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Issues in the Management of Public Latrines in Kalima's Markets: The Case of Kankinda Market from January 1 to June 30, 2025

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ABSTRACT

This study examines the management of public latrines at Kankinda Municipal Market, located in Kalima Commune, Pangi Territory, Maniema Province, in the Democratic Republic of the Congo. It aims to analyze the current public latrine management system in order to propose sustainable strategies for improving hygiene, sanitation, and users' well-being. The study adopted a mixed-methods approach, combining quantitative and qualitative methods, involving 90 participants, including 60 market users, 20 managers or municipal officials, and 10 health workers. Data was collected through interviews and direct observations, then analyzed using percentages and the chi-square test.

The findings reveal a concerning situation: 86.6% of respondents reported that they never used the latrines, while 82% considered them very dirty. Furthermore, 60% reported inadequate maintenance and risks of contamination, and 80% expressed disappointment after using the facilities. In addition, 95.6% of respondents indicated that the latrines were not cleaned daily, whereas 66% acknowledged the health risks associated with their poor sanitary conditions. According to 86% of respondents, access to the facilities also requires payment of a fee.

These findings highlight organizational, technical, and community-related shortcomings in public latrine management. The study recommends strengthening regular cleaning and maintenance, raising user awareness, improving institutional oversight, and promoting community participation to ensure sustainable and hygienic management of public latrines.

Keywords: Public latrines; sanitation management; hygiene; sanitation and Kankinda Market.

1. INTRODUCTION

I.1. Study Context

Access to adequate sanitation facilities is recognized as a fundamental right and a key indicator of public health development. However, according to (Bosede et al., 2025), more than 3.6 billion people worldwide still live without safely managed toilets. The issue of public latrines is particularly acute in low-income countries, especially in overcrowded urban areas where maintenance, hygiene, and management are often neglected.

Numerous studies have been conducted worldwide on the management of public latrines. In France, for example, the City of Paris has implemented a system of automatic, self-cleaning toilets that are accessible free of charge in public places (Behera et al., 2021). In the United States, some cities, such as New York, have established public-private partnerships for the sustainable management of this infrastructure (Quarshie et al., 2021). In Africa, community-based management is often recommended as an alternative to failing institutional systems.

In Senegal, a participatory approach involving local management committees has improved the cleanliness and sustainability of public latrines (Nguyen et al., 2025). In the DRC, latrine management remains a major structural problem, particularly in public markets where overcrowding, a lack of water and cleaning supplies, and the absence of qualified staff exacerbate the situation (Simiyu et al., 2021).

In Maniema Province, and particularly at the Kankinda municipal market, no documented study has yet been conducted to objectively assess the condition of public latrines, despite their critical importance to the health of urban populations. This lack of data and analysis hinders the implementation of sustainable solutions tailored to the local context.

In a context where Kindu's urban population growth is accompanied by insufficient development of sanitation infrastructure, the public latrines at the Kalima municipal market are in an advanced state of disrepair. Their management is often haphazard, characterized by a lack of institutional oversight, inadequate maintenance, poorly defined responsibilities, and low community involvement. This situation poses significant health risks, including the spread of diarrheal diseases, pollution of the immediate environment, and a violation of users' dignity, particularly that of women and children.

I.2. State of the Issue

According to (Bouraima, 2017), the purpose of this thesis is to analyze the interface between, on the one hand, the technological provision of sanitation and latrines in Burkina Faso which largely takes the form of latrine installation on private properties and in public spaces and, on the other hand, the societal dimension as reflected in the social representations of individuals and communities and their rationales for action regarding latrines. Examining these two dimensions together opens up a field of study that analyzes "latrine" infrastructure in light of the social representations associated with it and the objective constraints on its implementation.

Indeed, latrines represent the most tangible marker of change and are a prerequisite for ending open defecation. Residents have the right and the capacity to build on the land they occupy. In urban areas, improving sanitation is subject to a series of more heterogeneous and complex constraints, which both limit and diversify the available options.

According to (Leblond, 2025), the management of human excreta urine, feces, and menstrual blood is intrinsically political. It reveals the racialization of residents and neighborhoods, gender stereotypes, the stigmatization of practices and professions, and, more broadly, the unequal value assigned to bodies and spaces.

African cities, in particular, reveal sanitation as a major arena of colonial and, later, developmentalist intervention. It is in the name of health, poor hygiene, and unsanitary conditions and thus in the name of improving sanitation in neighborhoods and among populations that numerous interventions have been, and continue to be, promoted. In fact, when I presented a draft of this article, a fellow architect and urban planner expressed her surprise at the importance given to toilets in African cities: "These sanitation issues are the first urban planning projects to receive funding in cities—before planting a tree or creating a public space… which are never funded… I've seen plenty of volunteers under 30 come to manage people's restrooms."

This concern is not trivial but rather symptomatic of a new public health paradigm that has established excreta management as the key to improving urban sanitation and public health. It is supported by global governance mechanisms: an international day dedicated to toilets, a Sustainable Development Goal, and international statistics produced by the World Health Organization (WHO) and UNICEF, which reported that 254 million urban residents in Africa lacked access to basic sanitation.

I.3. The Issue

Access to safe and well-managed sanitation facilities is a critical public health issue worldwide. In developed countries such as France, the United States, and Spain, public policies have invested heavily in the maintenance, modernization, and accessibility of public restrooms. In France, the Public Health Act requires local governments to ensure a sufficient number of public restrooms, with regular maintenance ((Odirile et al., 2024) In the United States, cities such as San Francisco have implemented innovative programs like "Pit Stops" to provide clean and safe access to public restrooms, thereby reducing open defecation (Getachew et al., 2025). Spain, for its part, systematically incorporates accessible latrines into its urban planning, supported by public-private partnerships.

In Asia, although some countries such as Portugal and Switzerland do not often face the same sanitation challenges as those in Africa, they have nonetheless implemented strategies for the sustainable management of public restrooms, incorporating automated cleaning systems and water-saving measures (Semakula, Liang, Mukwaya, Mugagga, Nseka, et al., 2023). In Africa, the situation is more mixed. Senegal, Morocco, and Côte d'Ivoire have each developed strategies to improve urban sanitation.

In Dakar, a World Bank-funded project has rehabilitated latrines in several public markets (Zulu et al., 2023). In Abidjan, community-based programs have been implemented to manage public restrooms with user participation (Quarshie et al., 2021). In Morocco, the adopted approach focuses on decentralization and empowering local authorities (Jean-Baptiste & Monette, 2024).

In the Democratic Republic of the Congo, and particularly in major cities such as Kinshasa, Lubumbashi, and Goma, the management of public latrines remains a major challenge. A lack of funding, the absence of effective local policies, and a lack of public awareness contribute to an alarming situation, particularly in the (& Wihdaturrahmah and Chuemchit public markets, 2023).

According to the WHO, every year, 1.3 million people 90% of whom are children under five die from malaria, primarily due to unsanitary conditions. There are also 396 million cases of malaria reported annually, mainly in sub-Saharan Africa. According to the same WHO estimates, 160 million people are affected by schistosomiasis, which causes tens of thousands of deaths each year, mainly in sub-Saharan Africa. It is closely linked to the improper disposal of feces and the lack of access to safe water sources (Paddy et al., 2025).

Furthermore, 133 million people suffer from severe intestinal helminth infections, which often have serious consequences: cognitive impairment, dysenteric syndrome, or anemia. These diseases cause approximately 9,400 deaths per year. All of these diseases, known as dirty-hand or waterborne diseases, are mostly transmitted orally and result from unsanitary conditions caused by an unhealthy environment (Endris et al., 2024).

"However, at the national level, in most developing countries, hygiene and sanitation still do not receive much attention, despite the significant health consequences" (Nguyen et al., 2025). This epidemiological evidence regarding environmental health led the WHO to designate the decade 1981–1990 as the International Decade for Water and Sanitation, based on the following findings: 80% of diseases prevalent worldwide are waterborne or linked to the aquatic environment; in developing countries, unsanitary environmental conditions and risky practices account for 30% of all diseases and 75% of deaths; infectious and parasitic diseases account for more than 45% of causes of mortality worldwide (Simiyu et al., 2021).

Environmental contamination from liquid and solid waste generated by households, commercial activities, and government operations is also among the environmental risk factors. Among other consequences, this situation leads to the proliferation of vectors for certain diseases such as malaria, onchocerciasis, trypanosomiasis, filariasis, schistosomiasis, yellow fever, dengue, and Chikungunya.

An unhealthy environment is caused by human activity; unfortunately, people are not aware of the consequences of their actions on their environment and their health. Many social psychologists have sought to understand, first, how individuals' attitudes toward nature conservation are formed and, second, how these attitudes might explain ecological behaviors. Most of these studies, which use the "Theory of Planned Behavior," arrive at similar conclusions.

Sanitation is one of the fundamental pillars of public health and environmental protection. In both rural and urban areas,

the availability and proper management of sanitation infrastructure particularly public latrines play a crucial role in preventing waterborne diseases and preserving the quality of life.

People are at the center of development and, as such, must enjoy good health. There can be no sociopolitical, economic, or cultural development for a population that does not enjoy good health and lacks the means to protect or restore it ((Mremi et al., 2026).

Although health issues are nothing new, they have now become a concern for countries around the world, particularly in developing nations. Indeed, countries worldwide are engaged in a constant struggle for economic and health progress, as it is clear that progress in general depends closely on the standard of living of the population.

The surrounding population, as well as those who frequent these areas, are at risk of suffering the adverse effects of this calamitous situation and the unsanitary conditions that accompany it. They are therefore called upon to collaborate with the authorities and relevant agencies to explore potential solutions and contribute to resolving this problem, which is, at its core, a matter of public interest.

In addressing this topic, while recognizing that contributing to the search for a solution is essential for any researcher living in the community, one question captures our attention and serves as the central theme that will guide us throughout our research: understanding the causes of sanitation issues.

I.3.1. General Question

How does the current latrine management system at the Kankinda market, in the rural commune of Kalima, function, and to what extent does it contribute to the protection of public health and the well-being of users, with the aim of identifying strategies for sustainable improvement?

In light of the above, we asked ourselves the following questions:

- What are the organizational, technical, institutional, and community factors that influence the management of public latrines at the Kankinda municipal market?
- What is the level of knowledge among the population of the Kalima commune regarding the use of hygienic latrines?
- What strategies could be implemented to ensure sustainable and participatory management?

I.4. Objectives

I.4.1. General Objective

To analyze the current system for managing public latrines at the Kankinda municipal market in the rural commune of Kalima in order to propose strategies for sustainable improvement in public health and the well-being of users.

I.4.2. Specific Objectives:

- Identify the organizational, technical, institutional, and community factors that influence the management of public latrines at the Kalima municipal market in the Pangi territory;
- Assess the level of knowledge among the population of the Kalima commune regarding the use of hygienic latrines;
- Propose sustainable management strategies that integrate hygiene, governance, and financing.

I.5. General Hypothesis

The current latrine management system at the Kankinda market had organizational, technical, hygienic, and financial shortcomings that could increase health risks and compromise the well-being of users

I.5.1 Specific Hypotheses

To address the questions posed above, we formulate the following hypotheses:

- The absence of a clear local policy and appropriate governance mechanisms, the lack of funding, the absence of a regular maintenance system, and the low level of awareness are factors that influence the management of public latrines at the Kankinda municipal market;
- The level of knowledge among the population of the Kalima commune regarding the use of hygienic latrines is likely low.
- The implementation of a participatory system involving users, local authorities, and private managers would significantly improve hygiene conditions and management efficiency.

2. METHODOLOGY

Our study adopts a mixed-methods approach: the quantitative approach allows us to analyze numerical data regarding latrine usage, maintenance, and rational use, while the qualitative approach enables us to gather the perceptions of users and

managers through semi-structured interviews and direct observations using descriptive and analytical methods. As for the data collection technique, we used the Kobocollect software and Excel, along with a survey questionnaire administered to vendors, customers, and others. The data collected and collated in this manner were organized into various frequency tables before being processed. We calculated percentages and performed a bivariate analysis, using the chi-square test to verify our hypotheses.

2.1 Study Population

The target population consists of: market users (vendors, customers, and others), market and sanitation managers, municipal officials, and environmental officials

2.2 Study Sample

The sampling method used was purposive sampling, taking into account the relevance of the respondents to the issue under study. A total of 90 people were selected: 60 shoppers, 20 vendors or municipal officials, and 10 from other categories.

3. PRESENTATION AND DISCUSSION OF RESULTS

Presentation of Data

Table 1: Survey results by frequency of latrine use

Frequency	Number	%
Never	78	86.6
Rarely	04	4.4
Sometimes	07	08
Often	01	02
Always	0	0
TOTAL	**90**	**100**

Source: Survey conducted at the Kankinda municipal market

The findings in this table indicate that the latrines at the Kankinda municipal market are never used; 86.6% of respondents stated that they never use the latrines.

Table 2: Survey Results by Hygiene Conditions.

Hygiene Conditions	Number of Respondents	%
Hygiene conditions are poor	11	12
No hygiene standards are met	20	22
Lack of maintenance and risk of contamination	54	60
Other (please specify)	04	04
Abstention	01	02
TOTAL	**90**	**100**

Source: Survey conducted at the Kankinda municipal market

In this table, a large number of respondents 60% report that latrines are not properly maintained and that there is a likely risk of contamination, compared to 20 respondents 22% who believe that no hygiene standards are being met.

Table 3: Survey Report on the Condition of Latrines

Condition	Fo	fe	%
Very clean	0	22.5	0
Clean	05	22.5	06
Dirty	11	22.5	12
Very dirty	74	22.5	82
TOTAL	**90**	**90**	**100**

Source: Survey conducted at the Kankinda municipal market ddl = 3 at the 0.05 significance level

$\chi^2 = 158.22 > X^2$ tab = 7.81; the χ^2 value is very high and the p-value is less than 0.05**,** indicating an extremely significant difference between the observed and expected frequencies. In other words, perceptions of the condition of the latrines are not random**:** the vast majority of respondents (82%) consider the latrines to be very dirty**,** 12% find them dirty**,** only 6% find them "clean," and no respondent considers them "very clean."

Table 4: Survey Report on the Method Used for Anal Cleaning

Method Used for Anal Cleaning	Sample Size	%
With water	2	2
With toilet paper	3	3
With plain paper	6	7
Other (please specify)	79	88
TOTAL	**90**	**100**

Source: Survey conducted at the Kankinda municipal market

Based on this table, we found that 88% of respondents use other (to be specified) for anal cleansing, followed by 7% who use plain paper; 3% of our respondents confirmed that they use toilet paper. Additionally, we found a significant number 2% who use water for anal cleansing

Table 5: Survey Report on the Presence of an Environmental Technician

Availability of an Environmental Technician	Number of Respondents	%
Yes	70	78
No	20	22
TOTAL	**90**	**100**

Source: Survey conducted at the Kankinda municipal market

Information gathered from our respondents indicates that the Kankinda municipal market has a janitor who is responsible for keeping the market's latrines clean and accessible.

Table 6: Survey Report on Respondents' Impressions After Using the Latrines

Rating	Fo	Fe	%
Very satisfied	0	22.5	0
Satisfied	07	22.5	08
Dissatisfied	11	22.5	12
Disappointed	72	22.5	80
TOTAL	**90**	**90**	**100**

Source: survey conducted at the Kankinda municipal market; ddl = 3 at a significance level of 0.05

$\chi^2 = 147.38 > X^2$ tab = 7.81; the chi-square test shows that the differences between the observed ratings and those expected by chance are highly significant ($p < 0.05$). This means that the distribution of opinions is not uniform: the vast majority of respondents are disappointed (80%), 12% report being dissatisfied, and only 8% are "satisfied." The results reveal widespread dissatisfaction regarding the condition, cleanliness, or usability of the market's latrines. This situation is a critical indicator of poor sanitation management and requires rapid improvements in hygiene, a reliable maintenance system, and more rigorous governance

Table 7: Survey Report on Latrine Access Requirements

Latrine Access Requirements	Number of Respondents	%
Yes	74	86
No	16	14
TOTAL	**90**	**100**

Source: Survey conducted at the Kankinda municipal market

Our findings show that access to the market's latrines requires the prior payment of an access fee, the amount of which depends on the user's perceived need. This information is confirmed by 86% of respondents, compared to 14% who believe that access to the market's public latrines is free.

Table 8: Survey Report on Risks Associated with Unsanitary Latrines

Risks Associated with Unsafe Latrines	Fo	Fe	%
Yes	59	45	66
No	21	45	34
TOTAL	**90**	**90**	**100**

Source: Survey conducted at the Kankinda municipal market; ddl = 1 at a significance level of 0.05

Calculated $\chi^2 = 18.05 >$ tabulated $\chi^2 = 3.84$; the chi-square test shows a highly significant difference between the observed responses and those expected if the two options were equally likely ($p < 0.05$). This means that the majority of respondents (59 out of 90, or 66%) clearly recognize the existence of risks associated with unsanitary public latrines, and this result is not due to chance**.**

Table 9: Survey Report on the Daily Cleaning of Market Latrines

Daily Cleaning of Market Latrines	fo	Fe	%
Yes	4	45	4.45
No	86	45	95.6
TOTAL	**90**	**90**	**100**

Source: Survey conducted at the Kankinda municipal market; ddl = 1 at a significance level of 0.05

Calculated $\chi^2 = 74.71 > X^2$ tab = 3.84; the chi-square test shows a highly significant difference between the observed responses and those expected if the two options had been equivalent ($p < 0.05$). In other words, the vast majority of respondents (86 out of 90) believe that daily cleaning of latrines is not necessary to ensure hygiene. This difference is not due to chance; market users demonstrate a low perception of the importance of daily cleaning, indicating a lack of knowledge about hygiene, which constitutes an obstacle to the sustainable management of the latrines at the Kankinda/Kalima market.

4. DISCUSSION OF RESULTS

Our results show that perceptions of the condition of the latrines are not random: the vast majority of respondents (82%) consider the latrines to be very dirty, 12% find them very dirty, only 6% find them “clean,” and no respondent considers them “very clean.”

$\chi^2 = 158.22 > X^2$ tab = 7.81; the χ^2 value is very high and the p-value is less than 0.05, indicating an extremely significant difference between the observed and expected frequencies. In other words, the perception of the latrines’ condition is not a matter of chance: the vast majority of respondents (82%) consider the latrines to be very dirty, 12% find them dirty, only 6% find them “clean,” and no respondent considers them “very clean.”

This result confirms a severe deterioration of the latrines at the Kankinda/Kalima market. It highlights poor management and maintenance, a lack of regular cleaning, a high health risk for users, and the urgent need for a rehabilitation plan and enhanced hygiene measures.

According to (Bosede et al., 2025), the results of their study show that 94% say that hygiene conditions are poor and that none of the hygiene standards are being met. There are no hygiene facilities installed in the latrines at the Alunguli municipal market, which leaves potential users especially women vulnerable.

(Behera et al., 2021), in a cross-sectional study conducted in Ouagadougou in 2017, found that 21% of men and 39% of women never use public latrines due to their extremely unsanitary conditions. The study concluded by noting that the unsanitary conditions of public latrines drive approximately 8% of men to defecate in the open, while no women admitted to doing so. On the other hand, latrine users are less reluctant to use latrines when it comes to urinating, but they still prefer to defecate outdoors.

Similarly, a study by (Semakula, Liang, Mukwaya, Mugagga, Nseka, et al., 2023) in Zimbabwe reveals that the absence of a dedicated manager, a lack of water, and full pits contribute significantly to the rapid deterioration of latrines. Several authors have emphasized that the condition of latrines can be improved through clear governance and sustainable funding.

Our study shows that the majority of respondents are disappointed (82%), 12% report being dissatisfied, and only 6% of people are “satisfied.” The results reveal widespread dissatisfaction regarding the condition, cleanliness, and conditions of use of the market latrines. This situation is a critical indicator of poor sanitation management and requires rapid improvements in hygiene, a reliable maintenance system, and more rigorous governance. $\chi^2 = 147.38 > X^2$ tab = 7.81,the chi-square test shows that the differences between the observed ratings and those expected by chance are extremely significant ($p < 0.05$). This means that the distribution of impressions is not uniform; the very large

Several researchers acknowledge that the condition of latrines depends on organizational, technical, and community factors. (Odirile et al. (2024) in Uganda concluded that the absence of maintenance mechanisms, lack of water, and overcrowding of facilities lead to rapid deterioration of public latrines.

The ongoing risks associated with unsanitary public latrines—including those at the Kankinda municipal market—are no exception. According to our respondents, 66% affirmed the

existence of major risks linked to the unsanitary conditions of the market's latrines, compared to 34% who were skeptical and rejected this hypothesis. Calculated $\chi^2 = 18.05 > X^2$ tab = 3.84; the chi-square test shows a highly significant difference between the observed responses and those expected if the two options were equally likely ($p < 0.05$).

→ *INFLUENCE OF CLEANLINESS ON USERS' PERCEPTIONS*

The research clearly shows that the condition of latrines directly influences users' perceptions.

A study by (Nguyen et al., 2025) in eight urban markets in Malawi reveals that user satisfaction drops to less than 5% when latrines are poorly maintained, poorly ventilated, or lack handwashing facilities.

In Zimbabwe, (Getachew et al., 2025) showed that users express very negative impressions (disgust, fear of contamination) when latrines emit strong odors or have solid waste left in the stalls. These results confirm that the user experience is directly linked to the observed level of hygiene.

→ *USER PERCEPTIONS IN MARKETS*

Markets are among the places where negative impressions are highest.

In the DRC, (Tyagi et al., 2025) reported that more than 85% of latrine users at the Ruashi market (Lubumbashi) said they were *dissatisfied* or *very dissatisfied* after use, due to a lack of water, full pits, and the absence of clean seats or slabs.

A study conducted by (Hinton et al., 2023) in the markets of Maniema also confirmed that the overall impression is largely negative (nearly 90% dissatisfaction), linked to poorly maintained infrastructure and the absence of management systems.

These observations are very similar to the results you obtained in your Table 11 (80% disappointed and 12% dissatisfied).

According to (Beni et al., 2024), based on their field surveys, only 6% of respondents confirmed the existence of hygiene facilities installed in the latrines at the Kankinda municipal market, compared to 94% of market users who denied their existence. A significant number of respondents—94%—further assert that hygiene facilities are installed only superficially at the Kankinda municipal market when civil authorities conduct inspections or visits, in order to deceive visitors, and that they are removed once the authorities leave.

According to our survey findings, two respondents reported having access to water for anal cleansing to prevent contamination due to the lack of handwashing facilities.

According to Keleb et al. (2024), researchers from the public health program in Ouagadougou, of the 76 respondents surveyed, only 5% reported having handwashing supplies available. Hygiene issues—such as unpleasant odors, waste accumulation, failure to wash hands, the presence of vectors (flies, rats), and conditions conducive to the spread of disease—are frequently identified as sources of contamination and disease.

CONCLUSION

The study on the management of public latrines at the Kalima municipal market highlights several key elements for understanding the determinants of their operation and the prospects for sustainable improvement.

First, an analysis of organizational, technical, institutional, and community factors reveals that latrine management is strongly influenced by the absence of a clearly defined organizational framework, a lack of regular technical maintenance, weak institutional oversight, and still-limited community ownership. The combination of these factors contributes to the rapid deterioration of infrastructure and suboptimal use of existing facilities.

Second, an assessment of the population's knowledge of hygienic latrine use in the municipality of Kalima reveals significant disparities. While some residents have a basic understanding of the importance of hygiene, a significant proportion do not properly master the practices necessary to ensure the cleanliness and durability of the facilities. This knowledge gap directly impacts the condition of public latrines and environmental health.

The data were collected, tabulated, and analyzed, then presented in tables. After verifying data quality, we calculated percentages based on a simple random sample, which allowed us to arrive at the following results:

- 86% of our respondents rarely use the latrines;
- 60% of our respondents reported that the latrines are not properly maintained;
- 82% of our respondents stated that the latrines at the Kankinda municipal market are very dirty;
- 94% of respondents stated that there are no appropriate hygiene facilities in the latrines at the Kankinda municipal market;

- 40% of respondents use regular toilet paper for anal cleansing;
- 80% of market latrine users are dissatisfied after using them;
- 25% of respondents find alternative ways to relieve themselves;
- 86% of respondents reported that access to the market's latrines requires prior payment of an access fee, the amount of which depends on the user's perceived need;
- 66% of our respondents cited the constant risk associated with the unsanitary conditions of public latrines;
- 100% say that trash is discarded.

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