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Real State Of Water Resources Management In The City Of Kinshasa: The Case Of Urbano Rural Municipalities (Mount Ngafula, Bumbu And Kimbaseke).

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Summary:
Kinshasa, the capital of the Democratic Republic of Congo (DRC), is facing numerous challenges when it comes to managing water resources. With a population that is constantly growing as a result of rapid urbanization, inadequate infrastructure and high promiscuity due to a population of more than 15 million inhabitants, the pressure on water supply systems is immense. This inventory examines existing infrastructures, the challenges encountered, and proposes areas for improvement.
***Materials and Methods** : Wells, boreholes and springs are the main sources of water supply for domestic use (drinking, cooking, and washing). There are several, some are equipped and others are not equipped.*
-Garmin GPS: Gathering points using garmin64 (geographic data);
- RGC (Common geographical reference frame: which represents the different entities of the country for the location of our study areas)
- ARGIS software: to produce geo-referencing maps
-SPSS to analyze survey data and develop our CARPA.
***Results** : Evolution of the use of water boreholes in Kinshasa; Comparison between access to REGIDESO water and boreholes; Case study on specific municipalities. Strategies for improving access to water; Importance of investment in infrastructure and the role of local communities and NGOs.*
***Conclusion :** Summary of the main discoveries and future perspectives for access to water in Kinshasa*
***Keywords :** drinking water, boreholes, wells, infrastructure, urban disparities*

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I. Introduction

Managing water resources remains a major challenge in rapidly growing African cities, such as Kinshasa, capital of the Democratic Republic of Congo (DRC). Despite considerable water potential, the city is facing a chronic crisis of equitable and sustainable access to drinking water, particularly in its peripheral areas with unplanned urbanization such as Mount Ngafula, Bumbu and Kimbaseke. This paradox, often referred to as **"**abundance without access" (Jaglin, 2005), reflects systemic flaws in urban planning, public investment, and local water governance.

According to Sophocleous (2002)**,** groundwater is the only stable source of fresh water supply in many regions, including tropical ones, especially when surface water is contaminated or seasonal. In sub-Saharan Africa, the importance of groundwater is reinforced by climate variability and the inadequacy of formal hydraulic networks (Amoussou, 2000; Duran-Encalada et al., 2017). In this context, GIRE — integrated water resources management — was presented as a structuring approach. However, its application often remains problematic in southern countries (Julien, 2012; Jaglin, 2005; Zérah, 2000).

The DRC, although endowed with nearly 52% of Africa's fresh water reserves (AFD, 2011), ensures satisfactory access to drinking water for only about 26% of its population (World Bank, 2022). This deficit is exacerbated by infrastructure degradation, rapid population growth, chronic underinvestment, conflicts, and the effects of climate change. Recent studies (Mande, 2023; Wakabila, 2023) warn of future tensions around water if sustainable measures adapted to the local context are not implemented.

Several researchers (Blanchon, 2024; Devisch & De Herdt, 2004; Blanc & Gouvello, 2003) stress the importance of a contextualized and territorialized approach to water management, based on community dynamics, local capacities, and the physical realities of the field. This need is all the more urgent in urban-rural areas, where spatial and institutional fragmentation makes any homogeneous management action complex.

Moreover, the water crisis in Kinshasa is not isolated. Comparative studies conducted in West Africa (Badjana et al., 2015; Ogunjo et al., 2019), in South Africa (Le Monde, 2024), or in other megacities in the global South (Amankwaa et al., 2021; Koigi, 2024) highlight similar challenges: informality of services, degradation of ecosystems, unequal access, and the emergence of hybrid solutions between public, private and community actors.

The originality of this study is based on the fact that it documents, based on a 20-month field survey (January 2023 — August 2024**),** the daily realities of access to water in three contrasting municipalities in Kinshasa. Based on a sample of 150 households and triangulated qualitative and quantitative data, it seeks to identify local management approaches, population adaptation strategies and institutional levers that can be mobilized for the sustainable improvement of water access conditions. Thus, through an interpretation that is both socio-territorial and environmental, this work is in line with the research carried out by Jaglin (2005), Julien (2012), Blanchon (2024), and Kyala Wakabila (2023), while offering an original perspective anchored in the specific realities of Kinshasa.

Study issues

In Kinshasa, capital of the DRC, the challenges related to the management of water resources are particularly acute in **urban-rural municipalities** such as **Mount Ngafula**, Bumbu and Kimbaseke. These areas, which are both densely populated and sparsely urbanized, are characterized by limited access to drinking water, an absence of structured sanitation, and an unregulated exploitation of groundwater.

However, these municipalities are experiencing rapid and uncontrolled urbanization, without adequate planning for the management of water resources. This poses a **crucial water security challenge**, both for the health of populations and for the sustainability of the urban environment. However, these areas remain **under-studied** by academic research and little considered in national public policies.

Originality of the study

This work is distinguished by its **territorial anchoring targeted** at three specific urban-rural municipalities in Kinshasa — Mount Ngafula, Bumbu and Kimbaseke — rarely taken into account in general studies on water management in the DRC. The approach aims to **highlight intra-urban disparities** in access to water, while integrating the social, environmental and institutional dimensions of local water governance.

Through a cross-analysis of available water sources, consumption patterns, community management practices, and institutional framework, this study aims to **propose concrete ways of improvement** adapted to local realities. It is thus part of a **territorialized action-research** approach, with a strong potential to support public policies and community initiatives.

II. Environment And Methods.

Site description

The study was conducted in the city of **Kinshasa**, capital of the Democratic Republic of Congo (DRC), which extends over an area of approximately 9,965 km² with an estimated population of more than **17 million inhabitants** (INS, 2023). Kinshasa presents a **strong socio-spatial contrast**, with rapid, often anarchic urbanization, causing major difficulties in accessing basic services, in particular drinking water. The study focused on three so-called **urban-rural** municipalities, namely **Mount Ngafula**, **Bumbu** and **Kimbaseke**, chosen for their representativeness of the contrasting realities of local water management.

Mount Ngafula:

Located in the southwest of Kinshasa, **Mont Ngafula** is a semi-urban commune characterized by a hilly topography, composed of plateaus, hills and ravines. It is crossed by several small seasonal rivers, including the Lukaya River. Its urban expansion has been strongly influenced by rural exodus and population displacements.

Water issues: The municipality suffers from a lack of public water infrastructure. The majority of inhabitants use **natural springs**, **private boreholes**, or **river shores, which are** often unprotected and vulnerable to contamination.

Specific challenges: Erosion, soil pollution, and the weak urban framework make the management of water resources particularly complex. (fig 1)

Bumbu

Bumbu is a town with a high population density, located in the western zone of Kinshasa. Historically a popular district, it is now entirely urbanized but under-equipped with infrastructure.
Water issues: Despite its proximity to major roads and the city center, Bumbu remains poorly served by the REGIDESO network. Most of the population gets their supplies from **informal sources**, such as neighborhood wells, or through the system of bulk water retailers (called "pushers").
Specific challenges: The dilapidated nature of water pipes, population density, domestic discharges and the inadequacy of the sanitation system increase the risks of waterborne diseases. (fig 2)

Kimbaseke

Located in the eastern part of Kinshasa, **Kimbaseke** is a peripheral zone in full demographic expansion, but very little urbanized. It is characterized by **spontaneous urbanization**, with homes built without a master plan.
Water issues: Kimbaseke is **almost outside the formal drinking water network**. Residents rely heavily on **artisanal springs**, **community boreholes**, and rainwater. The cost of access to water is high, especially during the dry season.
Specific challenges: The lack of basic infrastructure, combined with household poverty, makes hygiene conditions very precarious. The risks of groundwater contamination are exacerbated by the proximity of latrines and dumps. (fig 3)

Justification for choosing municipalities

These three municipalities were selected for their **geographical, socio-economic and urban diversity**, allowing a **comparative and representative analysis** of the challenges of water management in Kinshasa:

- Mount Ngafula for the **semi-rural setting** with rugged topography.
- Bumbu for its **high urban density** and its saturation problems.
- Kimbaseke for its **peripheral and informal nature**, illustrating areas on the fringes of public governance.

This diversity of contexts makes it possible **to identify population adaptation patterns**, **institutional deficiencies** and **hybrid forms of water management**, ranging from the formal public network to community initiatives and the informal market.

The highlighted method is a descriptive study based on a series of surveys from January 2023-August 2024, or 20 months, on a sample of 150 households observed due to 50 households per study setting.

Water resources studied

- **Groundwater**: They are the main resource studied in the three municipalities. This study focused on the groundwater that feeds local wells and boreholes.
- **Wells**: Traditional and modern wells used by households for water supply, often unprotected, dug manually or mechanically.
- **Drilling**: Artisanal or semi-professional drillings, generally deeper, sometimes equipped with manual or electric pumps, accessible to groups of households or communities.
- **Data collection tools and equipment**
- **GPS (Global Positioning System)**: To precisely geolocate the water points (wells, boreholes, springs) and the households surveyed. This spatial identification allows us to analyze the distribution of resources and their accessibility. (tab 2)
- **Mobile phone**: Used for field calls, team coordination, as well as for quick note taking and sometimes site photography.
- **Agenda/Field notebook**: Paper support for recording daily observations, interviews, remarks and qualitative elements not captured by electronic tools.
- **Survey questionnaires**: Standardized printed or digital materials intended to collect data from households on access to water, usage practices, constraints and perceptions.
- **Digital camera/smartphone**: To visually document infrastructure, water point conditions, and population practices.
- **Data processing software** (post-survey): Use of software such as Excel, SPSS or QGIS for the processing, statistical analysis and mapping of collected data.

Field team

The study mobilized a multidisciplinary team composed of:

- Investigators trained in collecting water and socio-economic data,
- Supervisors in charge of quality control,
- Researchers for data processing and analysis.

Type of study

The present research is based on a descriptive field study, oriented towards the analysis of the real conditions of access, use and management of water resources in three urban-rural municipalities of Kinshasa: Mount Ngafula, Bumbu and Kimbaseke. According to **Quivy and Van Campenhoudt (2006)**, the descriptive approach makes it possible to draw up a precise inventory of a given social or environmental situation, through rigorous observation of facts and practices in the field.

This method is particularly suited to African urban contexts where official statistical data are often limited, and where everyday realities are not sufficiently documented by public institutions.

Duration and time frame of the study

The study took place over a period of **twenty (20) months**, from **January 2023 to August 2024**. This relatively long period allowed us to:

- Take into account **seasonal variations** that affect access to water (dry season and rainy season),
- Observe the **progressive changes** in household behavior and the evolution of infrastructure,
- Gather data that is more robust and less dependent on ephemeral contextual factors.

According to **Devisch and De Herdt (2004)**, a long-term study is particularly relevant in changing urban contexts, in order to grasp the dynamics of social responses to the failures of public services. **Sampling**

A total of **150 households** were observed, i.e. **50 households in each of the three targeted municipalities**. The choice of households was made according to a **reasoned and stratified** method, taking into account criteria such as:

- The geographical location within the municipality (center, periphery, landlocked areas),
- Types of access to water (connection to the network, wells, boreholes, informal sources),
- The socio-economic diversity of households.

This sampling strategy aims to reflect the **plurality of local situations** and to maximize the qualitative representativeness of the data. A similar approach is adopted by **Zerah (2000)** in his studies on differentiated access to water in Mumbai, India, or by **Jaglin (2005)** in his work on urban services in sub-Saharan Africa.

Data Collection Techniques

The research mobilized several complementary tools to guarantee the **reliability and triangulation of** information:

- **Questionnaire surveys**: addressed to heads of households to document supply sources, costs, daily constraints and the perception of water quality.
- **Semi-structured interviews:** conducted with local actors (district heads, REGIDESO agents, municipal officials, NGOs active in the field of water).
- **Direct observation**: allowing to evaluate hygiene conditions, the state of water points, collective behavior, etc.
- **Documentary analysis**: study of institutional reports, communal development plans, legislative texts, and hydrological databases available.

Methodological discussion

This methodological device has several advantages:

- It **incorporates local realities** that are often ignored by national statistics.
- It **allows a detailed reading of intra-urban disparities**, in particular between planned neighborhoods and informal areas.
- It offers a **dynamic and contextualized vision** of water management, sensitive to social, economic and environmental factors.

This approach is in line with work such as that of **Baron and Peyronnie (1996)**, which underlines the importance of territorial contextualization in urban surveys, or **Blanc and Gouvello (2003)**, which calls for a local and multisectoral interpretation of urban services in African cities.

In addition, the descriptive method makes it possible to pave the way for **practical and adapted recommendations** for community and institutional actors.

III. Results

Gender survey interviewed or affected by the survey are **women (67%)**, compared **to 33% men**. The survey shows that women constitute a large majority among the participants, which underlines their central role in the daily management of water in the municipalities studied. This could guide the recommendations towards

more active involvement of women in local water management policies, given their first-hand experience of the reality on the ground.
(tab 3)

The results of the survey conducted in the commune of Mount Ngafula show a predominance of women among the respondents (67% against 33% of men). This imbalance reflects not only the central place that women occupy in domestic water management, but also their strong involvement in issues related to access and use of this resource. These data suggest that **a more inclusive water management policy should necessarily take into account the voice of women**, especially in urban-rural areas. (tab 4)

In the municipality of Kimbaseke, the survey reveals a male predominance among the respondents (70% against 30% women). This situation is in sharp contrast to that observed in Mount Ngafula. It could reflect **less involvement of women in the survey or difficulty in accessing their views**. This imbalance suggests that the **results may not fully reflect the realities experienced by women, who** are often at the forefront of daily water management. (tab 5)

*Survey on the drinking water shortage in municipalities, neighborhoods as well as the frequency of:

The results of the table indicate that **the vast majority of inhabitants (84%) do not have a permanent supply of drinking water**, highlighting a serious lack of continuous access to this essential resource. Only **16% benefit from a regular service**, which indicates a critical situation, especially in urban areas where demand is constant. In addition, **15.5% of the data are missing**, which could reflect unserved areas or difficulties in accessing certain populations for the survey. **This precarious water supply** underlines the need for urgent interventions to strengthen infrastructure and ensure sustainable supplies. (tab 6, table 7, table 8)

*Survey on supply outside Regideso:

The results show a **massive dependence of inhabitants on water sources outside REGIDESO**, even in officially served neighborhoods. More than **94% of respondents with service also use boreholes**, noting **low confidence or insufficient service.** In unserved neighborhoods, supply relies on a combination of **boreholes (87.2%), wells (64.1%)**, and other less reliable sources. This situation illustrates the urgent need for **structural reform of the distribution network** and **support for community initiatives for access to water**, while guaranteeing the sanitary quality of the alternatives used. (tab 9)

*Survey on the reasons for difficulties in accessing drinking water: The results in Table 8 show that **demographic pressure is perceived as the major cause of difficulties in accessing drinking water** (77% of responses). This observation highlights **uncontrolled urbanization** and a **lack of adequate planning of** public services, particularly on the part of REGIDESO. Added to this is the weight of **outdated or undersized infrastructure** (20.9%), contributing to the inefficiency of the distribution system. Although little mentioned (2.2%), **anthropogenic water pollution** remains a **real and growing risk**, often underestimated by populations but requiring urgent attention from health and environmental authorities. (tab 10)

Infrastructure degradation
-Lack of surveillance and follow-up
-lack of in-depth studies of the area before investment:
-Overall lack of technical expertise
- Quality of water supply structures and their maintenance have been compromised (picture1)

*Survey on the consumption of drilling water

The survey shows that **63.5% of respondents directly consume borehole water as drinking water**, reflecting a **strong dependence on this alternative source in** the face of failures in the REGIDESO network. Although boreholes appear to be an additional or emergency solution, their use as the **main source of drinking water raises major health concerns**, especially in the absence of quality controls. This situation reveals the urgent need for **technical and sanitary supervision of boreholes**, as well as a **strategy to strengthen access to controlled drinking water** in the municipalities concerned. (table 11)

*survey on the quality of borewater and wells

The survey reveals that **66.9% of respondents consider that the water from boreholes and wells is not of good quality, despite the high use of** these sources as a drink (see Table 9). This situation reveals a **worrying paradox**: the population, although aware of the risks associated with the consumption of this water, **has no choice but to resort to it for lack of a reliable alternative**. This observation underlines **the urgent**

need for a technical, sanitary and regulatory framework for these installations, as well as a **policy to raise awareness and treat water at home** (e.g. chlorination, filters).
(table 12)

*survey on the characteristics of drilling waters and wells:

The survey highlights the prevalence of abnormal characteristics detected in borewaters, with 60.1% of users reporting questionable taste, and other problems such as coloration (8.7%), odor (8.7%), and hardness (6%). These perceptions, which are mostly negative, reinforce the conclusions of the previous tables on the **questionable quality of borewater**, despite their widespread use as drinking water. Only **11.5% of respondents noted no anomalies**, showing a **widespread quality deficit**, requiring **rigorous health monitoring**, **potability testing**, and **community education on home water treatment**.
(table 12)

*Survey on health problems related to the consumption of drilling and well water

The survey reveals that **more than half of respondents (55.4%) have suffered health problems related to the consumption of borehole water**, which is a major red flag. These results, compared with those in tables 9, 10 and 11, confirm that **borehole water, although widely used as a source of drink, presents real health risks**. This situation underlines the **urgent need to set up a water quality control system**, to ensure **minimal treatment at home (filtration, disinfection)** and to raise **public awareness of the risks associated with unsafe consumption**.
(table 14)

*Survey on the types of diseases related to the consumption of borehole and well water

The survey states that **stomach pain (73.7%) is the main health problem observed** following the consumption of borehole water. This symptom is typically linked to **microbiological contamination** of water, in particular by **pathogenic bacteria** or **intestinal parasites**. **Nausea (8.4%) and other problems (17.9%)** also highlight potential **toxic and chemical** risks. These data support the health concerns raised in the previous tables and **reinforce the urgency of water quality treatment and monitoring**, as well as **community awareness** to avoid these waterborne diseases.

*borehole water and wells is a cause of waterborne diseases

Waterborne diseases are transmitted through human and animal excrement from patients or germ carriers. The pathogens most commonly encountered in the tropical climate according to Poté John (2009). **The survey shows that 66.0% of respondents attribute waterborne diseases mainly to drinking water, and more specifically to borehole water.** This situation confirms that **water quality is a major health problem** in the municipalities of Kinshasa. In addition, **unsanitary** conditions (8.0%) and **other causes** (26.0%) related to environmental conditions around water sources increase the risk of contamination and diseases. These results reinforce the need **to strengthen the sanitation of water points** and **to put in place strict control of the quality of borehole water**. (Tab 16)

IV. Discussion

Managing water resources in Kinshasa, the capital of the Democratic Republic of Congo (DRC), remains a major challenge, especially in urban-rural municipalities such as Mount Ngafula, Bumbu, and Kimbaseke. Access to quality drinking water is limited, in large part due to the absence of reliable distribution systems and poor management of water resources. This situation has a direct impact on public health, with high risks of waterborne diseases, especially in the most vulnerable areas.

1. Drilling water challenges

Borehole water, which is the main source of water supply for many families in these municipalities, is often of poor quality. Survey results show a strong **negative perception** of the quality of borewater, with **66.9% of respondents considering water to be undrinkable** (Table 10). This water, although widely used, presents increased health risks. In fact, more than half of respondents (55.4%) reported having suffered from health problems, mainly **stomach pain (73.7%) and nausea (8.4%) (Tables 15 and 16)**. These symptoms are typically linked to **bacterial or parasitic contaminations**.

Similar studies conducted in other developing countries show comparable results. For example, a study in **Kenya** (Gacheri, 2014) reveals that **borehole water is a major source of waterborne diseases**, due to contamination by pathogens. Similarly, research in **Nigeria** (Oni et al., 2016) highlights that rural communities using untreated water sources frequently suffer from **waterborne diseases** such as diarrhea and typhoid.

2. The insalubrity of water points and its impact on water quality

The unsanitary nature of water points is another factor that worsens water quality in Kinshasa. Table 14 shows that **66.0% of respondents attribute the cause of** waterborne diseases primarily to drinking water, and **8.0% cite** unsanitary conditions as a contributing factor. Unprotected water sources, proximity to sanitary facilities, and lack of appropriate treatment increase the risk of contamination by **bacteria and viruses**.

This is consistent with the findings of a study conducted in **Tanzania** (Komba et al., 2017), which highlights that **unsanitary conditions around wells and boreholes** contribute to poor water quality and the increase in waterborne diseases, despite the presence of water sources available nearby.

3. The perception of water quality and alternatives

Despite the **mostly negative perception of the quality of borehole water**, alternatives such as the use of **wells, boreholes, or springs** remain necessary in many areas where access to water from the public network (REGIDESO) is almost non-existent (Table 7). However, as a study in **Senegal** (Diouf et al., 2015) points out, the lack of control over the quality of these sources **leads to a high consumption of untreated water**, with serious consequences for the health of populations.

It is interesting to note that, in some studies, **domestic filtration systems** have shown a **significant reduction in the health risks** associated with untreated water. For example, a study in **Mozambique** (Matusse et al., 2019) reveals that the use of simple household water filters reduced incidents of waterborne diseases by more than 40%, which could be a solution to consider in Kinshasa to improve the quality of water consumed.

4. Recommendations for sustainable water management

The results of this study underscore the **urgent need to put in place sustainable solutions** to improve the supply of drinking water in Kinshasa, including:

- **Strengthening borewater management: Establishment of regular controls of the quality of borehole** and well water through potability tests and simple but effective **disinfection methods** (chlorination).
- **Improving water supply infrastructure**: Investing in **drinking water distribution systems**, especially in the most remote areas where access to the REGIDESO network is insufficient.
- **Community awareness and health education**: Promote hygiene practices, such as the use of household water filters and adequate water storage, to reduce health risks.
- **Protection and sanitation of water points**: In collaboration with local authorities, **sanitize areas around water sources** to avoid contamination by waste, chemicals, and sewage.

The study of water resources management in Kinshasa, particularly in the municipalities of Mont Ngafula, Bumbu and Kimbaseke, reveals major challenges in terms of water quality and public health. The **results of the survey** show that the **consumption of poor quality borehole water** contributes significantly to waterborne diseases, which underscores the need for more rigorous management of water resources and improved health infrastructure. **Practical solutions**, such as improving water sources, domestic treatment, and sanitation of water points, are crucial to address these health challenges and improve access to drinking water in a sustainable manner.

V. Conclusion

The study on the real state of water resources management in the city of Kinshasa, particularly in the urban-rural municipalities of Mont Ngafula, Bumbu and Kimbaseke, highlighted major challenges concerning access to quality drinking water. The results of the survey show that the population is largely dependent on borehole water, but this water poses significant health risks due to its poor quality. More than half of the respondents reported health problems related to the consumption of this water, mainly stomachaches and nausea, symptoms often associated with microbiological contamination of the water.

Analyses revealed that the **insalubrity** of water points and the **poor quality of borewater are the main causes of** waterborne diseases in these municipalities. Furthermore, although alternatives such as wells, boreholes, and springs are commonly used, these sources remain insufficiently controlled and disinfected, increasing public health risks.

The data also underscore the importance **of improving water supply infrastructure** and **strengthening water quality control**, as well as the need to **raise awareness about** good hygiene practices and simple home water purification methods. The implementation of these recommendations would reduce water-related health risks and promote a healthier environment for residents of Kinshasa municipalities.

Finally, this study highlights the urgent need **to put in place sustainable solutions** to improve water resources management, taking into account local specificities and involving communities in water management and protection. An integrated approach, combining local governance efforts, health education, and investments

in sanitation and water treatment infrastructure, will be essential to ensure equitable and secure access to drinking water in Kinshasa.

Thus, the management of water resources in Kinshasa requires increased attention, collaboration between public authorities, civil society actors and local communities in order to ensure the public health and well-being of vulnerable populations in these municipalities.

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Tables

Tab 1

Key encrypted data by municipality

Commune	Estimated population (2023)	Area (km²)	Access to drinking water (%)	Density (inhabitants/km²)	Type of habitat
Mount Ngafula	~120,000	350	~ 35%	343	Semi-rural, dispersed
Bumbu	~450,000	37	~ 40%	12,162	Dense urban
Kimbaseke	~80,000	65	~ 20%	1,230	Informal periphery

Sources: National Statistics Institute (INS, 2023), 2023-2024 field surveys

The municipalities (MOUNT NGAFULA, BUMBU AND KIBANSEKE), population estimate (2023), their area per km2, accessibility to drinking water, their densities (inhabitants per km2, type of habitat).

Tab 2

Geographic coordinates of drilling and wells

	Adress			Coordinates			Depth (m)
	Commune	Neighborhood	Avenue and number	S	E	Elevation (m)	
1	Bumbu	Dipiya	Kinzozi 7	04° 22'53.5"	0.15°17'33.8"	312	2.5
2	Bumbu	Dipiya	Kinzozi 8	04°22'53.4"	015° 17'34.0"	313	2
3	Bumbu	Dipiya	Ngufu 12	04° 22'46.7"	015° 17'37.9"	33	5
4	Bumbu	Dipiya		04°22'4.0"	015° 13'6.7"		3
5	Bumbu	Dipiya		04° 22'49.7"	015° 17'44.3"		2
6	Bumbu	Dipiya		04° 22'50.2"	015° 17'45.7"		3
7	Bumbu	Dipiya		04° 22'43.1"	015° 17'40.6"		3
8	Bumbu	Dipiya		04°22'41.1"	015° 17'42.0"		2.5
9	Bumbu	Dipiya		04° 22'29.0"	0.15°18'0.1"		2
10	Bumbu	Dipiya		04° 22'1.4"	015° 18'6.7"		2.5
11	Bumbu	Dipiya	Kingungu	04° 22'52.2"	015° 17'34.9"		
12	Bumbu	Dipiya		04° 22'46.5"	015° 17'37.5"		
13	Bumbu	Dipiya		04° 22'46.6"	015° 17'37.9"		
1	Kimbanseke	Esanga		04° 26'53"	0.15°22'04.8"	302	3.5
2	Kimbanseke	Esanga		04° 26'43.0"	015° 22'04.6"	299	1
3	Kimbanseke	Esanga		04° 26'49.9"	015° 22'11.8"	303	1.5
4	Kimbanseke	Esanga		04° 26'50.0"	015° 22'11.9"	303	1.5
5	Kimbanseke	Esanga		04° 26'39.8"	015°22'01.8"		5
6	Kimbanseke	Esanga		04° 26'39.6"	015°22'01.7"		10
7	Kimbanseke	Esanga		04° 26'37.8"	015° 22'00.3"		4
8	Kimbanseke	Esanga		04° 26'52.2"	0.15°22'04.4"		8
9	Kimbanseke	Esanga		04° 26'48.1"	0.15°22'04.4"		6
1	Mount Ngafula	Don Bosco		04° 22'57.2"	015° 13'15.1"	322	
2	Mount Ngafula	Don Bosco		04° 23'02.3"	015° 13'17.8"	315	
3	Mount Ngafula	Don Bosco		04°22'54.4"	015° 13'13.3"	320	
4	Mount Ngafula	Don Bosco		04°22'44.4"	015° 12'55.7"	331	
5	Mount Ngafula	Don Bosco	Source	04° 22'38.7"	015° 12'45.6"	302	4

Drilling and wells, Address (municipalities, neighborhoods), depth and treatment

Tab 3

:: Report on the analysis of the field survey on gender in the commune of BUMBU;

Variable	Modalities	Absolute frequencies	Relative frequency
Sex	Masculine	16%	33%
	Feminine	34%	67%
		50%	100%

Tab 4
Analysis report of the field survey on gender in the commune of MONT NGAFULA

Variable	Modality	Absolute Frequency	Relative Frequency
Sex	Masculine	16%	33%
	Feminine	34%	67%
		50%	100%

Tab5
Analysis report of the field survey on gender in the municipality of KIMBASEKE.

variable	Modality	Frequency	Relative frequency
sex	masculine	35%	70%
	Feminine	15%	30%
		50%	100%

Tab 6
Presence of Drinking Water Services in the Municipalities

		Presence of Drinking Water Services in the Municipalities	
		Yes	No
Commune	Mount Ngafula	33	17
	Kimbanseke	47	2
	Bumbu	29	20

Tab 7: Presence of the Drinking Water Service in the Neighborhood

			Percentage	Valid percentage
Valid	Yes		73.6	73.6
	No		26.4	26.4
	Total		100.0	100.0

Tab 8: Presence of the Drinking Water Service in the Neighborhood

Variables/Terms		Absolute frequency	Relative frequency
Valid	Yes	13.5	16.0
	No	70.9	84.0
	Total	84,5	100.0
Missing	System	15.5	
Total		100.0	

Tab 9

Supply outside REGIDESO					
			Presence of the Drinking Water Service in the Neighborhood		Total
			Yes	No	
Supply outside RegideSOA	If No, Well Water Use	Effective	39	25	64
		%	37.5%	64.1%	
	If No, Use of Borewater	Effective	98	34	132
		%	94.2%	87.2%	
	If No, Spring Water Use	Effective	7	1	8
		%	6.7%	2.6%	
	If No, Use Faucets in Other Neighborhoods	Effective	9	3	12
		%	8.7%	7.7%	
	If No, Use of Other Means of Procurement	Effective	20	8	28
		%	19.2%	20.5%	
Total		Effective	104	39	143
Percentages and totals are based on respondents.					
A. Group of dichotomies tabulated at the value 1.					

Table 10: Reasons for Difficulties in Access to Drinking Water

		Percentage
Difficulties in Access to Drinking Water	Population growth as a reason for difficulties in accessing drinking water	77.0%
	Obsolete or insufficient infrastructures as a reason for Difficulties in Access to Drinking Water	20.9%
	Water pollution due to human activities as a reason for Difficulties in	2.2%

	Access to Drinking Water	
Total		100.0%

Tab 11: Using Drilling Water as a Drink

Variables/Terms		Absolute frequency	Relative frequency
Valid	Yes	63.5	63.5
	No	36.5	36.5
	Total	100.0	100.0

Tab 12 Drilling and Well Water Quality

Variables/Terms		Absolute frequency	Relative frequency
Valid	Yes	33.1	33.1
	No	66.9	66.9
	Total	100.0	100.0

Tab 13		
Characteristics of Drillwater	Drilling Water Coloring	8.7%
	Taste of Water Drilling	60.1%
	Drilling Water Smell	8.7%
	Water hardness Drilling	6.0%
	No Anomalous Characteristics of Drilling Waters	11.5%
	Other Characteristics of Drilling Waters	4.9%
Total		100.0%

Table 14: Health Problems as a Result of Drilling Water Consumption

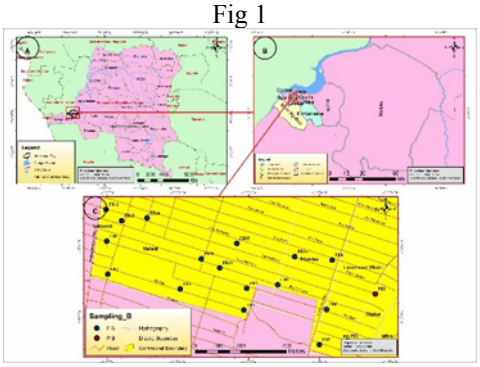
Variables/Terms		Absolute frequency	Relative frequency
Valid	Yes	55.4	55.4
	No	44.6	44.6
	Total	100.0	100.0

Tab 15 Drilling Water: Causes, Waterborne Diseases

			Responses Percentage
Causes of Hydric Diseases	If Yes, Unsanitary Conditions as a Cause of Diseases		8.0%
	If Yes, Drinking Water as a Cause of Diseases		66.0%
	If Yes, Other Causes of Diseases		26.0%
Total			100.0%

Figures

Fig 1

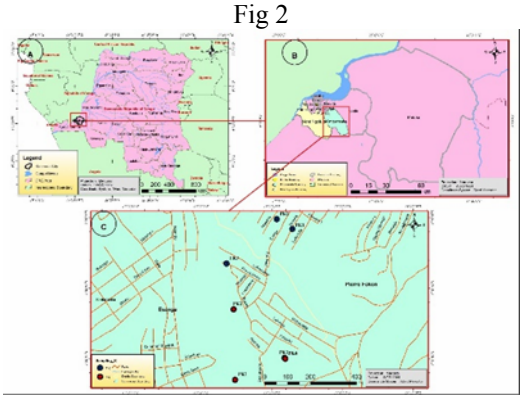


Bumbu Rural Municipality

The city province of Kinshasa is represented in part A

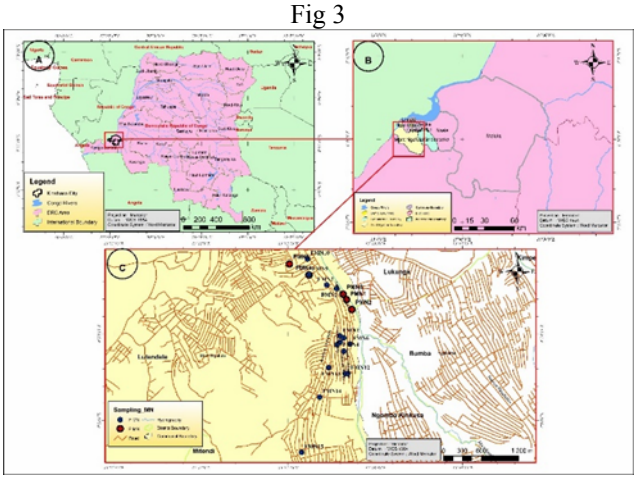
Bumbu in part B, and the various wells and boreholes, roads, hydrography, district boundaries and communal boundaries in part C

Fig 2



Kimbaseke Rural Municipality
The city province of Kinshasa represented in part A
Kimbaseke in part B, and the various wells and boreholes, roads, hydrography, district boundaries and communal boundaries in part C

Fig 3



Mont-ngafula Rural Municipality
The city province of Kinshasa represented in part A
Mount Ngafula in Part B, and the various wells and boreholes, roads, hydrography, district boundaries and communal boundaries in Part C