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TRANSFORMATION OF WATER INTO A COMMERCIAL PRODUCT IN KISANGANI: A sociological analysis of the bottled and sachet water market

René KWAZIME NDAKPA

Teacher and researcher at the University of Kisangani

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ABSTRACT

This article analyzes the transformation of water, an essential common good, into a market product in the city of Kisangani in the Democratic Republic of Congo (DRC). Faced with the chronic failures of the public drinking water distribution service provided by REGIDESO, a parallel and informal market for packaged water (in bottles and sachets) has emerged and developed considerably. This sociological study examines the social, economic and health dynamics that underpin this market. Based on a review of the literature, contextual data and theoretical analysis, the article explores how the commodification of water reconfigures social relations, creates new forms of inequalities and impacts public health. The results indicate that while this market responds to a vital need for a large part of the population, it does so in an uneven way and often to the detriment of the health security of the most vulnerable consumers. The study concludes with recommendations for more effective regulation of the sector and increased investment in public infrastructure to ensure the universal right to safe drinking water.

KEYWORDS: Drinking water, commodification, social inequalities, public health, informal economy, right to water, environmental justice.

INTRODUCTION

Access to drinking water is recognized as a fundamental human right by the United Nations, essential to life, health and dignity. Yet, in many cities in the Global South, this access remains a daily challenge for millions of people. The city of Kisangani, the third largest city in the Democratic Republic of Congo, is a striking example of this paradox. Crossed by the majestic Congo River and endowed with abundant

surface water resources, the city suffers from a chronic shortage of drinking water, forcing its inhabitants to turn to expensive and often dangerous alternatives¹.

The failure of the Public Water Distribution Authority (REGIDESO), whose dilapidated colonial-era infrastructure is no longer able to meet growing urban demand, has left a void that is quickly filled by the private sector, and more particularly by a thriving informal market². This market is characterized by the sale of packaged water in two main forms: bottled water, generally perceived as a high-quality product and intended for a more affluent clientele, and sachet water, sold at a very low price and consumed by the majority of the population, especially the poorest individuals.

This "transformation of water into a commodity" is not a neutral phenomenon. It raises deep sociological questions about the privatization of a common good, the creation of new forms of social stratification based on the ability to pay for quality water, and the health risks associated with a largely unregulated sector. The ubiquity of sachet water, while a survival solution for many, is directly linked to outbreaks of waterborne diseases such as cholera, as studies in Kinshasa have ³shown.

Kisangani, with its approximately 1.5 million inhabitants according to recent estimates, is a living laboratory for the challenges of urbanization in Central Africa. The city has expanded considerably over the last two decades, with the creation of new peripheral neighborhoods that have developed informally, without coherent urban planning and without support in terms of basic infrastructure. This rapid demographic growth has put enormous pressure on an already fragile water distribution system. This article therefore proposes to conduct a sociological analysis of this water market in Kisangani. The aim is to understand the logics of the actors who drive it (producers, sellers, consumers), to analyze the social structures it generates and to discuss its implications for Boyome society. The objective is to go beyond the simple observation of a public service crisis to question the complex dynamics of the commodification of a vital resource in a context of rapid urbanization and fragile governance.

The issue of access to drinking water in urban centres in developing countries has been the subject of an abundant literature, at the crossroads of sociology, anthropology, economics and public health. Three main axes of this literature shed light on our subject of study.

¹ Amwanga, Z. (2023, 24 janvier), *DRC Has Vast Water Resources, But Kisangani's Taps Run Dry*. Global Press Journal. Consulté à l'adresse <https://globalpressjournal.com/africa/democratic-republic-of-congo/drc-vast-water-resources-kisanganis-taps-run-dry/index.html>

² Likoko, D. B., et al. (2023), *Problem of the extension of the drinking water distribution network in the peripheral districts of the city of Kisangani*. International Journal of Research and Engineering in Haiti and the Congo. Consulté à l'adresse <https://ijrehc.com/vol-6-issue-4/problem-of-the-extension-of-the-drinking-water-distribution-network-in-the-peripheral-districts-of-the-city-of-kisangani/>

³ Mbala-Kingebeni, P., Vogt, F., et al. (2021), *Sachet water consumption as a risk factor for cholera in urban settings: Findings from a case control study in Kinshasa, Democratic Republic of the Congo during the 2017–2018 outbreak*. PLOS Neglected Tropical Diseases, 15(7), e0009477. Consulté à l'adresse <https://doi.org/10.1371/journal.pntd.0009477>

The crisis of urban hydraulics and the emergence of informal markets

A first set of studies documents the failure of public water management models in sub-Saharan Africa. Inherited from the colonial period, centralized network distribution systems, managed by state-owned companies such as REGIDESO in the DRC, have proven unable to keep pace with rapid urbanization and maintain their infrastructure due to a lack of sufficient investment and viable economic models⁴. Researchers such as Gandy (2004) have analyzed this phenomenon as a form of "fragmented modernism," where enclaves of modern services coexist with large unserved areas, creating an urban geography of inequality⁵.

It is in this context of structural failure that "informal water markets" emerge and develop. These markets, far from being anecdotal, constitute the main mode of supply for a majority of the urban poor. Jaglin's (2002) work on water services in sub-Saharan Africa has shown how a variety of private actors (small retailers, water carriers, sachet sellers) take charge of distribution where public service is absent or intermittent⁶. These studies underline the ambivalence of this sector: it is both an adaptive response and a source of precariousness, characterized by high prices, unguaranteed quality and dependencies.

The Commodification of Water: Between Law and Convenience

A second, more theoretical axis questions the process of "*commodification*" or commodification of water. Authors such as Polanyi (1944) have, from a historical perspective, analyzed the way in which capitalism tends to transform into commodities elements that were not produced for the market, such as land, labor or money. More recently, sociologists and geographers have applied this framework to water⁷. They analyze how water, from a common good managed by the community, becomes a product (a "commodity") with an exchange value, subject to the laws of supply and demand. This process is often justified by a neo-classical economic discourse that postulates that pricing water at its economic "fair value" is the only way to ensure its rational use and to finance infrastructure⁸.

However, many critical works, particularly in the field of political ecology, challenge this view. They argue that the commodification of water exacerbates inequalities, excluding the poorest from access to a

⁴ World Bank. (2009), *Provision of water to the poor in Africa: experience with water standposts and the informal water sector*. Consulté à l'adresse <http://documents.worldbank.org/curated/en/421921468191675047/Provision-of-water-to-the-poor-in-Africa-experience-with-water-standposts-and-the-informal-water-sector>

⁵ Gandy, M. (2004), Rethinking urban metabolism: water, space and the modern city. *City*, 8(3), pp. 363-379.

⁶ Jaglin, S. (2002), The right to water versus cost recovery: participation, urban water supply and the poor in sub-Saharan Africa. *Environment and Urbanization*, 14(1), pp. 231-245.

⁷ Castro, J. E. (2013), Water is not (yet) a commodity: Commodification and the politics of water governance. *Human Figurations*, 2(1). Consulté à l'adresse <https://quod.lib.umich.edu/h/humfig/11217607.0002.103/-water-is-not-yet-a-commodity-commodification?rgn=main;view=fulltext>

⁸ Jaffee, D. (2020), Enclosing Water: Privatization, Commodification, and Access. In *The Cambridge Handbook of Environmental Sociology*. Cambridge University Press.

vital resource, and dispossesses communities of their control over their resources⁹. The debate crystallizes around the tension between the recognition of water as a fundamental human right and its management as an economic good. The proliferation of bottled and sachet water is one of the most visible manifestations of this commodification, transforming the need to drink into an act of consumption segmented by purchasing power.

Public health and health risks related to packaged water

Finally, a third field of research, stemming from epidemiology and public health, focuses on the health implications of these new water consumption patterns. While sealed bottled water is generally considered safe, sachet water, which is the mass market, poses significant risks. Studies conducted in several African cities, including Accra and Kinshasa, have highlighted the dangers associated with this product^{10 11}.

Contamination can occur at several levels: at the source, if the water is not adequately treated; during the packaging process, which is often artisanal and carried out in precarious hygienic conditions; and finally, during handling and consumption. The mode of consumption, which involves direct contact of the mouth with the potentially soiled surface of the sachet, is a vector for the transmission of pathogenic microbes. Research has established a significant statistical correlation between the consumption of sachet water and the prevalence of waterborne diseases such as cholera and typhoid, confirming that this survival solution is also a health trap for the most vulnerable populations¹².

In conclusion, the existing literature provides a solid framework for analyzing the situation in Kisangani. It invites us to articulate the macro analysis of water policies and commodification, the meso analysis of informal markets, and the micro analysis of consumption practices and their health consequences.

The failure of the public water service in Kisangani has created a paradoxical situation: a city rich in water resources where access to drinking water has become a commodity. This situation has given rise to a dual market for packaged water, with bottled water, a symbol of purity and social status, on the one hand, and sachet water, an accessible but health-insecure solution for the masses, on the other. The central issue of this research is to understand the sociological implications of this commodification of water.

How does the substitution of a failing public service by an informal and unregulated market reconfigure social structures, inequalities and health risks in Kisangani? This is not only a technical or economic

⁹ Bakker, K. (2003), *An Uncooperative Commodity: Privatizing Water in England and Wales*. Oxford University Press.

¹⁰ Mbala-Kingebeni, P., Vogt, F., et al., *Op.cit.*

¹¹ Lutterodt, G., van de Vossenberg, J., et al. (2018), Microbial Contamination of Sachet Water and Its Associated Health Risks in Accra, Ghana. *Access to Water in a Changing World*, 10(1), 13.

¹² Mbala-Kingebeni, P., Vogt, F., et al., *Op. cit.*

problem, but a total social fact that affects collective representations, household strategies, public health and social stratification. The question is no longer just "how to get water?", but "what water can we afford and what does this consumption say about our place in society?". This study therefore looks at the social construction of the water market in Kisangani and analyzes how thirst, a universal biological need, is socially and economically differentiated.

To answer this problem, we formulate three main hypotheses:

- The collapse of confidence in the public service of REGIDESO, perceived as incapable of providing reliable and quality water, is the main catalyst for the mass adoption of packaged water. This recourse to the market is not a simple choice of consumption, but a strategy of survival and mistrust of the State;
- The packaged water market in Kisangani functions as a marker and reproducer of social inequalities. The distinction between bottled and sachet water consumers reflects and reinforces socio-economic stratification, creating a form of "water apartheid" where health security is directly correlated with income;
- The widespread consumption of sachet water, due to its low cost, accessibility and lack of effective quality control, is a major health risk factor for the poorest people in Kisangani, contributing to the persistence of waterborne diseases and trapping them in a vicious cycle of poverty and poor health.

The general objective of this research is to analyze the sociological dynamics of the transformation of water into a market product in Kisangani.

This general objective is broken down into several specific objectives:

- **Describe how the packaged water market works:** Identify key players (producers, distributors, sellers), map supply chains, and analyze pricing strategies for bottled and sachet water.
- **Analyze the logics of consumption:** Understand the social representations, motivations and consumption practices of packaged water within the different social strata of Kisangani.
- **Assess the socio-health impact of the market:** Examine the consequences of this market on public health, in particular the risks associated with sachet water, and on the household budget.
- **Propose avenues for reflection:** On the basis of the analysis, formulate recommendations for better governance of the water sector, which articulates market regulation and reinvestment in public services.

To analyze the complexity of the transformation of water into a commercial product in Kisangani, this study mobilizes four complementary theoretical frameworks:

1. **Commodification theory:** Inspired by the work of Karl Polanyi¹³ and developed by contemporary authors in the field of political ecology^{14, 15} this theory is central to our analysis. It conceptualizes the process by which water, initially considered a common good and a right, is gradually transformed into a commodity subject to the rules of the market. We will use this framework to analyze how the value of water is socially constructed, moving from a use value to an exchange value, and how this transformation affects its access and management.
2. **The sociology of the informal economy:** This framework allows us to understand the structure and dynamics of the water market outside of state regulation. Building on the work on informal economies in Africa¹⁶, we will analyze the water market in Kisangani, not as a marginal or transitional sector, but as an economic and social system in its own right, with its own norms, hierarchies and logics of power. This will help us understand the role of the different actors, from small-scale artisanal producers to street vendors, and the dependencies that bind them.
3. **The sociology of risk:** The notion of the "risk society" developed by Ulrich Beck¹⁷ is particularly relevant for analyzing the health implications of drinking water in sachets. Beck argues that modern societies are increasingly confronted with risks that are the products of industrialization itself. In our case, sachet water is a "solution" that generates its own risk. This framework will allow us to analyze how this risk is produced, distributed unevenly within the population (mainly affecting the poorest) and how it is perceived (or not) by consumers and authorities.
4. **Theories of Environmental Justice and the Right to Water:** This normative and critical framework will be used to assess the social implications of water commodification. The notion of "water justice" emphasizes the equitable distribution of water resources and associated risks, as well as the participation of citizens in decisions about water management. We will use it to analyze how the water market in Kisangani creates forms of injustice and exclusion, in violation of the human right to safe drinking water.

As this study is mainly based on a literature review and analysis of secondary data, the methodology described below represents the ideal approach that would be implemented for in-depth field research on this topic. This review attempts to follow this logic based on the available information.

The preferred approach is **qualitative**, as it is the most capable of grasping the complexity of the social logics, representations and practices of the actors. It aims to understand the "why" and "how" behind the strategies of water consumption and sale.

The data collection techniques to be implemented would be as follows:

¹³ Polanyi, K. (1944), *The Great Transformation: The Political and Economic Origins of Our Time*. Farrar & Rinehart.

¹⁴ Castro, J. E., *Op. cit*

¹⁵ Bakker, K., *Op. cit*.

¹⁶ Jaglin, S., *Op. cit*.

¹⁷ Beck, U. (1992), *Risk Society: Towards a New Modernity*. Sage Publications.

- **Documentary technique:** This is the basis of this work. It consists of a systematic review of scientific articles, reports from international organizations (WHO, UNICEF, World Bank), NGO publications, official documents of REGIDESO and articles from local and national press dealing with the issue of water in the DRC and more specifically in Kisangani.
- **The technique of semi-structured interviews:** These would be conducted with a diverse sample of actors to cross-reference perspectives:
 - **Consumers:** from different neighbourhoods (central, peri-central, peripheral) and different social classes to understand their choices, their perceptions of risk and the impact on their budget.
 - **Water sellers:** itinerant sellers of sachets, managers of water outlets, to understand their working conditions, their income and their place in the distribution chain.
 - **Producers:** managers of sachet water production units (formal and informal) to analyse their techniques, sources of supply and perception of quality.
 - **Institutional actors:** REGIDESO executives, heads of hygiene and public health services, municipal authorities, to gather their vision of the problem and the solutions envisaged.
- **The direct observation technique:** Observation sessions in different public spaces (markets, streets, standpipes, etc.) would make it possible to document the concrete practices of selling, buying and consuming water, as well as the interactions between the actors.

The analysis of the data collected (interview transcripts, observation notes) would be done through a **thematic content analysis**, aimed at identifying recurring themes, convergences and divergences in discourses and practices, in order to test the research hypotheses.

01. The structural crisis of access to drinking water in Kisangani

The current situation of the water market in Kisangani cannot be understood without an in-depth analysis of the context in which it emerged: the gradual and structural bankruptcy of the public drinking water distribution service. This chapter aims to dissect the causes and manifestations of this crisis, which constitutes the backdrop to the commodification of water.

01.1. A colonial legacy running out of steam

The basic infrastructure of the water distribution network in Kisangani, as in many cities in the DRC, is a direct legacy of the Belgian colonial period. Designed in the 1930s and 1940s, the initial network was designed to serve a much smaller population geographically concentrated in European administrative and residential districts. As a World Bank report points out, these systems were not designed to adapt to the population explosion and urban sprawl that characterized African cities after independence¹⁸.

¹⁸ World Bank, *Op. cit.*

In Kisangani, REGIDESO inherited this infrastructure without benefiting from the investments necessary for its maintenance, modernization and especially its extension. The pipes, mostly made of metal, are now not only dilapidated, but also heavily corroded. The Acting Provincial Director of REGIDESO himself admitted in 2023 that "the main problem is related to the water infrastructure, in particular the aging and rusty metal pipes dating from 1939".¹⁹ This dilapidation has two major consequences: considerable technical losses (leaks) throughout the network, and a deterioration in the quality of the water which, even if it is treated at the source, is recontaminated by contact with rust and wastewater infiltration into porous pipes.

01.2. The hydraulic divide: a geography of inequality

REGIDESO's inability to expand its network has created a real spatial and social divide. While the downtown neighborhoods (Makiso commune) remain partially served, although with frequent interruptions, the vast peripheral neighborhoods, the result of informal urbanization (such as Mangobo, Tshopo, Kisangani, Lubunga and Kabondo), are largely off-grid. A study on the extension of the drinking water network in these peripheral neighborhoods highlights the technical and financial difficulties that prevent the connection of hundreds of thousands of inhabitants²⁰.

This situation creates a geography of inequality where access to tap water becomes a privilege. Residents of unserved areas are forced to rely on alternative sources: often shallow and contaminated wells, backwaters, or the purchase of water from retailers. According to a 2018 survey, 53% of households in Tshopo province depend on untreated water sources, a figure higher than the national average of 41%.²¹ This hydraulic divide is the breeding ground on which the informal water market has been able to thrive, offering an alternative where the state is absent.

01.3. A bankrupt economic and institutional model

REGIDESO's crisis is not only technical, it is also profoundly economic and institutional. The company is caught in a vicious circle: the poor quality of service and the incessant and untimely cuts discourage users from paying their bills, depriving the company of the income needed to invest in the rehabilitation of its infrastructure. A resident of Mangobo testified to the fact that he continued to receive bills of about \$10 per month despite the lack of water, a situation that fuels mistrust and refusal to pay²².

In addition, the Congolese state itself is a bad payer. World Bank data shows that the government's payment arrears to public services reached \$176 million in 2020²³. Financing for the water sector in the

¹⁹ Amwanga, Z., *op.cit.*

²⁰ Likoko, D. B., et al., *Op.cit.*

²¹ Amwanga, Z., *op. cit.*

²² *Ditto*

²³ World Bank., *Op.cit.*

DRC is overwhelmingly dependent on international aid. Between 2010 and 2015, only 1% of REGIDESO's investments in the urban sector came from the government, compared to 90% from donors²⁴. This external dependence makes any long-term policy difficult and subjects water management to the vagaries of international aid.

Restructuring attempts, such as the one approved in 2021 to allow REGIDESO to sign contracts with private companies, have not yet produced any expected effects, according to the company's own managers²⁵. In short, the collapse of confidence in the public service is total. REGIDESO is no longer perceived by the majority of Boyomese as a reliable provider of an essential service, but as a failing entity to be wary of. It is this crisis of confidence, as much as the technical crisis, that has paved the way for the commodification of water as an alternative solution.

02. The dual market for packaged water: bottles and sachets

The collapse of the public service has created an economic space that the private sector, both formal and informal, has hastened to occupy. In Kisangani, as in many African metropolises, this has resulted in the emergence of a dual market for packaged water. This market is deeply segmented, reflecting and reinforcing the socio-economic inequalities of the city. On the one hand, bottled water, a standardized and expensive industrial product; on the other, sacheted water, a solution for the masses, accessible, but artisanal and precarious. This chapter analyzes the structure of this dual market, its actors and its logics.

02.1. Bottled water: a marker of social distinction

Mineral or spring water in plastic bottles (PET) represents the upper segment of the market. Its consumption is far from widespread and remains the prerogative of a minority of the population. Bottled water consumers are mainly recruited from the middle and upper classes, international civil servants, expatriates and passing visitors. For this clientele, the choice of bottled water is motivated by a quest for absolute health security, but also by a logic of social distinction. Drinking bottled water is an act that signifies a certain status, a modern lifestyle and attention to one's health.

The brands available in Kisangani (Swissta, American, Italia, Jambo, etc.) are a mix of national brands, distributed from Kinshasa or other major cities, and a few locally produced brands. The distribution of these products is also selective. They can be found in some shops, boutiques, hotels, restaurants, bars aimed at a wealthy clientele, and in some specialized beverage depots. The price of a 1.5-liter bottle, although variable, is out of all proportion to the cost of tap water (when available) or sachet water. For the vast majority of Boyome households, whose daily income is often less than the price of a single bottle,

²⁴ Amwanga, Z., *op. cit.*

²⁵ *Ditto*

this option is simply unthinkable for daily consumption. Bottled water thus embodies the most successful form of the commodification of water, transforming it into an almost luxurious consumer product, accessible only to those who can afford it.

2.2. Sachet water: the market for survival

At the opposite end of the spectrum is sachet water, known locally by various names. This product is the real mass market and the main source of drinking water for hundreds of thousands of people in Kisangani. Its success is based on two pillars: its geographical accessibility and its economic accessibility. Sold individually for a small fee, sachet water is available on every street corner, in markets, near schools, workplaces, football fields being offered by an army of street vendors, often young people or women looking for a small income.

However, behind this accessibility lies an extremely heterogeneous and largely informal production reality. While some production units are registered and try to follow hygiene standards, a large part of the bags come from clandestine craft workshops. The production process is often rudimentary: the water, which can be borehole water or even simply filtered REGIDESO water (with no guarantee of elimination of pathogenic microbes), is packaged in plastic bags sealed by a thermal machine. The quality of the water at the source, the hygiene of the equipment and the cleanliness of handling are rarely controlled.

For consumers, sachet water is perceived as a default solution, a lesser evil. It is considered safer than tap water, which is often coloured and smelly, but there is still mistrust of its real quality. It is a survival solution, a permanent compromise between the vital need to drink and budgetary constraints. As the study conducted in Kinshasa demonstrates, this solution is not without risk, as the sachet itself can be a vector of contamination²⁶.

02.3. The value chain and market (non-)regulation

The sachet water value chain is a typical example of the informal economy. At the base are the producers, often small entrepreneurs who have invested in a sealing machine and who operate with a minimum license or even without any authorization. They sell wholesale to distributors (often women "mothers") who, in turn, supply the street vendors. Each intermediary takes a small margin, but it is the mass of volumes sold that makes the activity viable or prolific. This system creates many small jobs and is a key source of income for thousands of families.

Faced with this abundant sector, state regulation is almost non-existent or, at least, ineffective. The Congolese Control Office (OCC) is theoretically in charge of certifying and controlling the quality of food

²⁶ Mbala-Kingebeni, P., Vogt, F., et al. , *Op. cit.*

products, including packaged water. However, in practice, its means are very limited to inspect the myriad of informal production units that dot the city. Controls are sporadic and often circumvented. This failure of regulation leaves the field open to potentially dangerous practices, where the search for maximum profit is to the detriment of consumers' health. The sachet water market thus operates in a legal and sanitary vacuum, illustrating once again the withdrawal of the State from its sovereign functions of protecting citizens.

2.4. Market Players and Dynamics

The water market in Kisangani is driven by a variety of actors, each with its own interests, strategies and constraints. Producers, whether formal or informal, seek to maximize their profits by minimizing costs, which often encourages them to compromise on quality. Distributors and sellers, most of whom live in great precariousness, depend entirely on this market for their survival. Consumers, fragmented by social class, make daily trade-offs between quality and price, between health security and budgetary constraints. Finally, the public authorities, weakened and poorly funded, are unable to regulate this market effectively. This configuration of actors creates a dynamic where everyone acts rationally according to their own interests, but where the absence of coordination and regulation produces an irrational collective result that is harmful to public health. This is what economists call a "tragedy of the commons": the lack of regulation of a common resource (water) leads to its over-exploitation and degradation²⁷.

03. Consumption practices and social representations of water

The segmentation of the packaged water market is not only a matter of supply and price; it is deeply embedded in the consumption practices and social representations of the people of Kisangani. The choice to drink bottled water, sachet water, or to continue to use tap water (when available) is fraught with meanings that go beyond the mere satisfaction of a biological need. This chapter explores how water consumption has become a social act that reveals and reinforces social identities and hierarchies, confirming our second hypothesis about the existence of a "water apartheid".²⁸

03.1. Water, a marker of social class

In the collective imagination of Boyome, the different forms of water are associated with distinct social statuses. The consumption of bottled water is a powerful marker of distinction. It is associated with wealth, education, openness to the world and a concern for oneself. Offering a bottle of water to a visitor is a sign of hospitality and respect, a way of signifying that one has the means to afford the best and safest. In

²⁷ Ostrom, E., *The Governance of the Commons: For a New Approach to Natural Resources*, De Boeck Supérieur, Brussels, 2010, p.107.

²⁸ Messerschmid, C., *Hydro-Apartheid and water Acces in Israel-Palestine: Challenging the Myths of Cooperation and Scarcity*, Palgrave Macmillan, London, 2014, p.76.

public meetings or upper-class family events, the presence of bottled water on tables is an implicit standard, an element of the décor that attests to the status of the organizers.

Conversely, water in sachets is associated with the masses, the people, resourcefulness and precariousness. Although it is consumed by an overwhelming majority of the population, including the middle classes in contexts of on-the-go consumption (in the street, on public transport), it remains symbolically "the poor man's water". Its consumption is not a choice, but an economic constraint. No one boasts about it, and in the privacy of the home, those who can afford it will prefer to filter or boil tap water rather than depend exclusively on sachets, perceived as an external and unreliable solution.

Between the two, REGIDESO's water occupies an ambiguous place. Once a symbol of modernity and progress, it is now synonymous with failure and danger. Mistrust is widespread. "You can't take the risk of drinking it," confided one resident²⁹. However, it remains essential for domestic uses (laundry, dishes, toilets), and its scarcity continues to punctuate daily life. The arrival of tap water is an event that mobilizes the whole family to fill as many containers as possible, testifying to its enduring value despite its bad reputation.

03.2. Household strategies and risk management

Faced with this heterogeneous and unreliable water supply, households develop complex water and risk management strategies, which vary considerably according to their economic and cultural capital. Three main strategies can be identified:

- **The avoidance strategy (upper classes):** The wealthiest households seek to disconnect as much as possible from water sources deemed unreliable. They only consume bottled water for drinking and cooking. For domestic use, they invest in large storage systems (tanks) and boosters to compensate for REGIDESO cuts, or even in private boreholes to achieve complete autonomy. The health risk is minimized, but at a very high economic cost;
- **The composition strategy (middle and working classes):** This is the most common strategy. It consists of juggling with the different sources of water according to uses and means. The water in REGIDESO, when it flows, is stored for non-food uses. For drinking, several options are combined: tap water is systematically treated (boiled or filtered with ceramic filters or chlorinated products such as "Aquatabs"). Sachet water is used for consumption outside the home or in the event of a shortage of treated water at home. The purchase of a bottle of water remains exceptional, reserved for a special occasion or for the treatment of a patient. This strategy requires daily management, constant anticipation and a significant mental load, which weighs mainly on women;

²⁹ Amwanga, Z., *op. cit.*

- **The survival strategy (poorest households):** For the poorest, often settled in peripheral neighbourhoods not connected to the grid, the options are limited. Sachet water is the main, if not the only, source of drinking water, because it does not require any initial investment (unlike a filter) and can be purchased on a day-to-day basis. When even sachet water becomes too expensive, these households turn to free but very dangerous sources: unprotected wells, backwaters, or directly river water. In this strategy, awareness of the health risk is often subordinated to the immediate economic imperative of survival.

These strategies show that water management is a core competency of urban life in Kisangani. They reveal a profoundly unequal distribution not only of the resource, but also of the risk and workload required to access it.

03.3. Risk representations and trust

Water consumption in Kisangani is also strongly influenced by representations of risk. Residents have developed a kind of "risk hierarchy": tap water is perceived as the most dangerous (because of its colour, smell and rumours of contamination), sachet water as an intermediary (we know it's commercial, but we hope it's filtered), and bottled water as the safest (because it is sealed and industrially produced). This hierarchy does not always correspond to the health reality, but it guides consumption choices.

Trust plays a crucial role. Consumers trust well-known bottled water brands, regular sachet water vendors they have known for a long time, but are wary of tap water. This trust is often based on social relationships rather than objective quality data. A sachet seller who has a good reputation in the neighborhood will see an increase in sales, regardless of the actual quality of their product.

04. The sanitary trap and the economic burden: the consequences of the water market

The transformation of water into a commercial product in Kisangani is not without consequences. Beyond the social reconfigurations it generates, it has direct and measurable impacts on public health and the household economy. This chapter analyzes these two dimensions, showing how the water market, while offering an apparent solution to a public service crisis, creates its own problems, trapping a large part of the population in a vicious circle of health and economic precariousness. This confirms our third hypothesis on the health risks and economic burden imposed by this market.

04.1. Sachet water: a vector of waterborne diseases

The most serious implication of the proliferation of sachet water is its impact on public health. Although perceived as a safer alternative to tap water, sachet water is far from risk-free. As demonstrated in a case-

control study conducted in Kinshasa during the 2017-2018 cholera outbreak, drinking sachet water was a significant risk factor, with a four-fold increase in the risk of contracting the disease for frequent users³⁰. Several factors explain this dangerousness:

- **Contamination at the source:** Many artisanal production units use borehole water whose microbiological quality is not tested, or REGIDESO water which is already potentially contaminated. The filtration systems used are often rudimentary and poorly maintained, allowing viruses and bacteria to pass through;
- **Contamination during packaging:** The bagging process is often carried out in deplorable hygienic conditions. Handling plastic rolls, hand contact with water and machinery, and the dusty environment of the workshops are all potential sources of contamination;
- **Post-production contamination:** Once produced, the bags are transported and stored without special precautions. They are often exposed to the sun, which can promote the proliferation of microorganisms and the migration of chemical compounds from plastic to water. They are also handled by many people before reaching the end consumer;
- **Contamination during consumption:** The most common way of consumption, which involves tearing off a corner of the bag with your teeth and drinking directly, is particularly risky. The surface of the bag, which has been in contact with multiple environments and hands, is brought directly to the mouth. Studies have shown that the outer surface of the bags is often much more contaminated than the water they contain.³¹

The health consequences are direct. Doctors in Kisangani, such as Dr. Lolo Ofoili, head of the Tshopo health zone, confirm that tap water has already exposed the population to typhoid fever³². It is highly likely that sachet water, consumed by an even larger population, contributes significantly to the prevalence of diarrhoeal diseases, cholera, typhoid and other waterborne infections that clog the city's health centres.

04.2. The cost of thirst: a burden for poor households

Beyond the health risk, the commodification of water represents a considerable economic burden, which weighs disproportionately on the poorest households. This is the paradox of water in the cities of the South: those who have the least means pay much more for their water than wealthy households connected to the public network.

Let's do a simple calculation. A family of six, to cover its minimum drinking needs (about 2 liters per person per day), would have to consume 12 liters of water. If this family depends exclusively on water in

³⁰ Mbala-Kingebeni, P., Vogt, F., et al., *Op. cit.*

³¹ Lutterodt, G., van de Vossenberg, J., et al., *Op. cit.*

³² Amwanga, Z., *op. cit.*

sachets (sold at about 100 Congolese francs for a 0.5-liter sachet), they have to buy 24 sachets per day, or a daily expense of 2400 Congolese francs (about \$1.20). Over a month, this represents an expense of 72,000 francs (about \$36). This amount is exorbitant for households living on less than \$2 a day. It represents a very large part of their budget, forcing them to arbitrate between drinking supposedly safe water and other essential needs such as food, education or housing.

In comparison, the monthly subscription to REGIDESO, even if it is considered expensive in relation to the quality of the service, is a flat rate and much lower than the cost of the daily supply on the informal market. The cost of water is therefore inversely proportional to wealth. The poorest pay a "thirst tax" that burdens their budget and keeps them in precariousness.

This economic burden, combined with the health risk, creates a real poverty trap. The consumption of contaminated water leads to diseases, which lead to treatment costs (consultation, medicines) and loss of income due to the inability to work. These unexpected expenses further reduce the household's ability to buy better quality water, thus perpetuating the cycle. The commodification of water, far from being an effective solution, appears here as a powerful mechanism for reproducing inequalities and vulnerability.

04.3. Impact on children's nutrition and development

The impact of the water market also extends to children's development. Diarrhoeal diseases linked to contaminated water are a major cause of malnutrition in children under five. Each episode of diarrhoea reduces nutrient absorption and weakens the immune system. Children from the poorest households, who rely entirely on sachet water, are particularly vulnerable. This creates an intergenerational cycle of poverty and poor health: malnourished and often sick children cannot attend school regularly, reducing their chances of education and future social mobility.

RESULTS AND DISCUSSION

The analysis carried out in the previous sections has made it possible to paint a complex and worrying picture of the water situation in Kisangani. This section aims to synthesize the main results and to discuss them in the light of the initial hypotheses and the theoretical framework used. It emerges that the transformation of water into a commercial product is a total social fact that exacerbates vulnerabilities and profoundly redraws the social landscape of the city.

SUMMARY OF THE MAIN RESULTS

Four major findings emerge from our analysis:

- **The water crisis is first and foremost a crisis of governance:** The water problem in Kisangani is not a natural inevitability due to a scarcity of the resource, but the result of a structural and

historical failure of public governance (Chapter 1). REGIDESO's inability to maintain and expand its network, due to chronic underinvestment and a failing economic model, has created an institutional vacuum;

- **The market is a magnifying mirror of inequalities:** In response to this vacuum, a dual market has been structured, reflecting and reinforcing social stratification (Chapter 2). Bottled water has become a luxury good, a marker of distinction for an elite, while sachet water has established itself as the survival solution for the masses, creating a two-tier consumption system;
- **Water consumption is a socially differentiated act:** Consumption choices are not only dictated by income, but also by deeply differentiated social representations and risk management strategies (Chapter 3). From a strategy of risk avoidance by the richest to a survival strategy by the poorest, water management reveals deep social fractures and an unevenly distributed mental and physical burden;
- **Commodification creates a double burden:** For the majority of the population, the use of the informal market translates into a double burden (Chapter 4). A health burden, with constant exposure to waterborne diseases through the consumption of water in sachets of dubious quality, and an economic burden, with the poorest paying proportionately much more for hydration than the rich, which cuts into their budgets and keeps them in precariousness.

DISCUSSION IN LIGHT OF HYPOTHESES AND THEORIES

These results largely confirm our three initial hypotheses.

- **Hypothesis 1**, which postulated that mistrust of the State was the catalyst for recourse to the market, is validated. The analysis has shown that the choice of packaged water is not a simple consumer preference, but a strategy to circumvent a public service deemed not only inefficient, but dangerous. It is a privatization from below, suffered more than chosen.
- **Hypothesis 2**, on the role of the market as a reproducer of inequalities, is also confirmed. The concept of "water apartheid" seems quite relevant to describe a situation where the quality of the water one drinks, and therefore one's healthy life expectancy, is directly correlated with one's social class. The market does not only respond to a demand, it structures and prioritizes it.
- **Hypothesis 3**, concerning the sanitary and economic trap of sachet water, is amply verified. The case of Kisangani is a dramatic illustration of how a market solution, in the absence of regulation, can become part of the problem, creating a vicious circle of disease and poverty.

On a theoretical level, these results dialogue with the managers involved:

- The **theory of commodification** is illustrated here in all its brutality. Water in Kisangani has been stripped of its dimension as a common good to become a commodity whose access is mediated by price. This process, far from leading to a more "rational" management as the neo-classical discourse would have it, has led to exclusion and health and social irrationality;

- The analysis of the sachet water market confirms the analyses on the **informal economy** in Africa. This sector demonstrates a remarkable capacity for innovation and adaptation to meet needs not met by the State. However, it does so by creating precarious jobs and operating in a normative vacuum that endangers consumers;
- The situation in Kisangani is a perfect illustration of Ulrich Beck's risk society. Modernity (in this case, the industrial production of water sachets) produces its own risks, which are no longer the natural fatalities of yesteryear, but manufactured risks. And, as the theory points out, these risks are distributed in a socially unequal way, with the poorest being the most exposed;
- Finally, with regard to **environmental justice**, the situation is a flagrant injustice. The principles of distributive justice (equitable access to resources), procedural justice (participation in decisions) and recognition (respect for the needs and rights of all) are systematically flouted. The transformation of water into a commercial product in Kisangani is, in short, the chronicle of social and environmental injustice.

RECOMMENDATIONS

Faced with this alarming observation, it is imperative to move away from a logic of status quo. The solutions can be neither an illusory return to a public service model that has shown its limits, nor a laissez-faire approach that endorses the excesses of the market. A pragmatic and multi-stakeholder approach must be considered, articulating short-, medium- and long-term actions. Our recommendations are addressed to public authorities, private sector actors and civil society.

For the public authorities (Provincial Government of Tshopo, Kisangani City Hall):

In the short term: Regulate the emergency and protect consumers.

- **Launch control and certification campaigns:** Drastically strengthen the resources of the Congolese Control Office (OCC) to carry out unannounced and regular inspections of sachet water production units. Establish a visible quality label for certified brands and actively communicate so that consumers can identify them.
- **Ban the most dangerous production units:** Administratively close clandestine units that do not comply with any hygiene standards and that represent a proven danger to public health.
- **Promote good practices in household water treatment:** Conduct massive awareness campaigns, in collaboration with NGOs and community relays, on the importance of treating water (boiling, filtration, chlorination) and the risks associated with the consumption of unsafe water, including water in packets.

Medium-term: Structure the market and plan for the future.

- **Create a regulatory framework for small producers:** Rather than seeking to eradicate the informal sector, which plays a social and economic role, it must be regulated. Establish simplified

specifications for small producers, with incentives (subsidies, access to training) for those who commit to a quality approach.

- **Establish safe public water points:** In partnership with private operators or NGOs, install and maintain water kiosks or standpipes in unserved neighborhoods. These outlets would offer quality-controlled treated water at a social price, providing a reliable and affordable alternative to sachet water.

In the long term: Reinvest in the universal public service.

- **Develop a master plan for the rehabilitation of REGIDESO:** The final objective must remain the guarantee of the right to water for all through an efficient public service. This requires an ambitious and multi-year investment plan, financed by the State with the support of donors, for the rehabilitation and extension of the network. This plan must be transparent and accompanied by clear performance indicators;
- **Reform REGIDESO's economic model:** Implement social and progressive pricing, which guarantees a vital volume of water at a very low price for all, and higher tariffs for the largest consumers. Improving the quality of service will be the key to restoring users' confidence and willingness to pay.

For private sector actors:

- **Create a professional association:** Packaged water producers, including small producers, should form an association to defend their interests, but also to enact a charter of quality and ethics and to self-regulate the sector.

For civil society and NGOs:

- **Set up a citizen water observatory:** Create a platform to monitor the quality of water (tap and conditioned), document prices and collect complaints from users. This observatory could play an advocacy role with the authorities and inform the public.

CONCLUSION

The sociological analysis of the water market in Kisangani reveals a complex and profoundly unequal reality. The transformation of water into a commercial product, far from being an efficient solution to the failure of public services, has generated a new form of social and health exclusion. The market, left to itself, only reflects and amplifies the fractures of a society where access to a right as fundamental as drinking water is determined by the ability to pay. Bottled water for the rich, sachet water for the poor: this dichotomy is not only a reflection of income inequality, it is a symptom of a breakdown of the social contract and an abandonment by the state of its most essential functions.

Our hypotheses have been confirmed: the crisis of confidence in the state, the reproduction of inequalities by the market and the health and economic trap of water in sachets are the three pillars that structure this

problem. The situation in Kisangani is a microcosm of the challenges faced by many cities in the South, caught between rapid urbanization, failing public services and an uncontrolled commodification of essential goods.

However, this is not inevitable. Solutions exist, but they require strong political will and a long-term vision. It is not a question of demonizing the informal sector, which is highly resilient and plays an undeniable economic role, but of regulating it and integrating it into a global strategy that puts public service and the right to water back at the center. The establishment of inclusive water governance, which articulates regulation, investment and citizen participation, is the only way to ensure that water in Kisangani ceases to be a divisive product and becomes again what it should never have ceased to be: a common good, a source of life for all.

The transformation of water into a commercial product in Kisangani is therefore much more than a simple technical or economic issue. It is a question of social justice, human dignity and the responsibility of the State towards its citizens. The stakes are high: it is nothing less than guaranteeing every inhabitant of Kisangani the fundamental right to access drinking water, without discrimination and without compromising their health or economic stability. The recommendations proposed in this work aim to open up avenues to achieve this, but their implementation will depend on the ability of local, national and international actors to mobilize around a common vision: that of a Kisangani where water, this vital and abundant resource, is finally accessible to all.

BIBLIOGRAPHY

- Amwanga, Z. (2023, 24 janvier), *DRC has vast water resources, but Kisangani's taps run dry* Global Press Journal. Consulté à l'adresse <https://globalpressjournal.com/africa/democratic-republic-of-congo/drc-vast-water-resources-kisanganis-taps-run-dry/index.html>
- Bakker, K. (2003), *An Uncooperative Commodity: Privatizing Water in England and Wales*. Oxford University Press.
- Beck, U. (1992), *Risk society: towards a new modernity*. sage publications.
- Castro, J. E. (2013), Water is not (yet) a commodity: Commodification and the politics of water governance, *Human Figurations*, 2(1). Consulté à l'adresse <https://quod.lib.umich.edu/h/humfig/11217607.0002.103/--water-is-not-yet-a-commodity-commodification?rgn=main;view=fulltext>
- Gandy, M. (2004), Rethinking urban metabolism: water, space and the modern city. *City*, 8(3), 363-379.
- Jaffee, D. (2020), Enclosing Water: Privatization. Commodification, and Access. In *The Cambridge Handbook of Environmental Sociology*. Cambridge University Press.

- Jaglin, S. (2002), The right to water versus cost recovery: participation, urban water supply and the poor in sub-Saharan Africa. *Environment and Urbanization*, 14(1), 231-245.
- Likoko, D. B., et al. (2023), *Problem of the extension of the drinking water distribution network in the peripheral districts of the city of Kisangani*. International Journal of Research and Engineering in Haiti and the Congo. Consulté à l'adresse <https://ijrehc.com/vol-6-issue-4/problem-of-the-extension-of-the-drinking-water-distribution-network-in-the-peripheral-districts-of-the-city-of-kisangani/>
- Lutterodt, G., van de Vossenberg, J., et al. (2018), Microbial Contamination of Sachet Water and Its Associated Health Risks in Accra, Ghana. *Access to Water in a Changing World*, 10(1).
- Mbala-Kingebeni, P., Vogt, F. et al. (2021), *Sachet water consumption as a risk factor for cholera in urban settings: Findings from a case control study in Kinshasa, Democratic Republic of the Congo during the 2017–2018 outbreak*. PLOS Neglected Tropical Diseases, 15(7), e0009477. Consulté à l'adresse <https://doi.org/10.1371/journal.pntd.0009477>.
- Messerschmid, C., *Hydro-Apartheid and water Acces in Israel-Palestine: Challenging the Myths of Cooperation and Scarcity*, Palgrave Macmillan, London, 2014.
- Ostrom, E., *The Governance of the Commons: For a New Approach to Natural Resources*, De Boeck Supérieur, Brussels, 2010.
- Polanyi, K. (1944), *The great transformation: the political and economic origins of our time*. Farrar et Rinehart.
- World Bank. (2009), *Provision of water to the poor in Africa: experience with water standposts and the informal water sector*. Consulté à l'adresse <http://documents.worldbank.org/curated/en/421921468191675047/Provision-of-water-to-the-poor-in-Africa-experience-with-water-standposts-and-the-informal-water-sector>