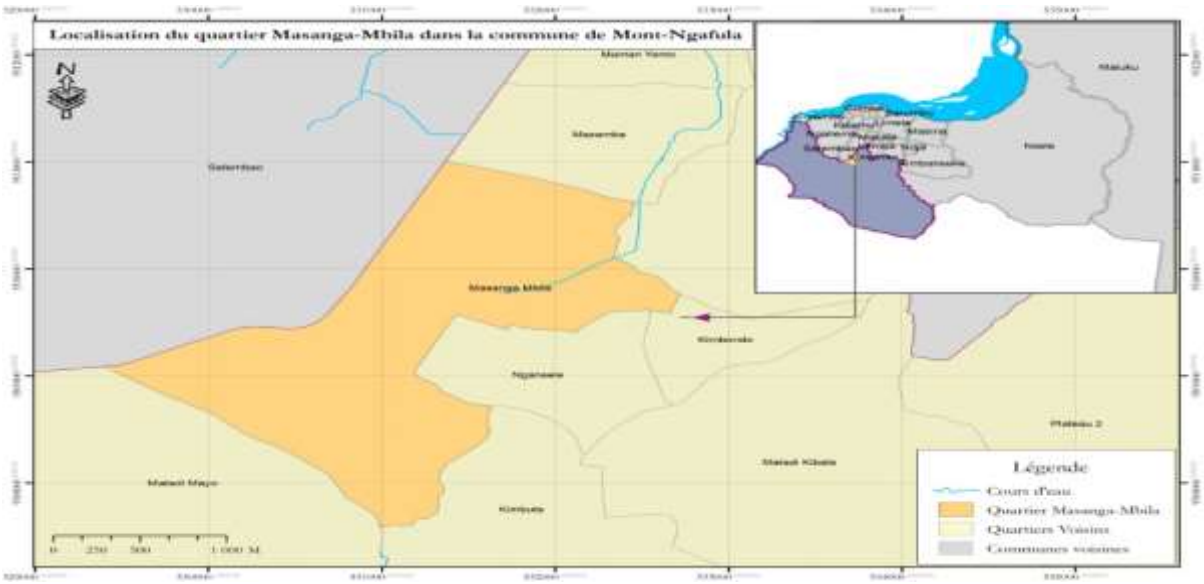


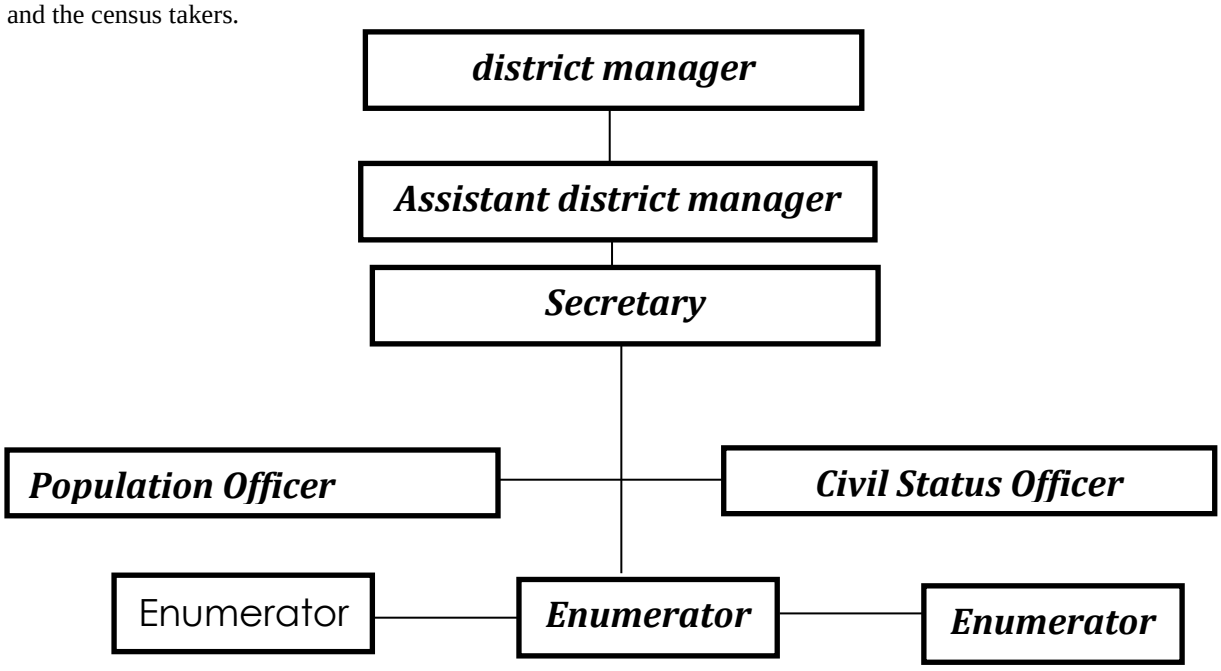
Figure 1: Quartier Masanga-Mbila in the Commune of Mont-Ngafula
Source: WGS 84 projection system. By B. Triomphe

As shown on the above map, the Masanga-Mbila district is bounded
To the north, by the Bianda and Ngasele districts
To the south, by the Masamba neighborhoods;
To the east by the Ngansele district and ;
to the west by the commune of Selembao.

2.1.1.2. Organization and administrative subdivision of the Masanga-Mbila district

II.3.1. Ward organizational structure

The district is managed by the district office. It is the municipality closest to the population. The office is made up of the head of the district, the deputy head of the district, the secretary, the population officer, the registrar and the census takers.



Source: Neighborhood Office Report, 2024

- The titular district manager: manages and supervises all political and administrative activities in the district. He is in charge of all personnel;

- The Deputy Ward Manager: is responsible for the administration and development of the ward, and for the administrative management of the staff;
- Secretary: coordinates all secretarial activities, maintains documentation and handles correspondence;
- Population Officer: in charge of technical matters (census), oversees all aspects of the district's population;

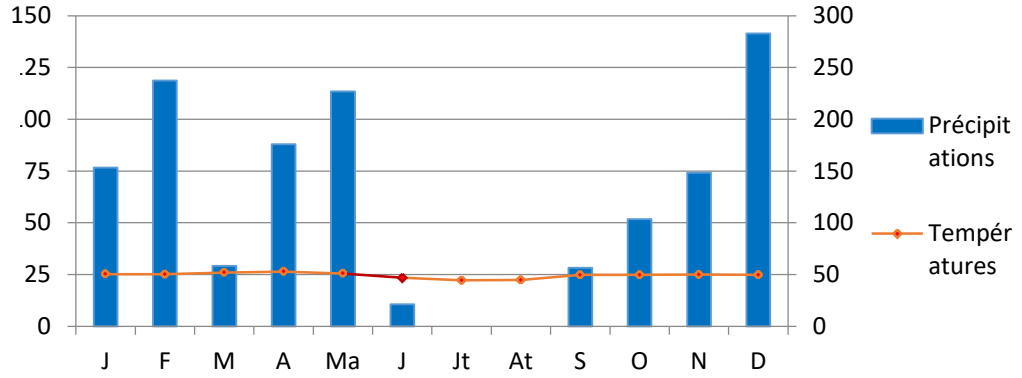
NB: The police are the strength of the district office. They collaborate with the district office. As for the ANR antenna, it helps the office with security information.

2.1.1.3. Biophysical environment

From a visual standpoint, the Masanga-Mbila district is characterized by hills, valleys and hilly terrain.

As for the soil, the Masanga-Mbila district has a sandy, marshy soil, which does not withstand the pressure of rainwater. It is therefore easily degraded, which is why the environment is at the mercy of gullying. The soil is also poor for agriculture.

The climate, however, is the same as that of the city of Kinshasa. It's a hot, humid tropical climate, with an 8-month rainy season. The dry season runs from mid-May to mid-September. The rest of the year is relatively rainy. Rainfall-thermometer data give us an idea of climate variation.



Source: 2023 data

Figure 3. Umbrothermal diagram of the Masanga-mbila district

Climatic data show that rainfall peaks in December and February, with interruptions in July and August. Total annual rainfall is 1,561.6 mm. Rainfall patterns are likely to influence soil erosion in the Masanga-Mbila district.

Maximum temperatures were recorded in March (26°C) and April (26.4°C), while maximum temperatures were recorded in June, July and August (23.4°C, 22.2°C). The average annual temperature is 24.6°C.

In terms of hydrology, the district is bordered by three small rivers: Kitadi, Nsaya and Mataba.

The natural or spontaneous vegetation has been severely degraded or even disappeared due to human action. Areas where market gardening is practiced are invaded by sand carried by run-off water. Fruit trees are planted on housing plots, but the biggest or oldest ones are cut down to make charcoal or pose a danger to housing.

2.1.1.5. Population trends in the Masanga-mbila district

II.5.2 Population size in 2024

Table II.3: Population in 2024

Congolese population					**Foreign population**					
Man	**wom en**	**boy**	**girl**	**TOT.**	**Man**	**wom en**	**boy**	**girl**	**TOT**	**GEN TOT**
3713	**3686**	**4095**	**5372**	**16866**	**21**	**20**	**29**	**30**	**100**	**16966**

Source: Neighborhood Office Report, 2024

Table II.4. Neighborhood population trends (2015-2024)

N°	**year**	**Effective**
1.	2015	10624
2.	2016	11989
3.	2017	12994

4.	2018	13754
5.	2019	14004
6.	2020	14563
7.	2021	15001
8.	2022	15805
9.	2023	16012
10.	2024	16966

Source: Neighborhood Office Report, 2024

The data in this table were used to produce Figure II.4. See below.

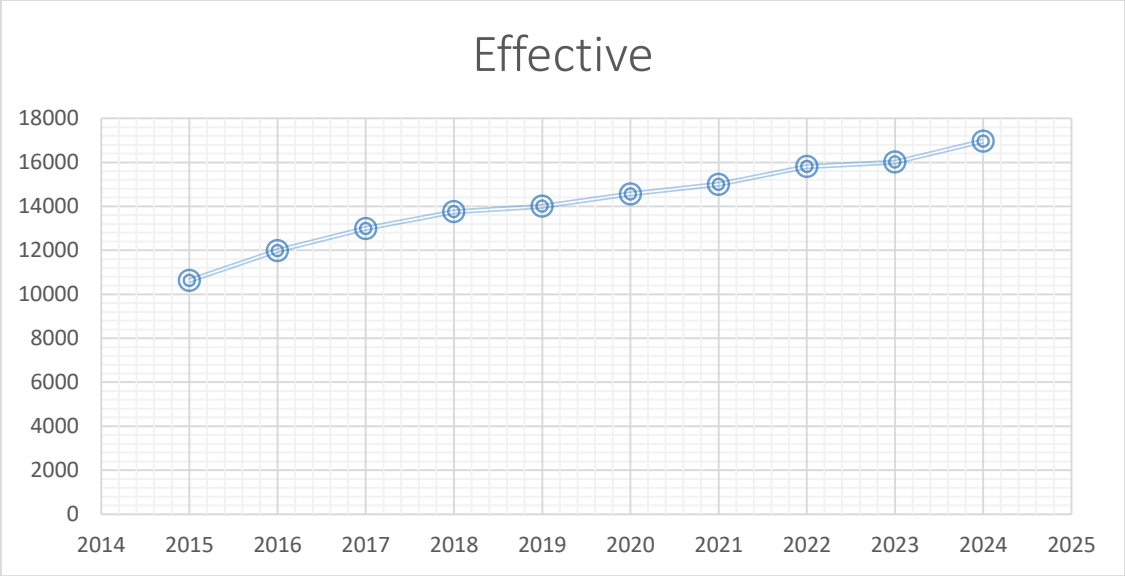


Figure 4: Neighborhood population curve (2015-2024)

Source: Neighborhood Office Report, 2024

If we consider the evolution of demographic numbers over the last ten years, i.e. from 2013 to 2022, we see a sustained evolution of the population over the period under consideration, with a five-year gain of 6342 inhabitants. If we look at the factors behind this sustained demographic growth, we see a combination of natural increase and internal and external migration (rural exodus, international migration). This demographic evolution certainly has an impact on waste production, given the demands of households.

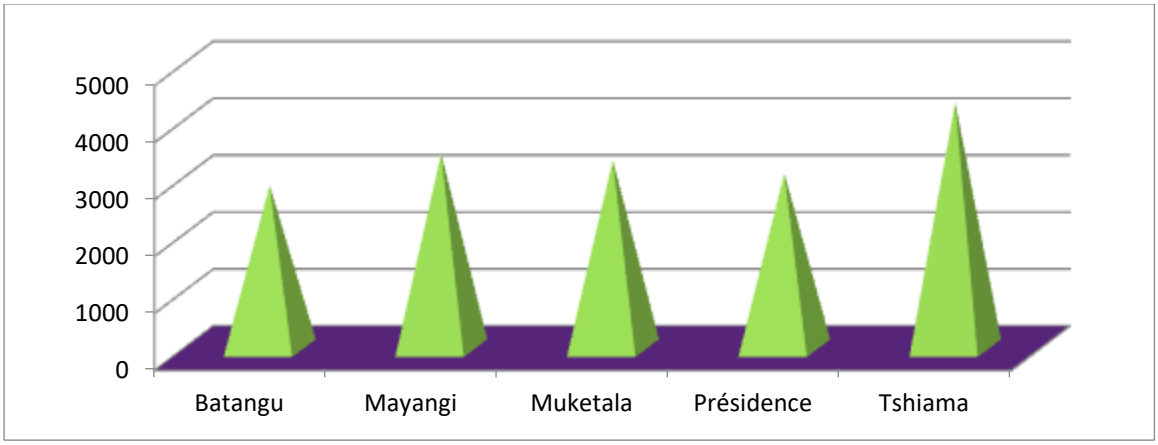
II.5.4. Population distribution of the Masanga-Mbila district by locality

The table below shows the spatial distribution of the population of the Masanga-Mbila district by locality in 2022.

Table II.5. Neighborhood population by locality

	Population congolaise					Population Etrangère					
Localités	M	W	B	G	TOT.	M	W	B	G	TOT.	TOT.GEN
Batangu	701	566	663	898	2828	5	6	6	10	27	2855
Mayangi	780	734	788	1092	3394	6	3	5	7	21	3415
Muketaka	765	741	766	1014	3286	3	6	4	3	16	3302
Présidence	624	612	796	1020	2052	5	4	6	5	20	3072
Tshiama	843	1033	1082	1348	4306	2	1	6	5	14	4320
Total	3713	3686	4095	5372	16866	21	20	29	30	100	16966

Source : neighborhood reourt,2024



Source : neighborhood reourt,2024

Figure 5 : neighborhood population masanga-mbila by locality

The statistical data in Table II.5. shows an uneven distribution of population in the five localities of the study area. Three population density bands stand out:

- Relatively sparsely populated localities with a population density of 16.8%, such as Batangu, considered to be the least populated;
- Moderately populated localities with a population density of 18.3% are Présidence, followed by Muketala with 19.4% of the district's population, and Mayangi with 20.1%;
- Finally, the most populous locality, with a higher rate of 25.4%, is Tshiama.

2.2 MATERIALS AND METHOD

2.2 Materials

We chose the Masanga-Mmbila district to carry out our research activities for this study.

I. Materials

The following materials were used:

1. Notebooks for taking notes;
2. Administrative documents of the district;
3. Administrative maps of the masanga-mbila district.

II. Methods

The work falls within the field of the environment.

The data are essentially qualitative, but a substantial effort has been made to quantify them. We used both analytical and systemic methods (De Sardan, 2008). These methods were supported by the documentary technique, the directive interview and the semi-directive interview.

This technique was used to collect and process quantitative and qualitative data. Interview information was assessed through content analysis.

The data collected was entered into Excel and analyzed using Microsoft Excel, producing tables, figures and graphs. Tables and graphs were interpreted using Microsoft Wold.

A purposive sampling approach was adopted, essentially taking into account only those schools that were accessible and willing to receive us. A total of 60 schools were surveyed.

III. RESULTS

III.1 Socio-administrative data

Table 1 Distribution of schools visited in the Masanga-mbila district by management regime

N°	Legal or management status	Number of schools	percentage
1	Private schools	30	50%
2	Protestant approved schools	5	8.3 %
3	Public schools	4	6.6
4	Catholic approved schools	15	25
5	kimbanguist approved schools	5	8.3 %

6	Salvationist approved schools	1	1.6
7	Islamic approved schools	0	0
Total	60		100

Source: field survey November 2024

This table shows that the private sector has the largest number of schools (50%). The contribution of private schools to the education sector is quite remarkable. Catholic schools come second with 25%; Protestant and Kimbanguist schools each with 8.3% and Official schools with 6.6%. And Islamic schools 0%.

Table 2. Main environmental threats facing schools in the Masanga-mbila district

N°	Types of threats	%
1	Heavey rain and floondign	40,14%
2	Anthropogenic practices (poor waste management, uncontrolled construction, etc.)	16,29%
3	Erosion	12,29%
4	River overflows	10,71%
5	Nothing reported	9,86%
6	Pollutions and births	7,14%
7	hurricanes	3,57%
Total	**100,%**	

Source: field survey November 2024

In the Masanga-mbila district, heavy rains and associated flooding are the main environmental threat (40.14%).

- Poor human practices such as waste management and anarchic construction each represent 14.29% of the threat, and erosion 12.29%.
- River overflows and poorly channelled run-off water represent 10.71% of the threat, while nuisance and pollution, notably noise pollution from churches and pubs, represent 7.14%.
- Finally, violent winds, hurricanes and tornadoes represent a threat of 3.57%, while 9.86% of respondents felt they had no opinion on the subject.

Table 3. Application of environmental protection concepts

N°	Schools that apply environmental protection concepts	Schools that do not apply environmental protection concepts
1	47	13

Source : fild surveys November 2024

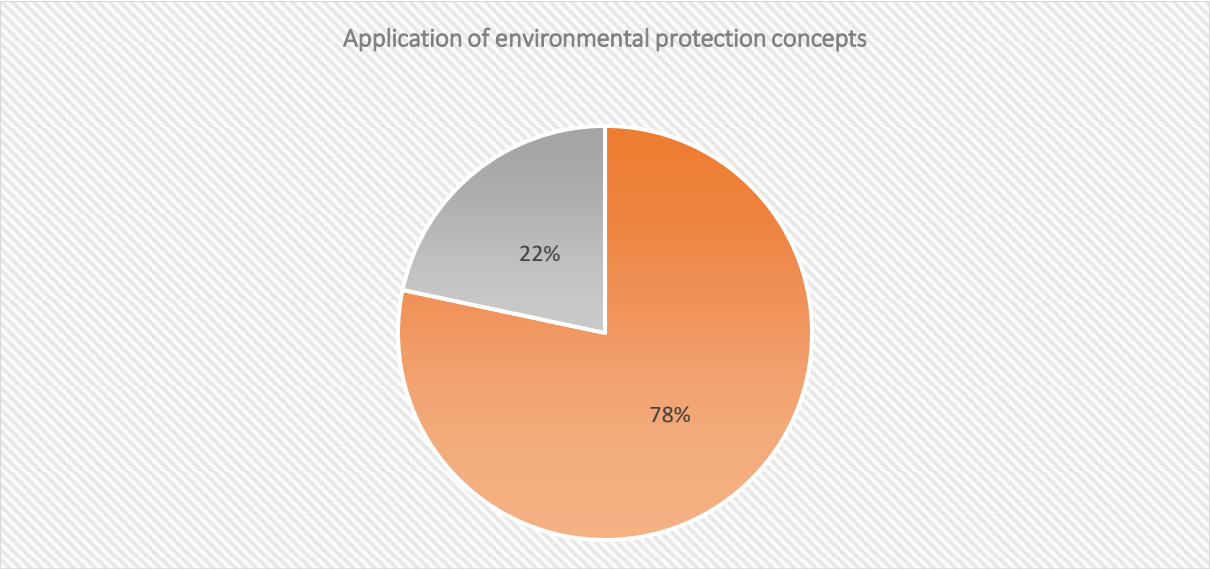


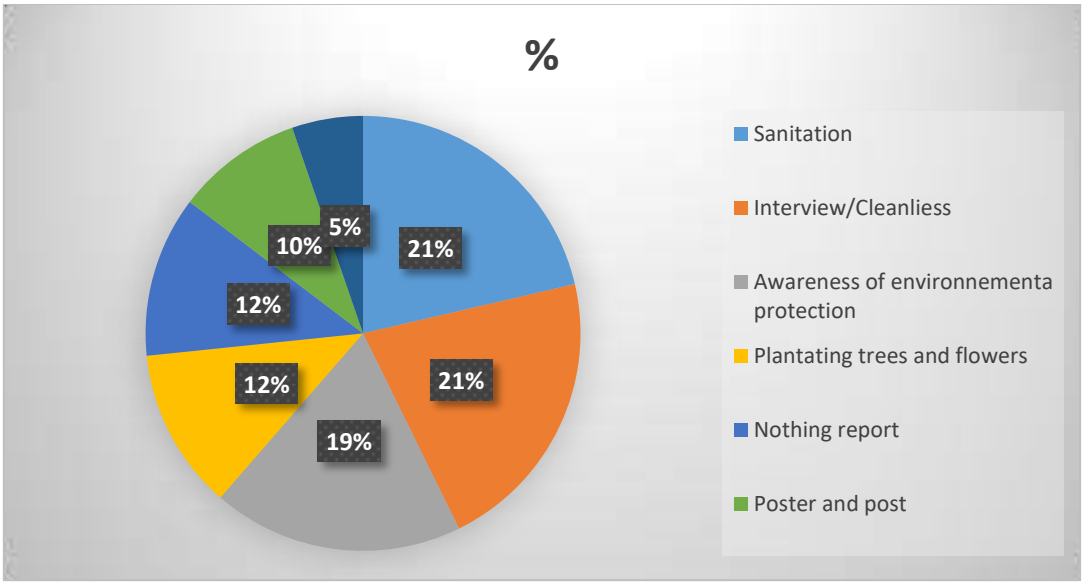
Fig 1: Application of environmental concepts
Source: field survey November 2024

The table and graph show that of the 60 schools visited in the Masanga-mbila district, 43 (78.%) claim to apply environmental protection concepts; 13 schools (22%), on the other hand, claim not to carry out environmental protection activities.

Table 3 Different activities linked to the promotion and protection of the environment in schools in the Masanga-mbila district

N°	Activities to promote environmental protection	%
1	Sanitation	18,2%
2	Interview/Cleanliess	18,2%
3	Awareness of environnementa protection	15,9%
4	Plantating trees and flowers	10,2%
5	Nothing report	10,2%
6	Poster and post	8,0%
7	Excursion/strolling Class	4,5%

Source: field survey November 2024



Source: field survey November 2024

Fig 2: Activities promoting environmental protection

This table and graph show that activities related to sanitation, maintenance and cleanliness are more frequent in schools in the Masanga-mbila district, to combat various diseases among pupils.

Table 4. Drinking water issues in Masanga-mbila schools

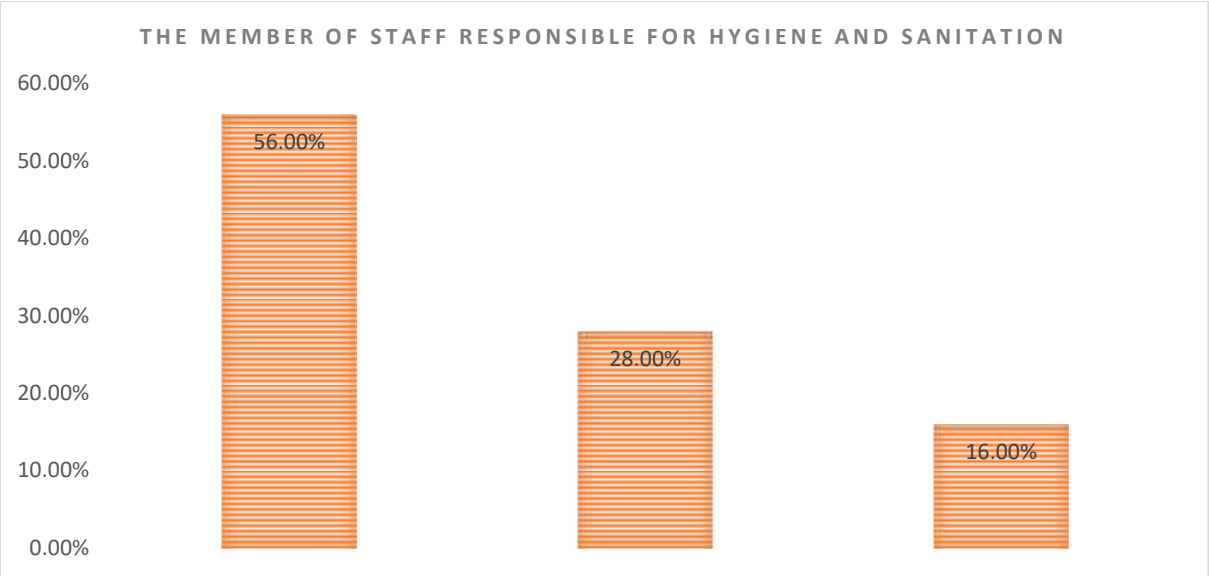
N°	Various water-related problems	Pourcentage
1	Irregular supply by REGIDESO	33,00%
2	Water shortages, schools without water supply	24,00%
3	High cost of access to water	16,00%
4	Theft or destruction of water supply equipment	14,00%
5	Unauthorized construction blocking access to water supply	8,00%
6	Nothing to report	5,00%
Total	**100,00%**	

The problem of drinking water in schools in the masanga-mbila district

After our investigations of the schools in the Masanga-mbila district in the commune of Mont-ngafula, we found that irregular water supply by REGIDESO was cited in 33% of cases; water shortages in schools without water supply or without an autonomous water supply system came second with 24% of cases; The high cost of access to water (16%), theft or destruction of drinking water supply equipment (14%) and anarchic construction blocking access to the water supply (8%).

Table 5. Hygiene and sanitation staff member

N°	The different options	%
1	Agent/worker paid by the school	56,00%
2	State-paid staff	28,00%
3	Nothing to report	16,00%
Total	**100,00%**	



Source: field survey November 2024

The table and graph show that 56% of hygiene and sanitation staff are workers paid by the school itself, and 28% are state employees, paid by the state.

Private schools are organized in their own way: either they have their own paid staff, or none at all.

Table 6. Observation of the environmental situation in schools in the Masanga-mbila district.

Observed indicators	Number schools
1. Dustbin in schoolyard	38
2. Garbage can per class	25
3. Built-in rubbish bin	40
4. Running water	
5. Toilets and latrines	34
a) For teachers	45
b) For girls	45
c) For boys	15
d) Communal toilets	45
6. Existence of toilet paper or water bucket in latrines	50
7. Window/ventilation	20
11. Environmental awareness sign	20
12. Green space	40
14. Flowers and trees	20

Source: field survey November 2024

- Schoolyard waste garbage cans are available in only 50 of the 60 schools surveyed, i.e. around (8 3.3%).
- Classroom waste garbage cans are present in 38 schools, i.e. 63.3%.
- Separate toilets for staff, girls and boys are present in 45 schools, i.e. around 75% of all cases.
- Most schools (40 out of 60), i.e. 33%, do not have an environmental awareness panel or board;
- 20 schools, i.e. 33%, are under direct threat (next to) or indirect threat (in the vicinity) of erosion.

IV. CONCLUSION

In approaching this study on the evaluation of the system of hygiene, sanitation and water use in the schools of the Masanga-mbila district, commune of Mont-ngafula, we set ourselves the general objective of analyzing the system of water management, hygiene and sanitation in these schools. This study will enable us to raise awareness and advocate for this school population by determining some different ways of managing water, hygiene and sanitation within their schools, to avoid the various diseases that may arise due to a lack of good management of these infrastructures. To achieve these objectives, we adopted a methodology based on analytical and systemic methods. These methods were supported by documentary techniques, directive interviews and semi-directive interviews.

This technique enabled us to collect and process quantitative and qualitative data. The information obtained from the interviews was assessed through content analysis. The results of our surveys showed that the majority of schools in the Masanga-mbila district still have serious problems with sanitation, hygiene and drinking water management.

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