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Improvement of the Sanitation of Public Places in Rural Areas in Burkina Faso: The Case of the Rural Commune of Béré in the Province of Zoundweogo

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Abstract

This study assesses sanitation in public places in the rural commune of Béré, Burkina Faso, and proposes improvements. The diagnosis reveals a glaring lack of infrastructure: the majority of markets (88%), mosques (61%), churches (53%), and many schools (22%) lack latrines, and those that exist are often in poor condition, dirty, and poorly maintained. The lack of greywater management and poor hygiene practices, with over 80% of users not washing their hands, exacerbate the situation. The study recommends a gradual approach: in the short term, funds need to be raised and local awareness increased. In the medium term, the construction of sanitation infrastructure that complies with standards is planned, with the involvement of the local population and stakeholders in the sanitation sector. Finally, in the long term, information, education, and communication initiatives will be implemented to bring about lasting behavioral changes. The estimated cost of these solutions is approximately 886,749,549 CFA francs, to be financed by contributions and community work. The study highlights the urgent need to improve sanitation in Béré through an integrated approach combining emergency action, investment, and awareness-raising.

Keywords

Sanitation Facilities, Innovations, Public Places, Rural Area, Burkina Faso

1. Introduction

Both governments and non-governmental organisations (NGOs) agree that if we are to achieve the Sustainable Development Goals (SDGs) and combat malaria and other infectious diseases such as diarrhoea and cholera, we need to improve the sanitation of people's living environments [1] [2]. With this in mind, many latrine construction projects, especially in households, have been initiated and are still ongoing. But today, it is important to note that sanitation in public places such as markets, bus stations, churches, mosques and institutional places, such as schools and health centres, remains a major problem [3] [4].

In Burkina Faso, sanitation in public places is rarely supervised. The overall water and sanitation sector has been transferred to the municipalities, which act as project owners [5] [6]. As such, town councils are responsible for sanitation, particularly in public places. However, they are faced with technical, organisational and financial difficulties, which really hamper their work [5]. As a result, there is a lack of sanitation facilities in public places, and maintenance remains a problem where they do exist. In rural areas, the situation is even more critical, to the point where it can be said that sanitation is almost forgotten in public places in rural areas [7].

The overall aim of our work is to help improve sanitation in public places in rural area in Burkina Faso. The specific aims of this study can be outlined as follows:

- Comprehensive assessment of the current state of sanitation in public places in the rural commune of Béré.

- Design and proposal of an innovative action plan to sustainably improve sanitation in public places, with a focus on adapted toilet solutions.

- Development of a detailed financing plan for the implementation of the action plan, with a particular emphasis on mobilizing endogenous resources.

The problem of sanitation in public places, particularly in rural areas, is a major public health issue in Burkina Faso and in many developing countries. This justifies the contextual relevance of our study. The choice of focusing on a specific rural commune (Béré) allows for an in-depth study with solutions ready for implementation. The results of this research could serve as a basis for developing public policies and sanitation improvement programmes at local and national level. They could also be useful to non-governmental organisations (NGOs) and local communities in implementing concrete actions.

2. Materials and Method

2.1. Study Area

The rural commune of Béré is located in the province of Zoundweogo, in the south-central region of Burkina Faso. It is located in the extreme north of the province between parallels 11˚42'25" and 12˚1'55" north latitude and meridians 0˚53'20" and 1˚12'50" west longitude [8]. Covering an area of 475.31 km^2, the commune of Béré is made up of 21 villages (**Figure 1**). At the last general population census in Burkina

Faso in 2019, the commune of Béré had approximately 33,489 inhabitants with an average growth rate of 2.94% [9]. This rate of population growth is very often out of step with developments in infrastructure, making it difficult for people to have adequate access to basic social services such as education, health, drinking water and sanitation [10]. This population is predominantly female, with women accounting for 53.31% of inhabitants [9]. It is therefore necessary to take account of their specific needs when building sanitation facilities, especially in public places.

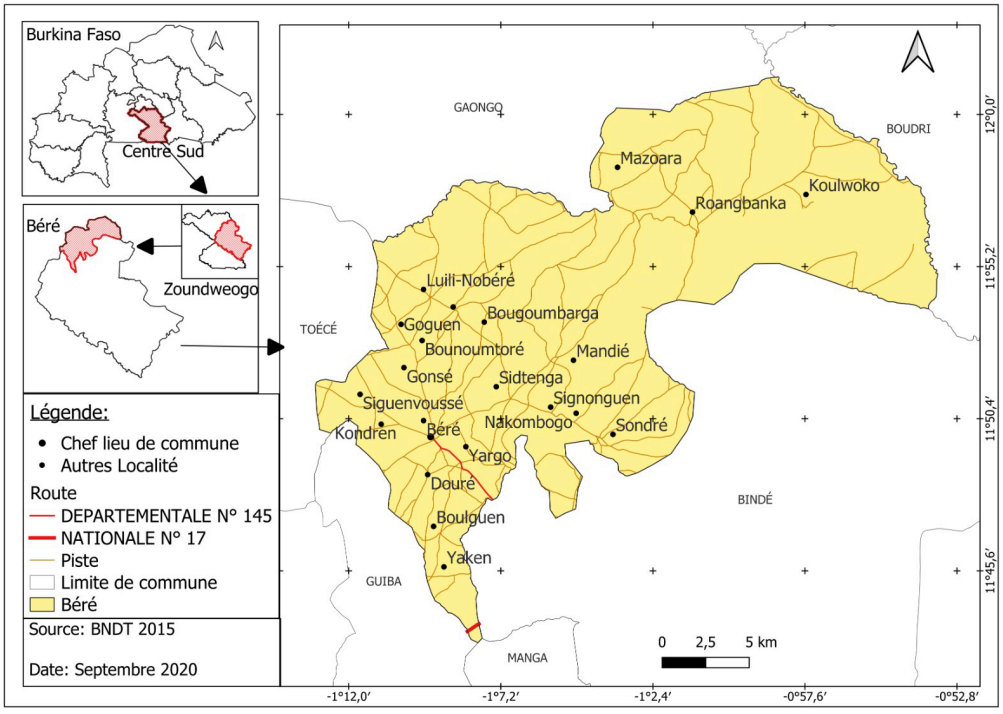

Figure 1. Geographical location of Béré.

2.2. Description of the General Methodology

Overall, the methodology implemented during the study can be summarised in three (03) main areas:

- Diagnosis of the state of sanitation in all public places in the 21 villages of the commune of Béré,
- Diagnosis of sanitation governance at municipal level,
- Financial evaluation to meet the need for sanitation facilities in public places, and awareness-raising activities to bring about a change in behaviour.

2.2.1. Methodology for Diagnosing the State of Sanitation in Public Places

The objective was to take stock of and diagnose the operation and management of sanitation facilities in public places, in particular schools, health centres, markets, bus stations, churches and mosques in all 21 villages in the commune of Béré. A questionnaire was drawn up for data collection. The development of the questionnaire included multiple validation phases. Initially, the team of engineers from the

NGO Eau Vive International, operating locally, refined the questions. Subsequently, municipal sanitation technicians, in collaboration with village water users' association leaders, contextualized the issues. The final validation was conducted by the regional directorate of water and sanitation in Zoundwéogo province. After these validation steps, the questionnaire was deployed into MWater software as a data collection tool.

The state of the latrines was assessed according to the criteria in Table 1. The communal authorities and village resource persons, in particular the chairmen of the village committees and the chairmen of the water users' associations, assisted the field mission by accompanying the interviewers to each public place in their village and introducing them to the questionnaires.

Table 1. Criteria for assessing the condition of latrines.

Conditions	Good	Bad	Fair
Meaning	- Cabin and slab in good condition + unfilled pit - Door in good condition	- Cabin or slab in poor condition - Pit filled - Door ripped off	- Cabin and slab in good condition + filled pit - Cabin or slab with minor cracks - Doors in acceptable condition

2.2.2. Methodology for Diagnosing Sanitation Governance at Municipal Level

The objective was to assess how the municipality fulfils its role as project owner for drinking water supply, hygiene and sanitation (WASH). A questionnaire was also deployed on the MWater software for this purpose. The data was mainly collected from the commune's top authorities, in particular the President of the Special Delegation, the commune's Secretary General and the Communal Water and Sanitation Technician, as well as from other heads of related departments (health and education departments).

2.2.3. Methodology for Assessing the Need for Sanitation Facilities and Evaluating the Cost of Improving the Sanitation Situation in Public Places in the Municipality of Béré

The assessment of the need for sanitation works was carried out after analysing the questionnaire on the diagnosis of sanitation in public places. This made it possible to identify the public places where the construction of sanitation facilities is necessary. The assessment of the need was also based on the criteria for access to the sanitation service according to the public place identified in accordance with Decree N˚ 2019-0320/PRES/PM/MEA/MINEFID/MATDC/MEEVCC/MS defining the standards, criteria and indicators for access to sanitation in Burkina Faso [11].

The cost of implementing solutions to improve sanitation in public places was evaluated by assessing the cost of building sanitation facilities to close the gap, as well as the cost of carrying out awareness-raising activities to change behaviour. The various unit prices were based on the price list applicable to the commune of Béré [12].

3. Results and Discussion

3.1. Presence of Sanitation Facilities in the Various Public Places

One hundred and thirteen (118) public places were identified in all 21 villages of the rural commune of Béré. They include schools, health centres (CSPS), markets, churches and mosques (Table 2). Mosques are the most numerous (44 mosques), followed by schools (32 schools), and health centres number only five (5). The population of Béré is predominantly Muslim, which explains the high number of mosques. Each village has at least one school, but there is a lack of health facilities.

Table 2 shows that, apart from the health centres, each of which has at least one latrine, many other public places have no latrines. In the rural commune of Béré, over 88% of markets, 61% of mosques, 53% of churches and 21% of schools have no latrines.

Markets welcome merchants and customers throughout the day, but most have no latrines. Needs are met in the open (behind the shops and next to bushes). However, when considering the economic level of the various markets, merchants have the means to build a block of community latrines [13]. Questioning the managers of some markets reveals that building latrines is not such a priority that some say they have never thought about it. Reference [14] made the same analysis, looking at the sociology of sanitation in medium-sized towns in Burkina Faso.

For schools without latrines, this is a real problem for pupils and teachers. Pupils relieve themselves in the open air around their classrooms. Some girls and teachers are often forced to negotiate with nearby households in order to use their toilets. These households are often reluctant to accept and some refuse access to pupils who are accused of soiling the toilets. Reference [15] drew the same conclusions when analysing conflicts over toilets in schools. In discussions with pupils and teachers, anecdotes emerged about certain pupils who had pressing needs (in cases of diarrhoea) and who were obliged to relieve themselves in full view of their classmates. The teachers justify the lack of sanitation facilities by the fact that this was not considered when the classrooms were built. They explained that they had not received any response to their requests from the town hall or their supervisory authority.

They also add that the parents' association has difficulty raising funds, and the construction of latrines is not a priority in their various action plans. The education authorities, who were also approached during this study, say they are aware of the difficulties and are working to remedy them. They say, for example, that latrines are now included in the specifications for building a school, so there will be no more new schools without latrines. For schools already built without latrines, or those with latrines in poor condition, they say they are looking for funding to resolve the situation.

The same is true of places of prayer: the surroundings are unhealthy because that's where the natural needs of users take place. The smells often affect the peace and quiet during worship. The people in charge who were approached recognise the need to carry out sanitation work, but say they are waiting for help to be able

to do so. The issue of sanitation in public places is relegated to second place by those who frequent these places, which explains the current situation. Reference [16] came to the same conclusion by studying the social representations and logics of latrines in medium-sized towns in Burkina Faso. Reference [13] analysed the role of the Decentralised Territorial Collectivities in the sustainability of water and sanitation services in the undeveloped areas of the commune of Dschang and noted that priority was not given to the water and sanitation sector.

Table 2 also highlights the fact that there are virtually no facilities for managing grey water, particularly cesspools in public places. This water is discharged directly into the natural environment, causing unhealthy conditions in the surrounding area. Discussions with the people in charge of these areas revealed that many of them saw no need to build grey water management facilities. Instead, they suggested moving further away before disposing of this water in the open air, as it would reduce the amount of dust raised, which is also a source of disturbance for them and users.

Table 2. Presence of sewage works in public places in the commune of Béré.

Location status	Total number	Number of places with latrines	Number of places without latrines	Number of places with sumps	Number of places without sumps
Schools	32	25 (78.12%)	7 (21.88%)	0	32 (100%)
Health centres	5	5 (100%)	0	1 (20%)	4 (80%)
Makets	17	2 (11,76%)	15 (88.24%)	0	17 (100%)
Church	15	7 (47.67%)	8 (53.33%)	2 (13.33%)	13 (86.67%)
Mosque	44	17 (38.64%)	27 (61.36%)	0	44 (100%)
Others (bus stations, Slaughterhouse)	5	4 (80%)	1 (20%)	1 (20%)	4 (80%)
Total	118	60 (50.85%)	58 (49.15%)	4 (3.39%)	114 (96.61%)

3.2. Units Typology of Latrines in Public Places

Figure 2 shows the different types of latrines found in public places in the commune of Béré. Ventilated improved pit (VIP) latrines are the most common type found in public places. They account for 80% of latrines in schools and 100% of latrines in markets. There are also traditional latrines, which account for more than half the latrines in mosques and churches. Sanplat latrines are also found mainly in health centres. Manual flush toilets (MFT) and mechanical flush toilets (MeFT) are practically non-existent.

VIP latrines, which are latrines approved in accordance with the regulations in Burkina Faso [11], are the most common, as latrines in public places were built when the place in question was built, or subsequently as part of projects financed by the local council or NGOs. When it is the beneficiaries or the people in charge of the premises who carry out the work themselves (churches or mosques, for example), traditional latrines are built. Traditional latrines may not be approved,

but they are relatively affordable compared with VIP, and already make it possible to avoid open defecation. However, these non-approved structures do not enable the entire oro-fecal contamination chain to be cut, hence the need to adopt improved Sanplat or VIP latrines, which can be relatively affordable to build and more effective [11] [17]. Awareness-raising campaigns could gradually lead to a switch from traditional latrines to improved Sanplat or VIP latrines. MFT and MeFT are practically non-existent in the villages of Béré, as current water is already a major problem in public places [10]. Many schools, markets and places of worship do not have a drinking water supply system, and when they do, they use human-powered pumps [3]. The lack of water therefore explains why there are no MFT or MeFT in public places in Béré.

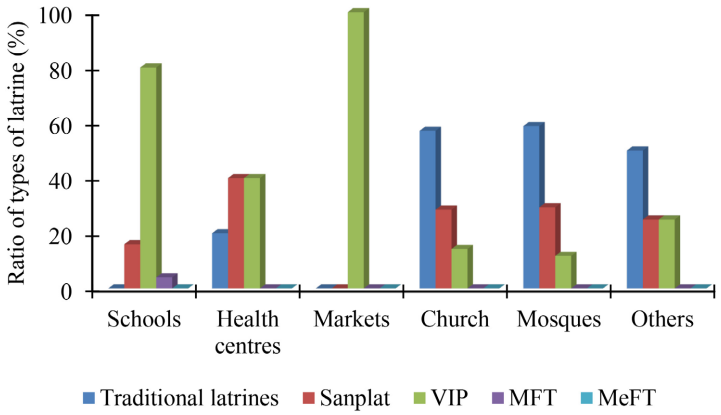

Figure 2. Type of latrines in public places in the commune of Béré.

3.3. Condition of Latrines in Public Places

Figures 3-4 show that most latrines in public places are in fair condition, except for schools, where latrines in poor condition are the most numerous. The situation in schools rivals that in markets, where there are no latrines in good condition and no clean toilets. **Figure 4** shows the state of cleanliness of latrines in different public places. Most users come to urinate, but they do not reach the defecation hole to do so. They urinate on the floor, which quickly makes the toilets dirty. Apart from mosques, where the ratio of latrines in good condition exceeds that of latrines in poor condition, in other public places, the percentages of latrines in poor condition always exceed those in good condition. As latrines in mosques are used a great deal before prayers, there is a reflex among those in charge and the faithful to maintain them [18]. Several latrines in the mosques are in good condition and clean, but they are more of the traditional type, which remains a weakness that needs to be improved. In schools and health centres, those in charge blame misuse by pupils or those accompanying patients, which rapidly degrades the latrines. In health centres, for example, the lack of shower cubicles means that users wash in the latrines, which speeds up the filling of the pits. In addition, the lack of a cabin for Hygienic Menstrual Management (HMM) means that women and other specific patients must throw nappies into the latrines, which also speeds up filling

and makes it very difficult, if not impossible, to empty them using emptying trucks.

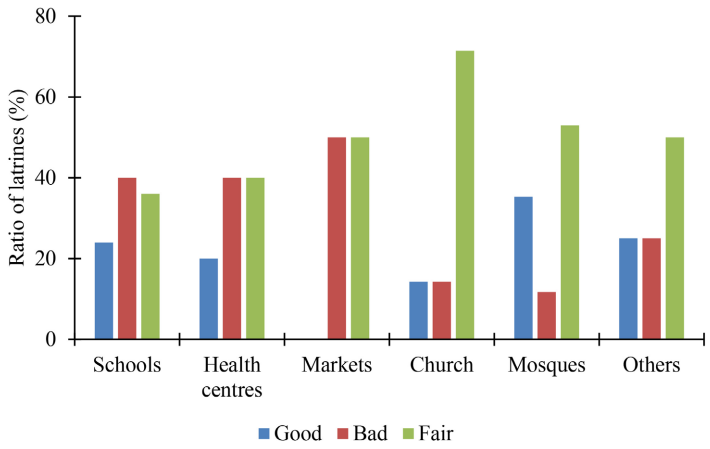

Figure 3. State of latrines in public places in the commune of Béré.

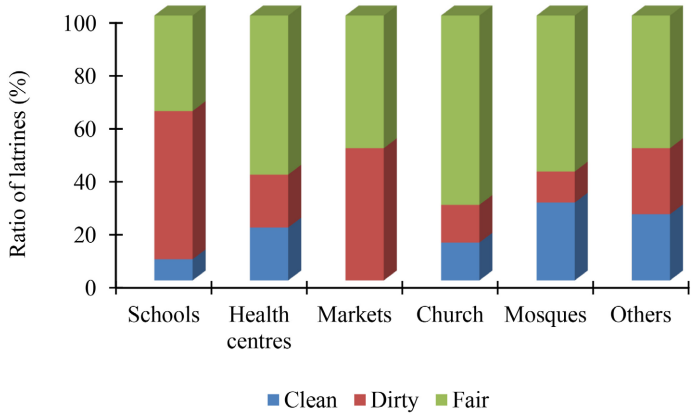

Figure 4. Cleanliness of latrines in public places in the commune of Béré.

Regarding the lack of cleanliness, several schools do not have a latrine cleaning programme and there are also no classroom lessons on the proper use of sanitation facilities, which explains this situation. Reference [19] also drew the same conclusions when looking at the issue of toilets in schools and they proposed more involvement from administrations to organise pupils to clean toilets at school. In health centres, no one is responsible for managing latrines and organising cleaning. The organisation of this service could be entrusted to a latrine manager, but health service users are not prepared to pay for the service, explaining that they find it difficult to pay for a medical consultation. In the markets, the situation is even more deplorable. As in other public places, there are no managers for the latrine blocks. The lack of cleanliness means that some cubicles are unusable. Discussions with the managers and various vendors revealed that people are not prepared to pay to relieve themselves, which makes it difficult to find a latrine manager. The situation is virtually the same in all the villages in the commune of Béré. Reference [20] analysed a similar situation for certain markets in Ghana.

3.4. Some Presence and Use of a Hand Washing Device (HWD) at Latrine Level

According to the standards and criteria for access to sanitation in Burkina Faso [11], the presence of a functional HWD near latrines is mandatory to minimize the risk of oro-fecal contamination. Not all latrines in Béré's mosques and markets have HWD. Over 40% of health centres and schools have functional HWD, but less than 20% of these are in use. Local cultural habits and practices, which do not emphasize hand hygiene, explain the non-use of HWD. **Figure 5** shows the ratio of latrines with functional HWD and the ratio of HWD in use. The functional HWD in schools and health centres were obtained through the distribution of HWD in response to the Covid 19 pandemic. All schools and health centres had been equipped with HWD, but more than half of these are currently out of use due to lack of maintenance. And where HWD are still available, they're hardly ever used. Indeed, the habit of washing one's hands after using the toilet is not ingrained in the population. This justifies the lack of maintenance or the non-use of HWD. However, discussions with people frequenting these public places show that they have all been made aware of the importance of handwashing on leaving the toilet, and they also know about other good hygiene practices. However, they do not put this into practice daily. The case of the population of Béré is not isolated; the same behaviour is noted in many towns and countryside in Burkina Faso [21] [22].

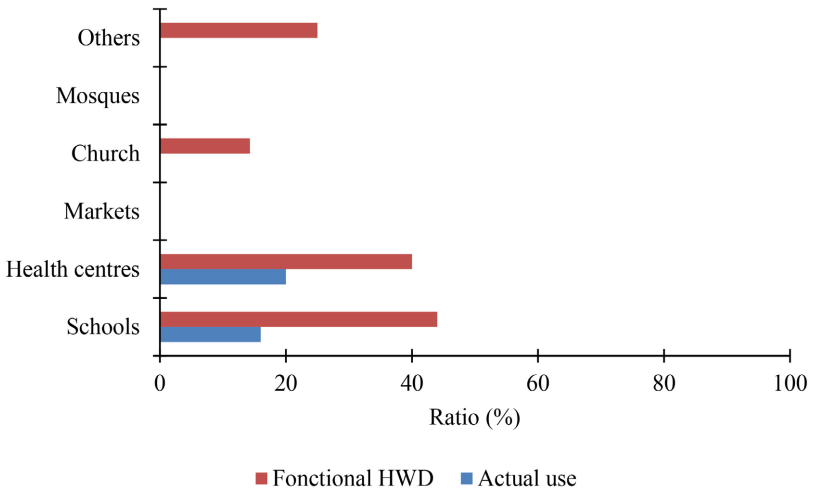

Figure 5. Presence and use of HWD in latrines in public places in the commune of Béré.

3.5. Considering the Human Rights-Based Approach (HRBA)

In public places in the villages of the commune of Béré, consideration of the HRBA is often limited to the question of separating latrines according to gender. All latrines in health centres, markets and churches consider the male/female separation of cubicles. This separation is also taken into account in some schools and mosques, but more needs to be done to make it systematic. This consideration of HRBA could be improved by considering the realization of cabins for disabled people and for the hygienic management of menstruation (HMM) [23] [24].

3.6. Exercising Communal Project Management in Water and Sanitation

When it comes to water and sanitation in Burkina Faso, communes are the project owners [25]. They are therefore responsible for organizing the sector and, above all, working to improve the rate of access to drinking water and sanitation throughout their territorial jurisdiction [13] [21] [25]. Communes are therefore invited to have a municipal development plan for the supply of drinking water, hygiene and sanitation (WASH MDP). The commune of Béré does not currently have a WASH MDP. It carries out WASH actions according to the interventions of the various financial partners in the commune. The commune of Béré does not have a Communal Water and Sanitation Council, which would be responsible for coordinating all WASH activities, as is the practice in other communes and provided for by the regulations [25]. The commune also lacks a functional water and sanitation department. To support the various players involved in the WASH sector, the commune has appointed a water and sanitation focal point. WASH-related activities are relegated to the background by the commune. For example, in 2021, out of a budget of around four hundred million, the mayor's office has not budgeted for any activity in the water and sanitation sector. The construction of water supply and sanitation facilities, the monitoring of water and sanitation user associations, and the monitoring of the functionality and cleanliness of sanitation facilities in public places, have not been carried out due to lack of budget. Béré is not an isolated case. Refence [13], analysing the role of decentralized local authorities in the sustainability of water and sanitation services, highlighted the lack of financial and technical resources that prevent several communes from playing their part.

3.7. Proposals for an Action Plan to Improve Sanitation in Public Places in the Commune of Béré

3.7.1. Innovations Proposed in the Design of New Public Toilet Plans

In Burkina Faso, there is a technical reference framework (including conceptual plans) that guides the construction of sanitation facilities in households and public places [26]. Some public works in Béré were carried out without reference to these guidelines. However, even for those built in accordance with the standard, difficulties remain. Following the analysis of the current situation, proposals for technological innovations were made to the design plans, considering the cultural practices and specific needs of the area's populations, in order to improve the use of latrines in public places.

Regardless of the type of rural public space, the design of toilet plans should incorporate the following innovations:

- VIP-type latrines;
- Installation of urinals in men's latrine blocks;
- HMM cubicles in women's latrine blocks;
- Creation of a cabin for disabled people (CDP) in each type of latrine block;
- Installation of WHD in each latrine block.

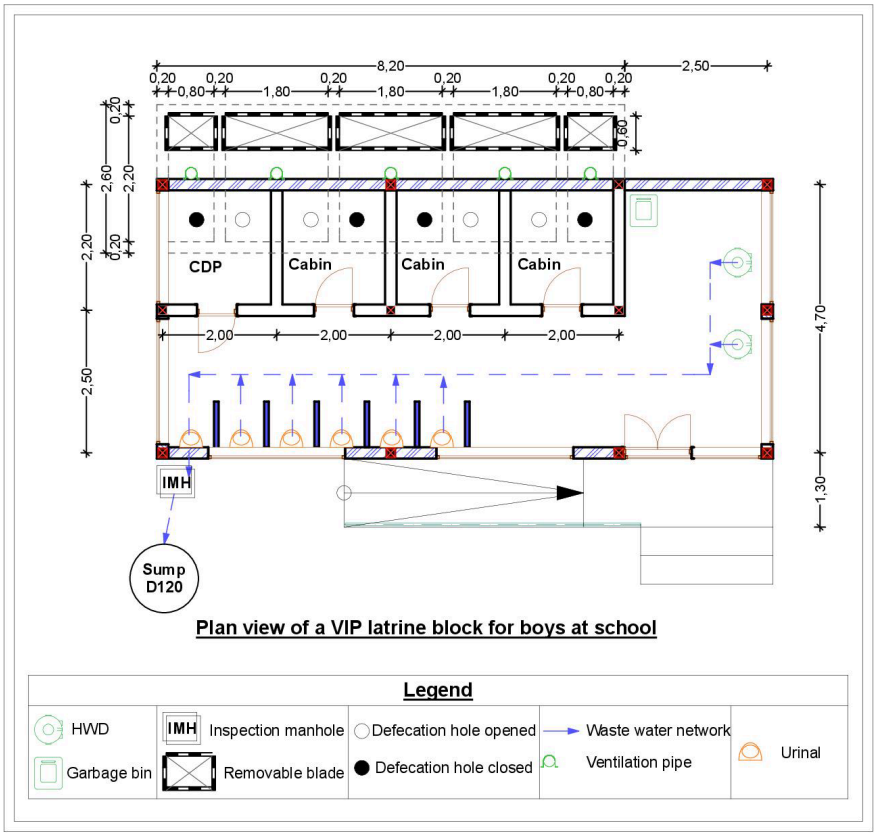

Figure 6. Plan view of a VIP latrine block for boys at school.

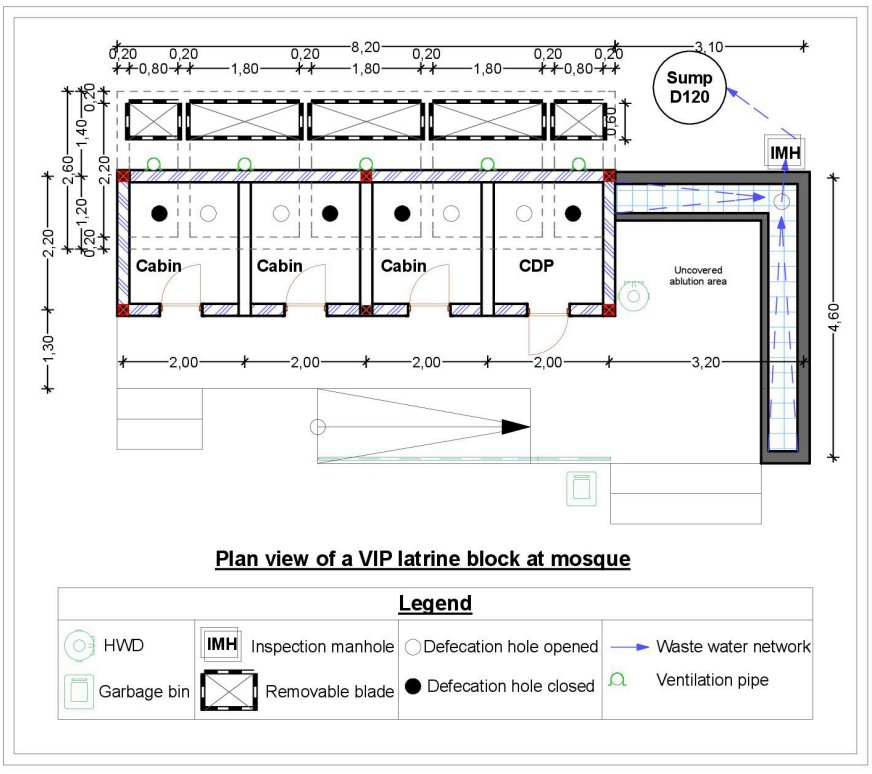

Figure 7. Plan view of a VIP latrine block at mosque.

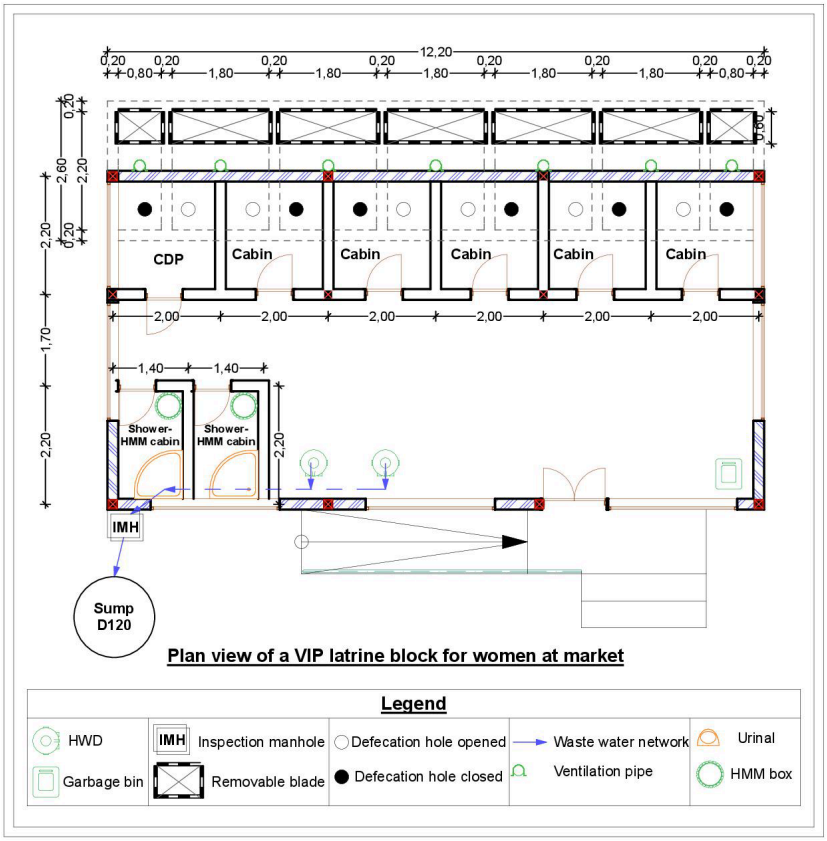

Figure 8. Plan view of a VIP latrine block for women at the market.

For school toilets, we could specifically add in terms of minimum needs one (01) VIP latrine block for boys, one (01) block for girls and one (01) block with separate cabins (male and female) for teachers. By way of example, Figure 6 shows a plan view of a VIP latrine block for boys at school level, considering the proposed innovations. At the health-care level, the minimum requirement could be estimated at one (01) block of VIP latrines for men, one (01) block for women and one (01) block with separate cabins (male and female) for health-care staff. These latrine blocks should include several shower cubicles connected to a sump. The same should apply to latrine blocks in churches. For mosques, it is not necessary to add urinals in men's latrine blocks because the results of surveys show that this should be unsuitable for the religious practice of the area. Based on the same survey results, it would not be advisable to add a cabin for hygienic management of menstruation at the women's latrine. The latrine blocks for men and for women are therefore similar. The innovation to consider for latrines in mosques is the addition of an ablution air connected to a sump should be integrated into the latrine blocks (Figure 7). For markets, at least one shower cabin should be added to the latrine blocks, as shown in the plan view of a women's latrine block (Figure 8).

3.7.2. Financial Evaluation of Innovative Sanitation Facilities in Public Areas of Béré

Based on the proposed conceptual plans, incorporating the proposed innovations,

the cost estimates were evaluated. Table 3 shows the cost of building a latrine block, depending on the public site considered. A school, for example, requires a toilet block for boys, estimated at 3,474,090 CFA francs, a block for girls estimated at 3,186,680 CFA francs, and a block for teachers at around 3,196,060 CFA francs. The total investment for sanitation works in a school is therefore 9,856,830 CFA francs. This unit cost for the 32 schools in the commune of Béré gives a total investment of 315,418,560 FCFA for the sanitation works needed to improve sanitation in Béré's schools. The same estimates were made for other types of public places, as detailed in Table 3. In sum, the overall budget for the construction of latrines in all the markets, schools, health centres, churches and mosques in the villages of the commune of Béré is estimated at 886,749,549 FCFA. Details of all the conceptual plans based on which the bills of quantities and estimates were drawn up are available and may be consulted for further information. It is important to remember that this financial estimate is based on the prices applicable for aggregates, cement, labour, etc. in the commune of Béré. It could not be generalised, but it provides an idea that could guide financial planning in any location.

Table 3. Overall estimate by latrine block construction plan.

N°	Designation	Quantity	Unit price	Total price
1	School/Boys' toilet	1	3,474,090	3,474,090
2	School/Girls' toilet	1	3,186,680	3,186,680
3	School/Teachers' toilet	1	3,196,060	3,196,060
4	Total cost of sanitation facilities for one (01) school	1	9,856,830	
5	Total cost of sanitation facilities for 32 schools of Béré	32	315,418,560	
6	Health centre/men's toilet	1	4,165,418	4,165,418
7	Health centre/women's toilet	1	4,269,288	4,269,288
8	Health centre/healthcare's toilet	1	3,196,060	3,196,060
9	Total cost of sanitation facilities for one (01) Health centre	1	11,630,765	
10	Total cost of sanitation facilities for 05 Health centres	5	58,153,825	
11	Market/men's toilet	1	4,597,101	4,597,101
12	Market/women's toilet	1	4,597,161	4,597,161
13	Total cost of sanitation facilities for one (01) market	1	9,194,262	
14	Total cost of sanitation facilities for 17 markets	17	156,302,454	
15	Church/men's toilet	1	5,520,214	5,520,214
16	Church/women's toilet	1	5,378,964	5,378,964
17	Total cost of sanitation facilities for one (01) Church	1	10,899,178	
18	Total cost of sanitation facilities for 15 churches	15	163,487,670	
19	Mosque/men's toilet	1	2,197,580	2,197,580
20	Mosque/women's toilet	1	2,197,580	2,197,580

Continued

21	Total cost of sanitation facilities for one (01) Mosque	1	4,395,160
22	Total cost of sanitation facilities for 15 mosques	44	193,387,040
23	Overall budget for the construction of latrines in public places in the villages of the commune of Béré	113	886,749,549

3.7.3. Communication Strategy for Behaviour Change

When it comes to improving sanitation in each environment, building facilities alone is not enough to achieve the objective [27] [28]. In fact, facilities may be present, but poorly used or not used at all. The inventory showed, for example, the lack of maintenance of sanitation facilities in all public places, the lack of facility managers, the lack of motivation to pay for sanitation services etc. This is why, beyond the construction of facilities, a communication strategy is necessary for an effective change in behaviour. The diagnostic study has revealed several awareness-raising, communication and training initiatives for those in charge of public places, those who frequent these places and the population in general. Awareness-raising actions have already been carried out in these localities, but the change in behaviour is still not perceptible. We therefore need to innovate in our strategy, building on the weaknesses of previous actions, in order to succeed in triggering this change in behaviour in favour of sanitation among the population of Béré. For example, for schools, the setting up of hygiene clubs and the management of toilet cleaning schedules by teachers would be relevant activities. For health centres, the recruitment of a latrine manager is inevitable. To motivate the latter, the health centre could institute a lump sum of 100 FCFA per medical consultation, to be used for latrine management. This would also avoid disputes between managers and users. There are many possible activities. For greater effectiveness, activities should focus on Behaviour Change Communication (BCC), Social Change Communication (SCC), Social Mobilization (SM) in favour of sanitation, lobbying the authorities to take sanitation into account in budget planning, and capacity building for all stakeholders. Sanitation is first and foremost a behaviour [29], and it is awareness that motivates investment in sanitation facilities and their effective use [30]. This is why it is important, while mobilizing finances for the construction of works, not to overshadow the Information, Education and Communication (IEC) activities that need to be carried out to achieve the targeted objectives [29] [30]. Finally, in addition to raising awareness, it would also be necessary to plan and effectively implement sanctions against users who refuse to comply with the conditions established to improve sanitation in public places.

3.7.4. Strategy for Mobilizing Financial Resources

Improving sanitation by relying on funding from foreign donors increasingly presents limitations [31]. Passive beneficiaries find it difficult to take ownership of projects. Many facilities are not used or are poorly maintained, and sanitation conditions remain little improved despite the implementation of sanitation projects. Convinced that real behavioural change can only come about with the per-

sonal involvement of beneficiaries, following an awareness of their situation, the proposed strategy for mobilizing financial resources to build latrines and carry out related activities in public places relies on endogenous resources (Table 4). The overall budget may seem colossal, but it's no more than a sum of small budgets for each public site. The common thread running through this fund-raising strategy could be summed up as follows: "Each public place should provide itself with the means to build these sanitation facilities and raise awareness of their proper use". In schools, for example, the administration can encourage parents, pupils and former pupils to contribute to the construction of sanitation facilities [32]. For health centres, voluntary contributions can be initiated with the help of traditional chiefs and local leaders (civil servants, authorities, members of parliament, etc.). In the case of markets, raising the awareness of shopkeepers could encourage them to contribute to the construction of latrines. Some could even engage in the sanitation business by offering sanitary blocks for a fee. In the case of places of worship, worshippers can organize themselves by paying contributions and carrying out community work to build sanitation facilities.

Public places are crowded. If awareness of the need to improve sanitation is effective, it would only take a tiny contribution from each one of us to raise the budget needed to build sanitation facilities in the public places we usually frequent. This would already be the beginning of a change in behaviour and social change in general.

Table 4. Fund-raising activities to finance sanitation projects in public places in villages in the commune of Béré.

Objectives	Activities	Persons responsible
1. Financing sanitation initiatives in schools	1. Lobby parents for a special membership fee 2. Lobby the school's alumni for a special contribution 3. Voluntary student contribution	School administration, Parents' Association, School clean-up clubs
2. Financing sanitation initiatives in health establishments	1. Advocacy with local leaders 2. Submitting a voluntary contribution basket 3. Advocacy with the Ministry of Health, NGOs and other partners	The health centre administration, Village chiefs, Local authorities
3. Financing sanitation initiatives in markets	1. Introduction of a special contribution by merchants 2. Lobby leaders to invest in the construction of fee-paying sanitary blocks Lobbying financial partners	Heads of traders' associations, Local authorities
4. Financing sanitation initiatives in churches and mosques	1. Introduction of a special contribution for members of the faithful 2. Carrying out community activities such as building pits or making bricks	Leaders of places of worship

4. Conclusions

At the end of this study, the results obtained show the urgent need for action to

clean up the living environment in public places in the rural commune of Béré. The users of these public places, notably pupils and teachers in the schools, patients and their careers in the health centres, and traders in the markets, spend their whole day there, under difficult sanitation conditions. Over 88% of markets, 61% of mosques, 53% of churches and 22% of schools have no latrines. Where latrines do exist, they are poorly maintained and poorly used. Around 40% of toilets in schools and health centres are in poor condition. In all Béré village markets, there are no latrine blocks in good condition. In all 118 public places identified, both grey water and garbage are dumped in the open. Users also lack the reflex to adopt good hygiene practices such as hand washing. It is important to implement solutions to correct this situation, lest these public places become epicentres of epidemics.

The first solution proposed is the construction of innovative latrine blocks in these public places. An assessment of the need for these structures reveals a requirement for 96 latrine blocks for the 32 schools, 20 blocks for the 0.5 health centres, 34 blocks for the 17 markets, 30 blocks for the 15 churches and 88 blocks for the 44 mosques. The total cost of these works is estimated at eight hundred and eighty-six million seven hundred and forty-nine thousand five hundred and forty-nine (886,749,549) CFA francs. This overall amount, based on the needs of each specific location, varies between 4,395,160 and 10,899,178 FCFA depending on the public site. A strategy for mobilizing endogenous resources is proposed, with activities that can be carried out in the short and medium term.

The second solution is a communication strategy to raise awareness and bring about a change in people's behaviour in the villages of Béré. This awareness is necessary to encourage people to pay the fees for the construction, use and maintenance of sanitation facilities. The anticipation and implementation of sanctions against users who fail to respect the hygiene and sanitation conditions laid down for the public places they frequent is also a form of communication that must necessarily be initiated over and above awareness-raising.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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