Annex 2c

Construction Study

to GCF Funding Proposal

Building the resilience of Togo's national health system and vulnerable communities to climate-sensitive health outcomes

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Deutsche Gesellschaft für internationale Zusammenarbeit (GIZ) GmbH

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Abbreviations and Acronyms

ASC	*Agents de Santé Communautaires* (Community Health Workers)
CEET	*Compagnie Énergie Électrique du Togo* (Togolese Electric Energy Company)
CHP	*Centre Hospitalier Préfectoral* (Prefectural Hospital Centre)
CMS	*Centre Médico-Social* (Medical-Social Centre)
COGES	*Comité de Gestion de Formation Sanitaire* (Health Facility Management Committee)
CVD	*Comité Villageois de Développement* (Village Development Committee)
DEWATS	Decentralised Wastewater Treatment Systems
DISEM	*Direction d'Infrastructure Sanitaire, Équipement et Maintenance* (Directorate of Health Infrastructure, Equipment and Maintenance)
DPS	*Direction Préfectorale de la Santé* (Prefectural Health Directorate)
EAH	*Eau, Assainissement et Hygiène* (Water, Sanitation and Hygiene)
EPP / JEP	*École Primaire Publique / Jardin d'Enfants Public* (Public Primary School / Public Kindergarten)
FS	*Formation Sanitaire* (Health Facility / Health Centre)
FVC	*Fonds Vert pour le Climat* (Green Climate Fund – GCF)
GEDEC	*Projet Gestion des Déchets et Décentralisation dans les Chefs-lieux de région* (Waste Management and Decentralisation in Regional Capitals Project)
IDE	*Infirmier Diplômé d'État* (State Registered Nurse)
MEN	*Ministère de l'Éducation nationale* (Ministry of Education)
MSHPCSUA	*Ministère de la Santé, de l'Hygiène Publique, de la Couverture Sanitaire Universelle et des Assurances* (Ministry of Health, Public Hygiene, Universal Health Coverage, and Insurance)
PF	*Planning Familial* (Family Planning)
PNAS	*Plan National d'Adaptation du Secteur de la Santé* (National Health Sector Adaptation Plan)
PMR	*Personne à Mobilité Réduite* (Person with Reduced Mobility)
SMI	*Salle Maternité Infantile* (Maternity and Child Health Ward)
Tde	*Société Togolaise des Eaux* (Togolese Water Company)
USP	*Unité de Soins Périphériques* (Peripheral Care Unit)
VIP	Ventilated Improved Pit Latrine
WASH	Water, Sanitation and Hygiene

Executive Summary

This report is part of the project to strengthen the resilience of Togo's national health system and vulnerable communities to climate-sensitive health outcomes, with the support of the Green Climate Fund (GCF).
The study focused on the Central, Kara, and Savanes regions, identified as the most exposed to the impacts of climate change and to the failures of health and WASH (Water, Sanitation and Hygiene) infrastructure ((UNDP) P. d., 2022/2023).

In a context of rising temperatures, prolonged droughts, and irregular rainfall, the health facilities studied are highly vulnerable, characterized by old buildings, uninsulated roofs, insufficient rainwater drainage infrastructure, difficulties in accessing drinking water, and a lack of adequate sanitation facilities. These weaknesses compromise the continuity and quality of care, especially in rural areas.

The study is based on an integrated methodology combining:

- A literature review of national health and climate standards.
- A consultation workshop on resilience measures for health infrastructure and WASH.
- Technical field diagnostics in 24 sites, covering health units, schools, and markets.

The analyses show that most of the infrastructure requires structural and functional interventions to ensure its sustainability and adaptation to future climate conditions and challenges.
The main orientations adopted concern:

- Bringing buildings up to climate-resilient standards (double roof, natural ventilation, sunshades, rainwater drainage).
- Improving WASH infrastructure (access to water, hygiene, waste management).
- The integration of renewable energies and sustainable local materials.
- The implementation of a preventive maintenance plan and regular monitoring.

The proposed intervention scenarios – rehabilitation, extension, or construction – are prioritized according to needs.

This study serves as a decision-making tool to guide investments in safer, sustainable, and climate-friendly health and community infrastructure, thereby contributing to the strengthening of the health system in Togo.

Introduction

Climate change is one of the major challenges for global public health today. Its effects are reflected in an increase in the frequency and intensity of extreme weather events — heat waves, floods, droughts, high winds — that put a strain on health systems and infrastructure. Healthcare facilities, from small dispensaries to large hospitals, are on the front line of these hazards. Their role is crucial: to ensure the continuity of services, to protect populations, and to support communities in emergencies.

However, these infrastructures are themselves vulnerable. In the Central, Kara, and Savanes regions of Togo, this fragility is worsened by sometimes extreme weather, limited resources, and the deterioration or insufficiency of some equipment and buildings. Environmental pressures, along with changing health needs, are decreasing the operational capacity of health facilities. Additionally, certain management and operating practices can harm the environment, creating a vicious circle that directly impacts the health of populations.

In this context, strengthening the climate resilience of health infrastructure and water, sanitation, and hygiene (WASH) systems is becoming a strategic priority. This means not only anticipating and limiting the impacts of climate hazards, but also transforming healthcare facilities into safe, sustainable spaces that can function even in times of crisis.

This report analyses the current state of health infrastructure in the Central, Kara, and Savanes regions, identifies vulnerabilities to climate and environmental risks, and offers guidance for sustainable strengthening of their resilience.

i. Background and rationale for the study

Togo is facing increasing health challenges amplified by the effects of climate change, including rising temperatures, intensifying heatwaves, and rainfall variability. These phenomena increase the transmission of climate-sensitive health outcomes, particularly malaria and diarrhoea, as well as the direct impacts on maternal and newborn health ((UNDP) F. V., 2021).

The Central, Kara, and Savanes regions, identified as the most vulnerable, have a high incidence of these diseases, increased exposure to climatic hazards, and fragile health infrastructure ((UNDP) F. V., 2021). Schools suffer from structural and organizational deficits: irregular access to drinking water, inadequate sanitation systems, poorly applied building standards, a lack of equipment adapted to extreme conditions, and a weak capacity to manage climatic health emergencies.

In this context, and in accordance with the strategic orientations defined in the concept note submitted to the Green Climate Fund aimed at "strengthening the resilience of Togo’s national health system and vulnerable communities to climate-sensitive health outcomes", a diagnosis of health infrastructure is essential. It will make it possible to assess their level of resilience, identify priorities for intervention, and propose sustainable adaptation solutions.

This will help target investments, integrate climate data into health planning, and align actions with the National Health Sector Adaptation Plan (PNAS, 2020) and Togo’s international commitments on climate resilience.

ii. Objectives

Main objective

The main objective of this study is to develop robust and integrated scenarios to improve the climate resilience of public health infrastructure and WASH infrastructure in the Centrale, Kara, and Savanes regions of Togo in order to reduce the vulnerability of populations to climate-sensitive health outcomes.

Specific objectives

- Carry out a physical and functional diagnosis of health and WASH infrastructure (schools, public places, water and sanitation networks) to identify their condition, deficiencies, and needs for improvement.
- Analyse needs and develop intervention scenarios adapted to local and climatic conditions, including the construction, rehabilitation, or extension of infrastructure.
- Study the local construction market to identify available resources, technical and human capacities, legal frameworks, and risks.
- Develop preventive and corrective maintenance recommendations, adapted to each type of infrastructure, to guarantee the durability and performance of the structures.

iii. Methodology

The methodology of the study is structured as follows: an iterative documentary review, informed by workshop exchanges, which aimed to identify resilience measures and finalise collection tools; the collection of field data by means of diagnostic sheets; interviews/exchanges with local actors and beneficiaries, and the synthesis and analysis of the information collected.

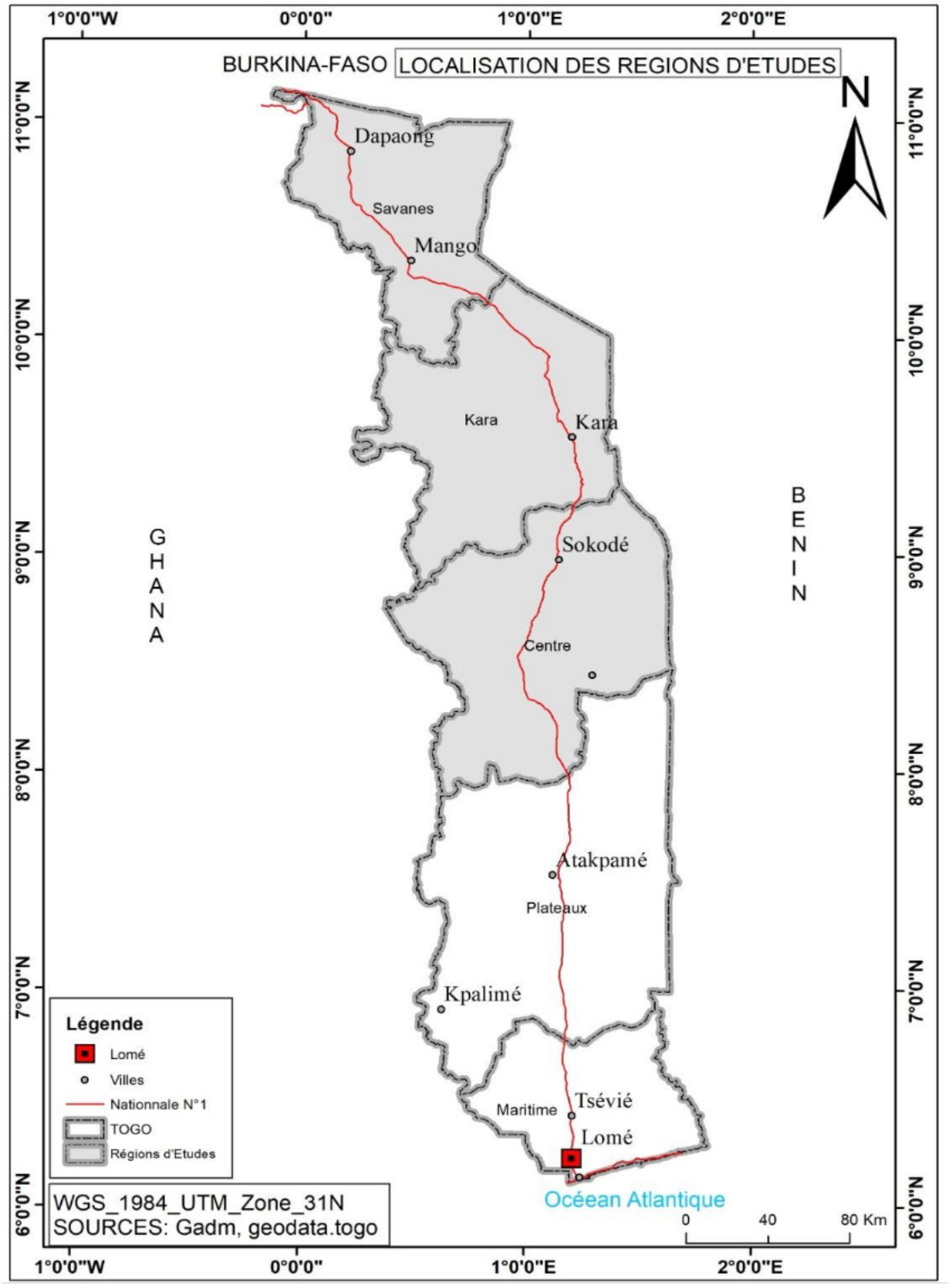
iv. Limitations

This study has certain limitations that should be highlighted. On the one hand, its geographical scope remains limited and does not allow the results to be fully generalized to the whole country, as regional realities are very diverse. In addition, the analysis is based on ad hoc visits, which limits the consideration of seasonal variations, particularly between the dry and rainy seasons. The environmental data collected (temperature, humidity related to thermal comfort) remains limited and does not reflect the continuous evolution of local conditions. In addition, the lack of technical documents for some old infrastructures has restricted the accurate assessment of their compliance and resilience. Similarly, the analysis of the electrical systems, the cold chain, and the equipment did not make it possible to estimate their residual life or their real performance.

1. Overview of the study area

The study area covers northern Togo, more specifically the Central, Kara, and Savanes regions.

Figure 1: Map of Togo with identification of the study regions



(Source: GADM, geodata.togo 14/10/2025)

1.1. General overview of Togo

Togo, officially the Togolese Republic, is a West African country covering 56,600 km². It is bordered to the north by Burkina Faso, to the east by Benin, to the west by Ghana, and has a coastline of nearly 50 km on the Gulf of Guinea to the south. Its narrow and elongated shape (650 km long and a maximum width of about 150 km) makes it a strategic corridor between the coast and the West African hinterland.

The population is estimated at 8.1 million (2022) with an annual growth rate of 2.3%. Togo is among the Least Developed Countries (LDCs), with a Human Development Index (HDI) of 0.539 (2021) and a Gross National Income (GNI) per capita of USD 867 ((UNDP) P. D., 2022/2023). The climate varies from humid sub-equatorial in the south to dry tropical in the north, marked by a dry season and a rainy season.

Togo is divided into five regions: Maritime, Plateaux, Centrale, Kara, and Savanes, which are further subdivided into prefectures and communes. The economy is mainly based on agriculture, trade, and phosphate, with economic growth influenced by climatic hazards and regional market conditions.

1.2. Climate

The country exhibits marked climatic diversity that directly influences the planning and sustainability of infrastructure, especially health infrastructure. The country is characterized by a North-South gradient that determines the distribution of seasons and rainfall.

Overview of climate differences

- North (Sudanian and dry climate)
  Heat waves and prolonged droughts dominate, accentuated by a long dry season and by the Harmattan. Rainfall is concentrated over a few months, which increases the risk of erosion and runoff during intense rainfall. Infrastructure is therefore exposed to both prolonged periods of drought (water stress, soil cracking) and violent rainfall in the wet season.
- South (sub-equatorial and humid climate)
  Rainfall is more frequent, with two rainy seasons. This increases the risk of persistent moisture, infiltration, and flooding, especially in coastal areas and poorly drained urban areas. High humidity also promotes the degradation of materials (wood, plaster, paints) and the development of mould.

Table 1: Summary table of key parameters

Climate parameter	Observed/estimated values	Key trends and observations
Maximum temperatures	> 35 °C (Savanes region)	• Average increase of +1.1 °C since the 1960s. • Projections: +1.5 °C to +2.5 °C by 2050 (RCP 4.5 and 8.5 scenarios).
Rainfall amounts	850 – 1,500 mm/year (depending on the area)	• Average decrease of 5–10 % in rainfall over the past 30 years. • High interannual variability. • More frequent, prolonged droughts and intense rainfall events.

Wind speed	1,5 – 3 m/s	• Dominant winds from the northeast (Harmattan) during the dry season. • From the southwest (monsoon) during the rainy season.
Sunshine duration	Annual average: ≈ 2,800 h; up to 3,000 h (Savanes)	• Sunniest period: November to March (dry season).

(Source: Green Climate Fund (GCF) Concept Note – Health and Climate in Togo, 2021)

Impacts on construction

- **In the North**
  Buildings are highly exposed to high temperatures. Increased heat transfer through materials used, especially sheet metal roofs, reduces indoor thermal comfort. Most banco constructions have poor long-term durability, with the appearance of frequent cracks. Added to this is the difficulty of accessing water, which complicates daily activities, especially during prolonged drought periods.

- **In the South**
  The main challenge lies in managing humidity and heavy rainfall. Recurring issues include water infiltration, particularly at roof level, where water tends to accumulate, and persistent moisture that weakens building structures. As a result, occupants experience significant discomfort during the rainy season.

In summary, the North requires infrastructure that is resilient to heat and drought, while the South requires construction adapted to intense rainfall and constant humidity. Our study area is located in the climatic North region. These climatic contrasts must imperatively guide the architectural design and technical choices of health and community infrastructures in Togo.

1.3. Study area: Centrale, Kara, and Savanes regions

Centrale region
Located at the heart of the country, the Centrale region covers approximately 13,317 km² and has a population of 779,529 inhabitants (INSEED, 2022), with Sokodé as its administrative capital, the second-largest city in Togo. The region experiences a tropical climate, characterized by a clear alternation between the dry and rainy seasons. It has a high prevalence of malaria and diarrhoea, exacerbated by difficulties in accessing safe drinking water.

Kara region
Located north of the Centrale Region, the Kara Region covers approximately 11,738 km² and has a population of 985,512 inhabitants (INSEED, 2022), with Kara city as its administrative capital, a dynamic centre and commercial hub. The region is characterized by a high incidence of malaria and diarrhoea, particularly in rural areas where access to healthcare remains limited.

Savanes region
Located at the extreme north of Togo, the Savanes Region covers approximately 8,533 km² and has a population of 1,143,520 inhabitants (INSEED, 2022). Its administrative capital, Dapaong, is an important administrative and commercial centre. The region is particularly impacted by malaria, diarrhoea, and the direct effects of heat on maternal and child health.

The table below presents the annual average temperature evolution in the regional capitals according to the RCP4.5 and RCP8.5 scenarios, in the short and medium term. The values shown correspond to temperature anomalies relative to the 1981–2010 reference period, calculated from the CORDEX-Africa and CMIP5 climate model ensembles. This analysis illustrates the regional warming trend and identifies areas where thermal stress on infrastructure and health services is expected to be most pronounced.

Table 2: Annual average temperature evolution by regional capital (RCP4.5/8.5, ref. 1981-2010)

Regional capital	Area	Population	RCP Scenario	Time period	Annual average temperature increase (°C)
Savanes (Dapaong)	8,533 km²	1,143,520	4.5	2011-2040	+0.96
				2041-2070	+1.80
			8.5	2011-2040	+1.00
				2041-2070	+2.40
Kara (Kara)	11,738 km²	985,512	4.5	2011-2040	+0.81
				2041-2070	+1.50
			8.5	2011-2040	+0.89
				2041-2070	+2.10
Centrale (Sokode)	13,317 km²	779,529	4.5	2011-2040	+0.81
				2041-2070	+1.50
			8.5	2011-2040	+0.90
				2041-2070	+2.10

(Source: Project Concept Note, Green Climate Fund, 2024-08-02)

Common challenges in the study area

These three regions, located in the northern half of the country, share common vulnerabilities. From a health perspective, they experience high morbidity rates associated with climate-sensitive health outcomes (Togolese Republic – Ministry of Health and Social Protection, 2020).

Their healthcare infrastructure is often outdated, poorly adapted to extreme climatic conditions, and insufficiently equipped with water, sanitation, and hygiene services. From a climate perspective, they are experiencing a general rise in temperatures, longer dry periods, and increased risks of heat waves.

These factors explain why these regions are prioritised in projects aimed at strengthening the climate resilience of health infrastructure, in line with the orientations of the National Health Sector Adaptation Plan and the Green Climate Fund Concept Note.

1.4. Climatic phenomena to which infrastructure is exposed

In the context of the country, health infrastructure is exposed to several climatic phenomena that directly affect its durability and operation:

- Extreme heat and heat waves

Rising temperatures, particularly pronounced during the dry season, cause overheating in poorly insulated buildings, thermal discomfort for staff and patients, and accelerated material degradation.

- Heavy rainfall and flooding

Increasingly frequent torrential rains cause flooding of sites located in low-lying or poorly drained areas, weaken foundations through erosion, and promote water infiltration, compromising the stability and functionality of buildings.

- High humidity and water stagnation

High humidity, combined with stagnant rainwater, promotes the development of mould, the corrosion of metal structures, and the proliferation of mosquitoes, increasing the risks of waterborne and vector-borne diseases, particularly malaria.

- Droughts and water stress

Prolonged droughts reduce the availability of water for basic health and hygiene needs and place significant pressure on boreholes, cisterns, and storage systems, often revealing that they are insufficiently sized and vulnerable.

- Strong winds and storms

Episodes of strong winds can damage roofs, tear off lightweight coverings, and destabilise or deteriorate elevated infrastructure such as water-tank supports and other exposed equipment, increasing the structural fragility of health facilities.

2. Institutional and regulatory framework

The implementation of sanitation and WASH infrastructure in schools in Togo falls within an institutional and regulatory framework involving several key stakeholders.

2.1. Health facilities

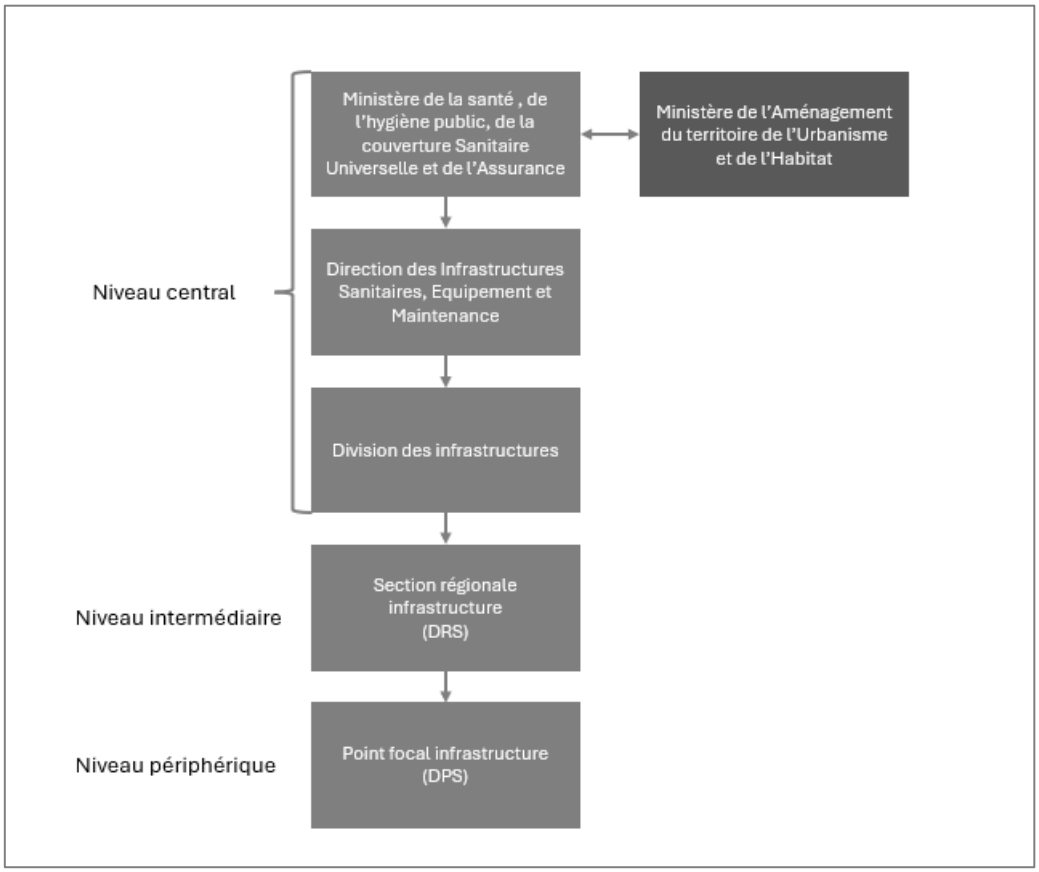
The construction of health infrastructure at the peripheral level is coordinated by the Ministry of Health, Public Hygiene, Universal Health Coverage, and Insurance (MSHPCSUA), in direct collaboration with the Ministry of Territorial Planning, Urban Planning, and Housing (MATUH) for technical and urban planning aspects.

Under the authority of MSHPCSUA, the Directorate of Infrastructure, Equipment, and Maintenance (DISEM) ensures the technical supervision of construction and rehabilitation projects. The Infrastructure Division is responsible for planning, monitoring studies, and ensuring compliance with national standards.

At the decentralized level, the regional health directorates (DRS), through their regional infrastructure sections, provide technical support and oversee work in the regions. Finally, in each prefecture, the prefectural health directorates (DPS), through their infrastructure focal points, oversee operational implementation and coordinate activities locally.

This structure aims to ensure coherence between national planning, central technical supervision, and effective implementation at the peripheral level.

Figure 2: Institutional framework



(Source: From the MSHPCSUA diagram)

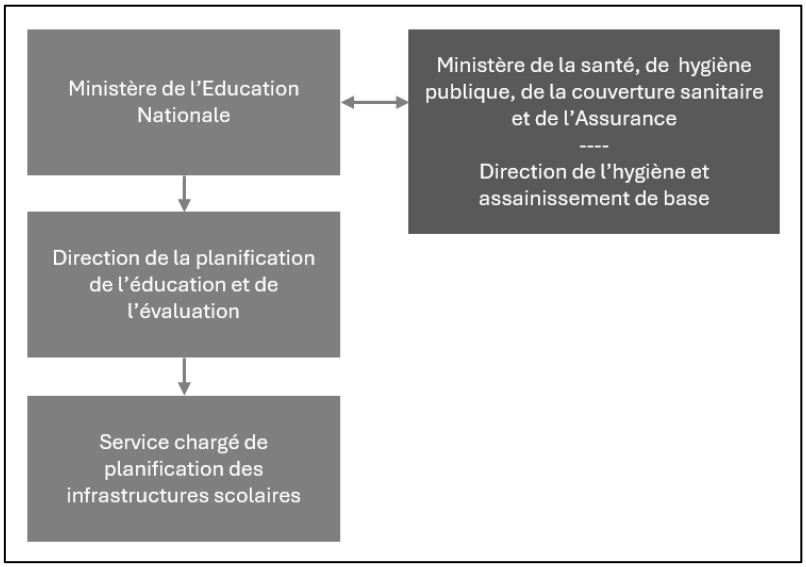
2.2. WASH infrastructure in schools

The planning and implementation of school infrastructure fall under the responsibility of the Ministry of National Education (MEN), in functional coordination with the Ministry of Health, Public Hygiene, Universal Health Coverage, and Insurance (MSHPCSUA) through the DHAB, to ensure that hygiene and health standards are considered in schools.

Within the MEN, the Directorate of Education Planning and Evaluation oversees the strategic programming of educational investments, needs analysis, and the prioritization of interventions. Within this directorate, the Service in charge of school infrastructure planning is specifically responsible for the design, siting, and technical planning of school buildings, ensuring that infrastructure aligns with student population growth and national standards.

The diagram below presents the main institutions involved and the coordination relationships among the actors responsible for planning and implementing school infrastructure and WASH standards in the educational environment.

Figure 3: Diagram of the WASH institutional framework in schools



(Source: From MEN diagram)

After presenting the institutional framework, Table 3 below summarizes the main legal and regulatory texts that structure the regulatory framework for the planning, design, and implementation of health infrastructure in Togo.

Table 3: Summary of key texts for the planning, design, and implementation of health infrastructure in Togo

Institution	Practical scope	Text/law
Ministry of Health	Establishes the legal framework for health facilities and refers to ministerial decrees specifying technical standards (floor area, rooms, equipment, IPC/WASH).	Law No. 2009-007 on the Public Health Code.
Ministry of Urban Planning	Defines the procedure for issuing urban planning permits, required documents (site plan, topographic survey, geotechnical report if required), and posting/display requirements.	Decree No. 2016-043/PR on the Issuance of Urban Planning Acts.
Public Procurement Regulatory Authority	Monitoring procedures for all contracts funded by the State or donors.	Law No. 2021-033 and Decree No. 2022-080/PR on the Public Procurement Code.
Ministry of Environment	Obligations regarding environmental impact assessment and waste management.	Framework Environmental Law / Environmental Code (Law No. 2008-005; Law No. 88-14).
WHO / UNICEF WASH-FIT (2018)	Operational framework to improve water, sanitation, and hygiene in health facilities; useful for IPC and medical waste management.	International technical guides (WASH).

(Source: Own elaboration, 10/2025)

3. Methodology of the study

The methodology was based on a literature review, including a review of the relevant health and climate regulatory texts. It also included the design of data collection forms, a workshop to identify resilience measures for health and WASH infrastructure, followed by the validation of the data collection tool.

3.1. Literature review

The analysis of documentation on resilience standards and approaches guided us in the objective analysis of the data collected in the field, a decisive element in proposing scenarios. This analysis also enabled us to identify possible solutions for interventions. Among the main documents, we can cite:

- Togo Health Standards | Volume 1, 2013[1]

This document addresses the technical standards to be followed in the construction of health facilities, as adopted by the Ministry of Health. It provides information on the equipment programs to be implemented and the usable surface areas to consider according to the type of health centre. The contribution of this document to our project allowed us to define the areas of components to be added based on the proposed usable surface areas and to establish guidelines for rehabilitation works.

- Green Climate Fund Concept Note

This document presents the current situation of the health system in Togo, characterized by limited access to care, insufficient infrastructure, and an uneven distribution of services. Health indicators remain low, particularly in rural areas. This document guided our proposals for the development of modern and adapted infrastructure and the establishment of effective management systems. These interventions focus on the most disadvantaged areas, with particular attention to vulnerable populations, especially women and children.

- Health System Resilience to Climate Change (WHO, 2021)[2]

This document serves as a key reference, as it provides a methodology for assessing the vulnerability and resilience of health infrastructure exposed to climate hazards. It highlights the major risks faced by these facilities (floods, heat waves, storms, droughts) and emphasizes the importance of integrating climate considerations into the planning, design, and management of health services. The report also provides practical recommendations to strengthen infrastructure robustness, improve resource management (energy, water, waste), and ensure continuity of care in contexts increasingly affected by climate shocks.

3.2. Data collection: Diagnostic forms

The second step consisted of developing diagnostic forms for field surveys (see Appendix 27), based on the analysis axes defined in advance. These tools enabled the collection of both quantitative and qualitative data on the identified sites.
A consultation workshop bringing together professionals and national and local stakeholders was held to present and discuss the diagnostic methods, validate the tools, and review innovative adaptation measures to strengthen infrastructure resilience. The contributions helped identify feasible and relevant options within the Togolese context, while excluding those deemed unrealistic or unsuitable.
These guidelines then informed the field mission for in-depth diagnostics and the development of implementation scenarios.

[1] Togo Health Standards | Volume 1, August 2013
[2] WHO guidelines for climate-resilient and environmentally sustainable health facilities

3.3. Data collection: On-site methodology

The diagnostic visits included the sites of Peripheral Care Units (USPs) and school and public WASH infrastructures and households to assess the condition of existing buildings and equipment and identify needs for rehabilitation or improvement. These visits include the collection of spatial, structural, environmental, and logistical information to guide planning. And this encompasses:

- Field surveys

A field survey session was conducted with local stakeholders at each visited site, including health facility managers for the Peripheral Care Units (USPs), school principals, and market authorities, in order to collect data on the USPs as well as the WASH aspects of the visited infrastructure.
The survey questionnaire was part of the previously developed diagnostic form, serving as the methodological basis for information collection.

- Collection of metric and ambient parameters

During field data collection, we recorded the dimensions of the infrastructure as well as climatic data, notably temperature and relative humidity. This information enabled the assessment of the condition of existing spaces, their layout, the internal comfort of occupants, and the compliance of their functions with current standards.

- Digitalisation and compilation of field data

To facilitate data compilation, KoBoToolbox was used, saving time during collection and simplifying processing. The data were then exported and consolidated into an Excel spreadsheet to facilitate analysis and interpretation.

- Focus group

Among the data collection methods, a focus group session was organized. This session, held with the targeted stakeholders, notably local development committees, allowed us to cross-check information and more accurately identify the challenges and needs of the target populations, such as women and children.

4. Outline

The report will be structured in two parts. The first part will be dedicated to the description and assessment of the visited facilities (USPs, WASH USPs, WASH infrastructure in schools and markets, and households), addressing identified problems, observed dysfunctions, and so on. In this section, the evaluation of the infrastructure will be carried out according to predefined assessment criteria.

The second part will focus on proposing intervention scenarios aimed at strengthening the resilience of the infrastructure.

5. Typologies of peripheral health units and standards

5.1. Definition and typologies of peripheral care units

According to national standards, healthcare structures in Togo are listed from the periphery as follows (see Appendix 1: Togo health standards):

- Type I USP:
  These cover a population of 5,000 to 15,000 inhabitants. They primarily provide general medicine (for adults and children, including trauma cases) and include a maternity unit. They constitute a first-contact facility with a minimal service offer. Their human resources are limited, with a minimum staff of seven health workers.

- Type II USP:
  These serve a population of more than 15,000 inhabitants (optimal: 15,000 to 30,000). In addition to general medicine and maternity services, they must have a diagnostic laboratory. This is an expanded facility, adapted to larger populations. Their organization requires a larger staff, with a minimum of 17 health workers.

The standards also specify that USPs, whether type I or II, should be at least 2.5 km apart to ensure equitable territorial coverage and optimal accessibility for the population.

During the field mission, it was observed that type II USPs are frequently referred to as Centre Médico-Social (CMS). Therefore, to maintain terminological consistency in this report, the term CMS may be used in places to refer to type II USPs.

5.2. Overview of the national standard for health infrastructure

National standards applicable to health infrastructure are structured into two categories: common standards and specific standards.

> Common standards applicable to all infrastructure relate to the environment, climatology, safety, construction materials, and sizing.
>
> Specific standards for each category of institution relate to function, geo-demography, capacity, and sizing.

5.2.1. Environmental standards

Environmental standards take the following criteria into account:

Site location

For this criterion, the chosen site must be healthy, located in a calm area, away from heavy traffic, and in a non-polluted environment. It should be distant from sources of vibrations. The land must be spacious enough to allow for possible future expansion.

Accessibility

For this criterion, the choice of site must consider ease of connection to existing road networks.

Slope (topography)

For this third criterion, the site selected for a health unit should not be overly uneven. The slope should not exceed 10%. The site morphology must facilitate proper drainage of wastewater and runoff.

5.2.2. Climatic standards

Considering Togo's hot and humid climate, health facilities must be well-ventilated and properly oriented with respect to sunlight. This arrangement ensures the continuous renewal of overheated or stale air.

The orientation of buildings should take advantage of the prevailing wind direction. Windows and openings should be protected from the direct rays of the rising and setting sun. The use of certain design features, such as extended roof overhangs, is recommended to prevent solar radiation infiltration depending on the orientation of the windows.

5.2.3. Safety standards

Health facilities must be equipped with a minimum level of safety measures to protect the lives of patients and staff from potential hazards.

Safety related to contamination

The layout of the rooms must be designed to isolate patients who are contagious. Service rooms must be closed off from corridors and separated from patient circulation areas. The arrangement of spaces must ensure a clear separation between septic zones and aseptic zones.

Safety related to fire

In rural areas, site planning must include a protection perimeter of at least 25 meters around the buildings to prevent any fire risk.

In urban areas, the design must provide for the installation of strategically placed fire hydrants and fire points, the availability of extinguishers in sensitive areas, and the creation of easily accessible emergency exits and stairways. Joinery elements, including doors and windows, must be designed to be fire-resistant. Finally, electrical circuits must be secured using appropriate fuses, properly insulated wires, and cables sized according to the loads they are expected to carry.

Safety related to sanitation

Each health facility must have a reliable system for supplying potable water. Wastewater and stormwater must be collected and drained through an appropriate system. An incinerator must be provided for biomedical waste, and closed bins must be installed for solid waste. Sanitary installations must be compliant, and a permanent system for rodent control, insect control, and disinfection must be implemented to maintain hygiene.

Safety related to noise control

Rooms intended to accommodate patients requiring acoustic isolation must be designed to ensure optimal soundproofing. Their location must avoid any proximity to external sources of noise. Exterior walls must incorporate insulation made of 10 cm–thick fibre placed between the cladding and the main structure. They must be reinforced with sound-absorbing panels made of fiberglass or mineral fibre. Ceilings must include perforated panels to reduce noise intensity, while floors must receive an additional layer installed over insulation materials such as polystyrene. Finally, windows must be fixed and hermetically sealed to ensure complete acoustic tightness.

Safety related to protection in hazardous areas

In multi-storey buildings, balconies must be equipped with guardrails with a minimum height of 1.50 m to ensure user safety. High-risk areas, such as electrical installations, machinery rooms, or spaces where gas emissions may occur, must be strictly barricaded to limit unauthorized access and prevent accidents.

Safety related to the protection of persons with disabilities

Access to buildings must be designed to guarantee universal accessibility. Ramps must therefore be provided at main entrances as well as in strategic areas, particularly near stairways. Where required by the configuration of the premises, the installation of elevators must be planned to facilitate vertical circulation and ensure inclusion for persons with reduced mobility.

5.2.4. Construction materials standards

Construction materials must be used in accordance with best practices and in strict compliance with the specifications outlined in the project specifications[3] defined by the project owner.

[3] Project specifications refer to the recommendations and technical provisions defined by the project owner, in consultation with the project designer (consulting firm). They may vary from one project to another depending on the specific characteristics of each intervention, particularly when experimenting with new solutions to address issues observed in the field or improving current practices.

5.2.5. Geographic and population standards

USPs are classified into two types based on the size of the population they serve. Type I USPs serve a population of 5,000 to 15,000 inhabitants, and their viability becomes difficult below 5,000 inhabitants due to fixed costs. Type II USPs serve a population of more than 15,000 inhabitants, with an optimal range of 15,000 to 30,000 inhabitants.

5.2.6. Capacity standards

The accommodation capacity of Peripheral Care Units must be organized functionally. For Type I USPs, the standard provides for a total of six beds, distributed between the general medicine department (two beds) and the maternity department (four beds). For Type II USPs, the layout must allow for sixteen beds, evenly distributed between the general medicine department (eight beds) and the maternity department (eight beds).

5.2.7. Dimensional standards

Dimensional standards for rooms are based on those generally recommended by the WHO for developing countries. These standards apply under the principle of modularity, which preserves the advantage of adapting spaces to needs for expansion, conversion, or technological change.

Given the evolution of architectural techniques in modular design, the spatial dimension standards used as a calculation basis per activity unit are as follows:

- Multipurpose consultation/examination unit = 3.60 m × 4.80 m, or 17.28 m²
- Bedside care unit for hospitalized patients = 3.50 m × 3.50 m, or 12.25 m²
- Delivery unit = 4.20 m × 4.80 m, or 20.16 m²
- Hospitalization unit for a 4-bed room = 5.40 m × 6.60 m, or 35.64 m²
- Laboratory room area = 3 m × 6 m, or 18 m² per module (6 m² per laboratory staff)

5.2.8. Building layout standards

For Type I USPs, the spatial organization should favour a linear layout. The site plan must arrange a single block integrating, on either side of a logistical core, the curative care service and the MCH/FP (Maternal and Child Health/Family Planning) block. The entire unit is connected by a circulation corridor or a veranda that serves as a reception hall and waiting area. Staff housing and ancillary facilities must be separate entities while remaining on the same site as the health centre.

For Type II USPs, the overall configuration should follow the same principle as Type I USPs. However, the organization must include, within the SMI/FP block, a dedicated hospitalization unit for maternity, as well as an additional block reserved for laboratory activities.

6. Overview of the healthcare units visited

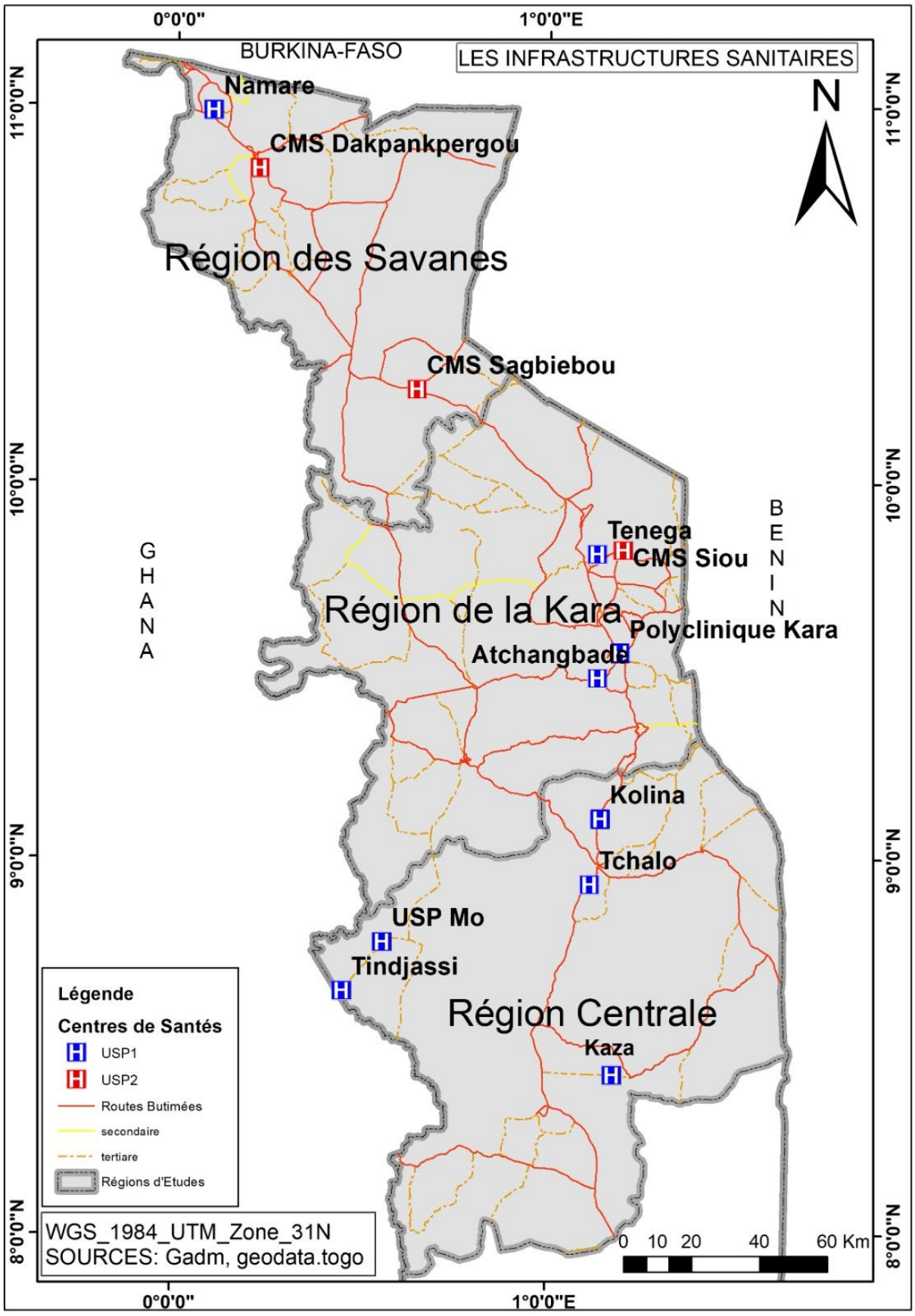
The field mission took place from 9 to 23 July 2025. The visit to the identified sites enabled a diagnosis of the state of the infrastructure. In total, 24 sites were evaluated, including 10 healthcare units, 2 households, 7 primary schools, and 5 markets, distributed across 10 health districts located in the Centrale, Kara, and Savanes regions.

Among the 10 healthcare centres visited, 6 are Type I and 4 are Type II. The analysis of the visited sites reveals a contrast between the different healthcare units. An initial assessment highlights that both centres are facing difficulties, and others are benefiting from more favourable conditions.

The evaluation of the facilities will be based on the aspects established by the national standards, ensuring an objective assessment. The results will then be systematically compared with national and international standards, allowing gaps to be identified and appropriate recommendations to be proposed.

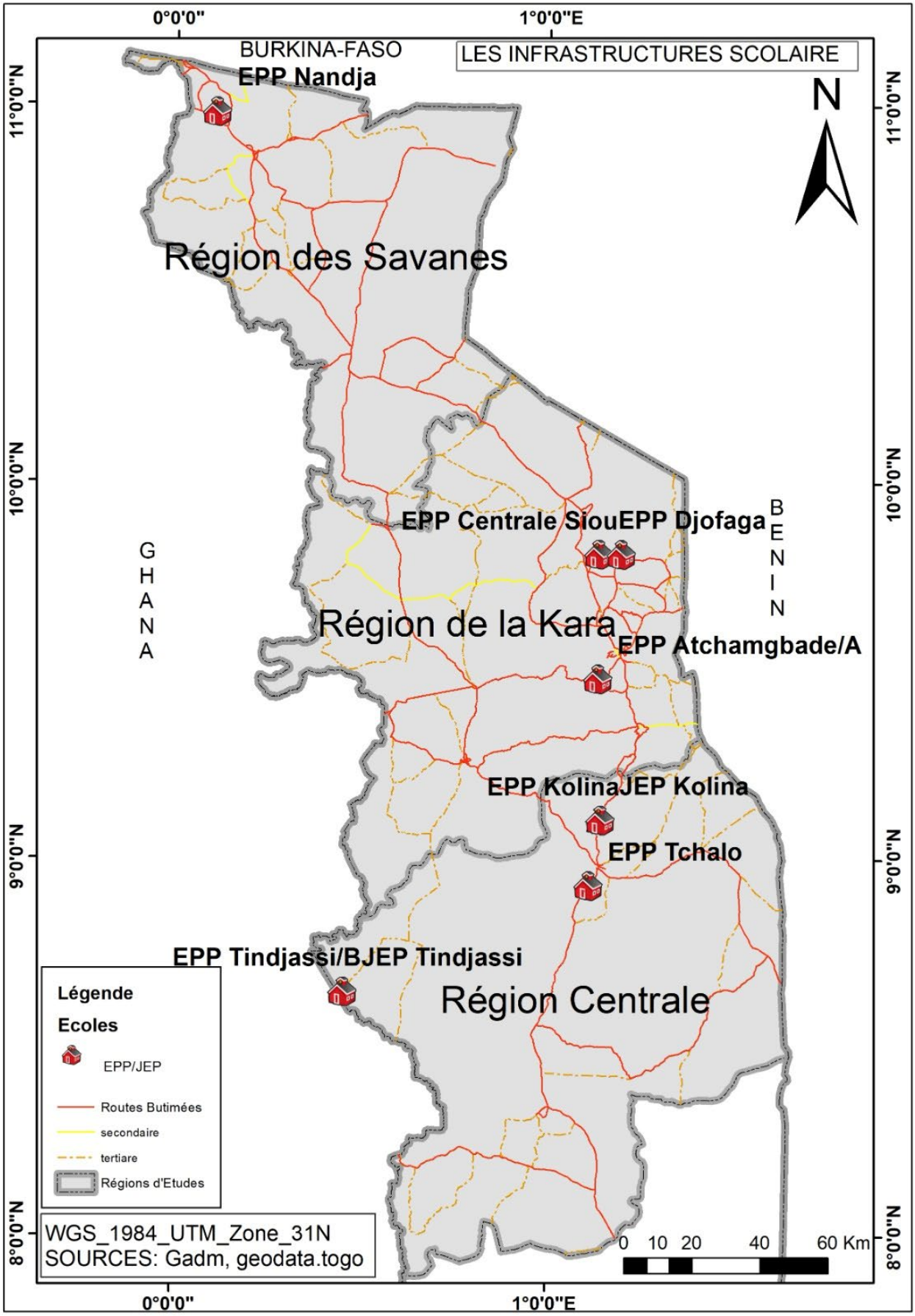
6.1. Location

Figure 4: Overview of the healthcare infrastructure



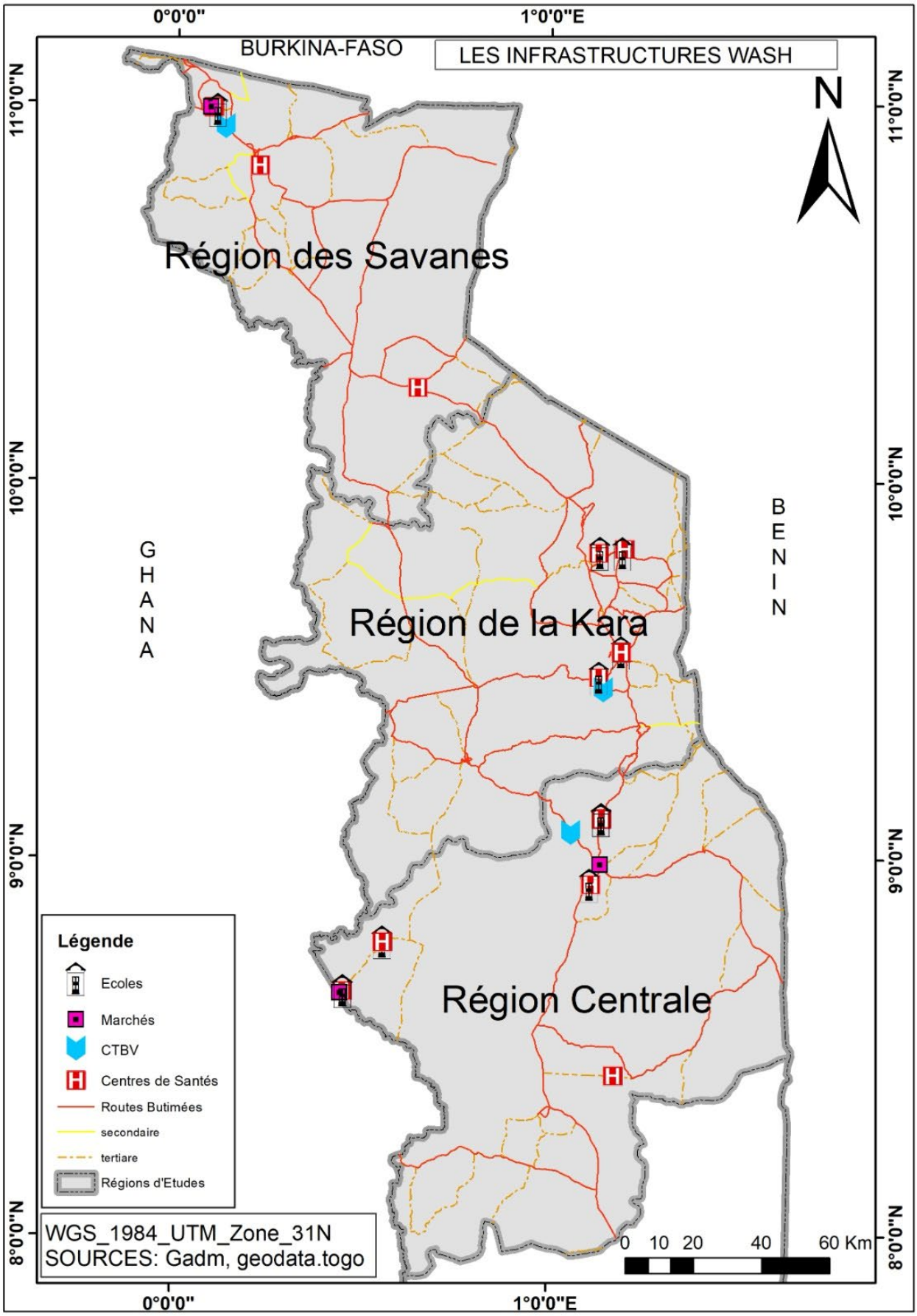
(Source: GADM, geodata.togo 14/10/2025)

Figure 5: Overview of school infrastructure



(Source: GADM, geodata.togo 14/10/2025)

Figure 6: Overview of WASH infrastructure



(Source: GADM, geodata.togo 14/10/2025)

6.2. Geographic and population analysis

The studied health coverage shows significant disparities both in terms of geography and population. The number of villages served by each facility ranges from 6 to 16, while the population covered by the service varies from 4,070 inhabitants (USP Kolina) to 16,225 inhabitants (CMS Sagbiebou). This distribution indicates that some centres serve a relatively limited demand, while others absorb a much higher patient load.

Table 4: Summary table of the demographics of the visited sites.

Facility name	Number of villages served	Population served
USP Tindjassi	10	14,820
USP Tchalo	11	7,914
USP Kolina	6	4,070
USP Kaza	10	6,500
USP Atchangbade	15	10,457
USP Tenega	6	4,607
CMS Siou	16	7,827
USP Namare	13	12,536
CMS Dakpankpergou	15	10,924
CMS Sagbiebou	12	16,225

On average, each health centre serves approximately 9,588 inhabitants, for a total estimated population of 95,880 across the 10 facilities. This ratio is at the upper end of the range generally recommended in West Africa, where one rural health centre is suggested per 5,000 to 10,000 inhabitants (WHO, 2010).

While the current coverage can be considered generally compliant with standards, it remains fragile. Future population growth, combined with factors such as facility location, road conditions, and service availability, could quickly upset this balance.

In summary, although most of the visited facilities meet the demographic criteria for Type I USPs, some fall below the viability threshold, while others may need to be upgraded to Type II USP classification based on the population they serve.

6.3. Construction years of USPs

The visited health facilities reflect a wide range of ages and conditions. Some, such as the maternity unit at CMS Siou, dating back to the 1950s, are very old, while others built in the 1980s–1990s (USP Kaza, USP Tchalo) already show significant signs of deterioration. In contrast, a few more recent facilities, such as CMS Dakpankpergou (constructed in 2014 and renovated in 2022), are in better condition and largely comply with current standards.

Photo of CMS Siou

Photo of Kaza

Photo of Dakpankpergou

(Photos: Own elaboration, 07/2025)

6.4. Analysis of the sites

The analysis of the physical characteristics of the visited sites will consider the following aspects.

6.4.1. Site layout

Existing conditions

Built occupancy on the sites is low, with constructed areas ranging from 328 m² (Kaza USP) to 1,240 m² (Siou CMS). The allocated land plots are highly heterogeneous—ranging from one hectare in Tchalo to more than 11 hectares in Kolina and Namare—and the buildings occupy only about one-fifth of these areas. This indicates strong potential for expansion on several sites, particularly Tindjassi and Sagbiebou. Most of the infrastructure is located in rural areas, with limited traffic and no significant pollution or sources of vibration. Land is generally provided by the local communities, without any formal regulatory reference; consequently, plot size depends more on the availability of land than on technical or demographic criteria. Only the Siou CMS, located near a market, experiences noise disturbances.

Assessment against the standard

Overall, most infrastructure is in rural areas with low traffic and no significant noise or vibration sources, ensuring an environment conducive to public health. However, the Siou CMS is a partial exception due to its proximity to a market, which generates noise and increased traffic, contrary to the recommendation that facilities be in low-disturbance zones. Regarding land spaciousness, most sites have sufficient surface area to allow future expansion, in accordance with the standard. Nonetheless, the absence of an official reference framework for the spatial organization of USPs leads to significant variability and limits the harmonization of land-use planning.

6.4.2. Accessibility

Existing conditions

From November to April (dry season, harmattan), accessibility is generally satisfactory: four facilities report roads in good condition, five report slightly degraded roads, and only one reports a severely degraded road. During the rainy season (May–October, with concentrated rainfall), conditions deteriorate significantly: six facilities indicate difficult access, while only four report that access remains easy.

Assessment against the standard

The standard requires that the site be connected to access roads within the existing road network. During the dry season, functional connectivity to the network can be considered broadly compliant. However, during the rainy season, the deterioration of accessibility and the disruptions observed on several sites indicate that the structures and road surfaces do not ensure continuous year-round usability, which falls short of the standard's requirements for reliable access throughout the year.

6.4.3. Slope (topography) and risks

Existing conditions

Four sites are affected by seasonal flooding, resulting in non-compliance with accessibility and hygiene requirements. Five sites exhibit stagnant water, increasing vector-borne disease risks, and four show evidence of erosion. Water-management infrastructure is largely absent across the portfolio. Vegetation cover is dense on nine sites, offering benefits for erosion control and microclimate regulation. However, frequent wildlife incursions on eight sites reflect inadequate boundary fencing. In Siou and Tchalo, maize cultivation immediately adjacent to clinical blocks is inconsistent with recommended mosquito-control practices.

Figure 7: Effects of erosion on health infrastructure – case of the Namare USP, Savanes region

(Photos: Own elaboration, 07/2025)

Assessment against the standard

The observed drainage conditions fail to meet the requirements for effective management of wastewater and stormwater, as evidenced by recurrent flooding and water retention. The criterion of a slope ≤ 10% has not yet been documented; however, signs of erosion and concentrated runoff indicate poorly managed local gradients, warranting a detailed topographic assessment. Finally, the lack of adequate collection, conveyance, and discharge infrastructure (gutters, outlets, and maintenance) is inconsistent with the standard's objective of ensuring safe and controlled water evacuation.

6.4.4. Thermal comfort assessment

All healthcare units in our study area are located in the northern climatic zone, characterized by a Sudanian climate with a distinct dry/rainy season alternation, strong interannual variability, and frequent droughts. By contrast, the southern climatic zone has a subequatorial climate, with higher humidity, more regular rainfall, and a risk of flooding.

The hot and sunny climate of the studied regions exacerbates the vulnerabilities of the infrastructure. The predominance of metal-sheet roofs without insulation, combined with insufficient solar shading and inadequate ventilation, exposes users to high indoor temperatures. Without appropriate interventions, the buildings become "thermal traps," placing stress on patients and healthcare staff and reducing the attractiveness of the services.

The analysis will focus on thermal comfort measures observed across the different healthcare units visited, assessing the extent to which these provisions are adapted to the climatic conditions affecting the facilities. Subsequently, an evaluation will be conducted to determine the current impact of the climate on the operation and durability of these healthcare infrastructures.

6.4.5. Thermal comfort measures

Data collected on indoor conditions

As part of the study, temperatures were measured at two different times, both indoors within the delivery rooms and outdoors.

Table 5: Average temperatures and humidity in the visited spaces

Average indoor temperature	28,2°C
Average outdoor temperature	26,8°C
Average humidity	68,1%

(Source: Data collected on site, 2025)

The data indicate that the indoor temperature is, on average, 1.4 °C higher than the outdoor temperature, reflecting an accumulation of heat within the buildings. This points to insufficient thermal inertia or inadequate natural ventilation, often associated with poorly insulating materials (metal roofs, non-ventilated walls, and low ceiling heights). According to references for healthcare buildings in humid tropical zones, optimal thermal comfort is achieved at temperatures between 24 °C and 28 °C, with relative humidity ranging from 40 % to 60 % (ASHRAE, 2017; Standardisation, 2005).
At 28.2 °C and 68 % humidity, occupants are at the upper limit of thermal comfort: the perceived temperature tends toward warm and can become slightly uncomfortable in the absence of active ventilation. High humidity reduces the effectiveness of sweating and the body's cooling capacity, thereby increasing discomfort and potentially contributing to fatigue, decreased concentration, and irritability among both staff and patients.

Active ventilation

Most USPs do not have functional standalone or split air conditioners, except for USP Kolina, which has several installed and operational units, notably in the general medicine block and some specialized rooms. In contrast, pedestal and ceiling fans are present in almost all centres (USP Tindjassi, USP Tchalo, USP Atchangbade, USP Kaza, etc.), although their operational condition varies.

When functional, these fans provide immediate relief from high temperatures, but their effectiveness is limited in large rooms where air circulation is poor. The absence or malfunction of these devices results in significant discomfort for both staff and patients, negatively affecting the quality of care and the concentration of healthcare personnel.

Figure 8: Mechanical ventilation in the delivery room of the Siou CMS – Kara, 2025

(Photo: Own elaboration, 07/2025)

Ventilation passive

Natural ventilation relies primarily on the arrangement of openings, such as windows and high-level vents. In some centres, such as USP Kolina and CMS Siou, the buildings have sufficiently sized openings allowing for adequate air circulation. In contrast, other facilities, including USP Kaza and USP Tenega, have limited or poorly oriented openings, resulting in heat stagnation.

Thermal regulation remains inadequate in several centres due to insufficient passive ventilation, stemming from poorly oriented openings, a lack of sunshades, and the absence of appropriate design features such as covered galleries or double roofs.

Solar protection

Several centres benefit from natural shading provided by trees in the courtyards (USP Tindjassi, USP Tchalo, USP Kolina, USP Atchangbade), reducing direct exposure to sunlight. Some facilities, such as USP Kolina, have installed awnings or small overhangs to protect the maternity entrance, while USP Kaza uses metal sheets as sunshades over certain windows.

Figure 9: Illustration of the need for and solution to solar protection in healthcare infrastructure. On the left, a façade exposed to direct sunlight; on the right, the installation of an awning with metal sheeting as an adaptation measure

(Photo: Own elaboration, 07/2025)

Figure 10: Lack of solar protection measures at the Namare centre in Tindjassi

(Photo: Own elaboration, 07/2025)

However, other sites lack any effective measures, leaving façades directly exposed to sunlight. Natural shading can provide some relief, but it is unreliable, depending on the density and placement of trees. The absence of a deliberate architectural approach to solar protection exacerbates indoor overheating.

Roof insulation

Most facilities are covered with corrugated metal roofs. Roofs are typically the primary pathway for heat gain. The roofs observed lack both thermal insulation and ventilated double layers, which exacerbates the overheating of interior spaces. In some cases, the absence of eaves or overhangs also reduces solar protection for the façades. The heat accumulated beneath metal roofs makes the rooms particularly uncomfortable during the hot season.

Figure 11: Aluminum tray roof – USP Tchalo

(Photo: Own elaboration, 07/2025)

The analysis of healthcare infrastructure from the perspective of thermal comfort highlights a major challenge: indoor comfort is strongly influenced by the local hot and sunny climate as well as by the architectural design of the buildings.

As a result, the existing infrastructure remains poorly adapted to the climatic conditions of the study region, affecting not only the performance of the buildings themselves but also the durability of their constituent elements.

6.4.6. Assessment against national and international standards

The healthcare infrastructure observed exhibits a marked mismatch with the climatic conditions typical of hot and humid areas in Togo. Measurements indicate an average indoor temperature of 28.2 °C, 1.4 °C higher than outdoors, with 68 % relative humidity, reflecting heat accumulation and inadequate ventilation.

Most buildings are poorly oriented relative to prevailing winds and lack effective solar protection. Openings are often too small or poorly positioned, limiting air circulation and preventing the renewal of warm indoor air. Uninsulated metal roofs without overhangs further exacerbate heat transmission, resulting in consistently elevated indoor temperatures. Only a few facilities, such as USP Kolina and CMS Siou, benefit from adequate natural or mechanical ventilation.

Compared with national climate standards—which recommend buildings that are well-ventilated, oriented according to prevailing winds, and protected from east- and west-facing sun exposure—these structures are generally non-compliant. The thermal conditions observed exceed the upper comfort limits defined by ASHRAE 55 (2017) and ISO 7730 (2005), placing occupants in a state of uncomfortable humid heat.

6.5. Assessment of safety systems

This assessment focuses on safety aspects as defined by national standards within healthcare units and has identified both functional and non-functional safety systems aimed at protecting the lives of patients and staff.

6.5.1. Safety related to contamination

The spatial organization observed in several healthcare units exhibits deficiencies that compromise sanitary safety. Patient flow is poorly managed: users attending general medicine consultations share the same corridors as pregnant or postpartum women. This proximity results in inappropriate cross-traffic, significantly increasing the risk of cross-infections.

Moreover, the near absence of buffer zones exacerbates this vulnerability. In most centres, there are no separate waiting areas, and maternity patients must wait in the same spaces as other patients, which negatively affects the quality of reception and facilitates cross-contamination.

Internal circulation is also poorly designed. In some USPs where the maternity unit is integrated with the general medicine block, access to the delivery room requires passing through other care rooms. This layout exposes patients to additional contamination risks and compromises both their dignity and comfort.

Figure 12: USP Namare: narrow corridor hindering circulation

(Photo: Own elaboration, 07/2025)

The current spatial organization of the USPs does not comply with normative principles for contamination prevention. Major deviations include the lack of isolation for infectious patients, the absence of separation between septic and aseptic zones, and poorly designed internal circulation—all factors that increase the likelihood of cross-infections and reduce the quality of care. These arrangements also heighten exposure to vector-borne diseases, particularly malaria, due to insufficient protection and layouts that favour vector proliferation.

6.5.2. Fire safety systems

The assessment of healthcare units highlights an almost complete absence of fire safety systems. Except for USP Kolina, which has a few functional fire extinguishers, no other centre has adequate means for fire prevention or response.

No evacuation plans were displayed, and no smoke detectors were identified. This lack of essential systems exposes both staff and patients to serious risks in the event of a fire, severely limiting the ability to react and ensure occupant safety.

Furthermore, site layouts do not always incorporate a 25-meter protective perimeter around the buildings, which is essential in rural contexts to limit the spread of potential bushfires or accidental fires.

The current state of fire safety in the visited healthcare facilities reveals a major gap relative to prevention and firefighting standards. Non-compliance affects equipment, site layout, and the safety of electrical installations, significantly exposing both patients and staff to serious hazards.

6.5.3. Management of water supply, hygiene, sanitation, and equipment maintenance

The assessment of healthcare units highlights several issues to be evaluated against sanitary standards.

Main water sources

Healthcare facilities primarily rely on boreholes and wells equipped with pumps (manual, motorized, or solar). Some are connected to the national TDE network (USP Kolina, CMS Siou), while others combine boreholes with network connections (USP Tindjassi). Although water availability is generally ensured, some sites (USP Tchalo, USP Tenega) experience interruptions during the dry season, necessitating the use of community sources.

In certain centres, such as Dakpankpergou, water is available nearby but not directly connected to the buildings. It is transported from the source and supplied via taps and water tanks, either fixed or mobile.

Figure 13: Improvised water system inside the Dakpankpergou centre due to lack of network connection – Savanes region, 2025

(Photos: Own elaboration, 07/2025)

Local maintenance capacity is generally ensured in several facilities through the availability of spare parts and the involvement of community workers. However, some units, such as USP Kolina and USP Tindjassi, lack regular technical follow-up, which undermines the durability and efficiency of the equipment.

Most facilities operate without a structured monitoring or alert system to report malfunctions or maintenance needs, relying instead on visual inspections by staff, which delays problem detection and resolution.

Figure 14: Water supply in three USPs: Sagbiebou – borehole with submersible pump on the left; Kaza – water tower in the centre; Dakpankpergou – manual borehole on the right

(Photo: Own elaboration, 07/2025)

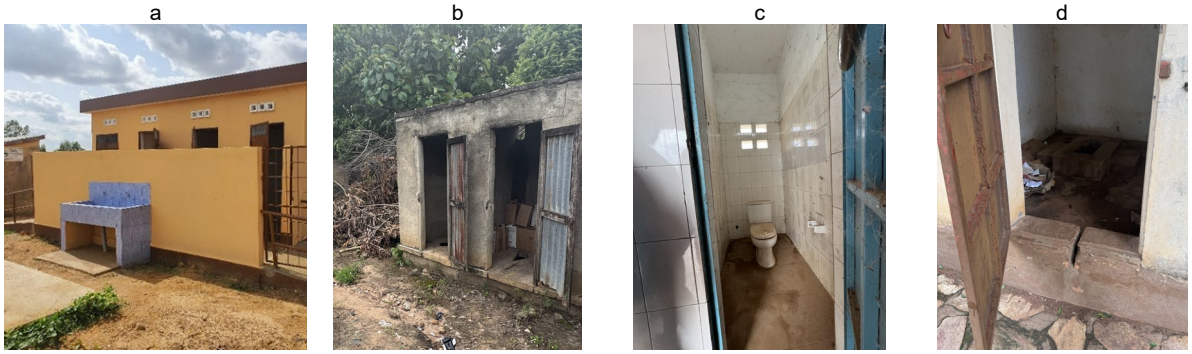
Sanitary Blocks

The data collected indicate that seven blocks have toilets considered accessible, while two report access difficulties. Regarding comfort and suitability, five blocks are deemed adequate for users' needs, whereas four highlight deficiencies.

Most healthcare sites are equipped with VIP-style toilets. In some centres, these remain in use due to the lack of alternatives. In others, they are rarely used or entirely abandoned because of their poor condition or unsuitability for users' needs. When VIP toilets are the only option, they are used by all users.

Figure 15: Types of toilets observed (left → right):
(a) New, connected; (b) Old, repurposed for informal storage; (c) Western-style toilet not connected in Dapaong (unused); (d) VIP latrine in Tindjassi

a b c d



(Photos: Own elaboration, 07/2025)

Some centres also have flush toilets connected to septic tanks but without a direct water supply, which explains the abandonment and deterioration of these facilities (e.g., CMS Dakpankpergou). In many cases, maintenance is carried out directly by staff, and access to modern toilets is restricted: users must request a key from staff to use them, limiting their effective use.

Overall, only a few centres provide toilets accessible to all users, and only one has fully functional and operational facilities.

The Ministry of Health plans to gradually replace VIP toilets with septic tank systems or other safer alternatives due to the increased contamination risk associated with VIP toilets.

Regarding liquid waste management, emptying of pits is not a major issue in eight facilities, mainly because most are equipped with dry VIP-style toilets, which do not require regular emptying. However, in centres with septic tanks, no emptying operations have yet been carried out, posing a risk to the durability of the installations.

Septic sludge management

The management of septic sludge varies between facilities. The majority (5 out of 9) reported that this service is provided by the municipality, while three centres have never carried out any sludge removal. When municipal services are unavailable, private contractors generally provide the service. The average cost of sludge removal is approximately fifty-four euros = EUR 54.

In six facilities, this issue is not applicable, either because no removal has been performed or because the facilities in use (notably VIP toilets) do not require it. Among the facilities concerned, two report performing sludge removal every five years or more, while one carries it out every three years.

Hygiene infrastructure and handwashing systems

Handwashing facilities are present in all healthcare centres, but their quality and configuration vary considerably. The majority (six out of nine) have a tap with a sink connected to the water network, while a few centres still rely on rudimentary systems such as water buckets with cups and basins (2 cases) or a tap connected to a fixed or mobile tank (one case).

Soap is available near all handwashing points, and the facilities are functional and in regular use. However, regarding showers and access to hot water, most centres have only basic equipment limited to simple washing, without any heating system. Two facilities, USP Tenega and CMS Sagbiebou, have solar water heaters, but these are out of service, significantly reducing their utility and highlighting a lack of regular maintenance.

In terms of menstrual hygiene, no facility has dedicated installations to meet the needs of women and adolescent girls. In maternity wards, hygiene products are extremely limited: only one centre provides a maternity kit including toiletries, while eight centres provide no products at all (no sanitary pads, underwear, or other specific items). Furthermore, the absence of functional showers and, in several centres, the lack of running water in delivery rooms severely limit patient dignity and infection prevention.

Overall, hygiene infrastructure demonstrates a minimal level of functionality, but its non-compliance with standards, including the absence of modern equipment, limited accessibility, and lack of menstrual hygiene provisions, significantly reduces its impact on the quality of care.

Figure 16: Handwashing systems (from left to right): (a) USP Kaza – fixed, connected system; (b) non-connected centre – makeshift facility; (c) outdoor sink – non-functional

a b c

(Photos: Own elaboration, 07/2025)

Financial management and funding of WASH services

Financial resources for the maintenance of sanitation infrastructure primarily come from the USP's dedicated budget line. This allocation covers routine operating expenses, including water and energy costs, as well as minor maintenance and repairs. However, the available budget is often insufficient to meet all basic needs, particularly those related to water supply and facility upkeep.

Regarding facility emptying, field data indicate that most centres are equipped with VIP toilets, which do not require regular emptying. This explains why actual management costs remain limited. In contrast, facilities with septic tanks will incur recurring expenses in the medium and long term.

Of the nine facilities studied, six have a dedicated budget for septic sludge management, while three do not. This absence is either because the need has not yet arisen (no sludge removal has been performed) or due to other operational factors. In eight out of nine cases, funding comes exclusively from the USP's budget line.

Fund management and oversight are primarily handled by the COGES, with validation by the DPS. In some cases, such as CMS Dakpankpergou, a more formalized mechanism is in place, including an expenditure authorization form. Nonetheless, the overall system remains improvable, particularly in terms of financial traceability and the speed of resource mobilization.

6.5.4. Waste management

The management of routine solid waste remains inadequate in most facilities. Only a few centres have suitable covered bins (USP Kaza, CMS Siou), while the majority lack a standardized system for waste collection and treatment.

Figure 17: Waste-sorting unit: USP Tenega

(Photo: Own elaboration, 07/2025)

Biomedical waste management is partial in most sites (e.g., USP Atchangbade, CMS Sagbiebou), with practices not aligned with WASH standards. Most centres have an incinerator, except Kaza, Kolina, and Tchalo. However, many of these incinerators are in poor condition (cracks, wear) and require maintenance. The absence or malfunction of incinerators leads to risky practices, such as open-air disposal of syringes or destruction in pits.

Most facilities also lack an organized stormwater drainage system. The absence of pipes or drainage ditches causes water stagnation, promoting mosquito proliferation and associated health risks. Furthermore, in most centres, no structured pest control, disinfection, or preventive hygiene measures have been implemented. The lack of a clear separation between clean and contaminated areas (e.g., USP Kaza) increases contamination risks and reduces overall hygiene.

The assessment shows that the facilities fall far short of minimum sanitation and hygiene standards. The most critical gaps include unreliable access to safe water, the absence of solid and liquid waste collection systems, non-functional biomedical incinerators, inadequate sanitary installations, and a complete lack of pest control and preventive hygiene measures. These deficiencies directly compromise health safety, infrastructure durability, and quality of care.

Figure 18: Medical and solid waste management: (a) USP Kaza – single pit for waste disposal; (b) USP Namare – degraded/cracked incinerator; (c) Unprepared site – open-air solid waste dump; (d) USP Tenega – basin used as a disposal point in the delivery room, 2025

a b c d

(Photos: Own elaboration, 07/2025)

6.5.5. Accessibility of health facilities for persons with reduced mobility

Most health facilities are equipped with access ramps, but these do not meet the required safety standards to ensure effective accessibility for persons with disabilities. In several cases (USP Tindjassi, USP Tenega, CMS Sagbiebou), the ramps are too steep, have unsuitable surface finishes, or lead directly onto unstable ground such as sand. In addition, the absence of handrails increases the risk of falls, making these ramps unsafe for wheelchair users or individuals with reduced mobility.

Figure 19: Entrance ramp for persons with reduced mobility at the USP Kolina

(Photo: Own elaboration, 07/2025)

These design and construction shortcomings compromise not only accessibility but also the physical safety of users, who are exposed to risks of imbalance and falls.

Accessible toilets for persons with reduced mobility (PRM) are extremely rare. Only USP Namare and CMS Sagbiebou are equipped with such facilities, thanks to external support such as UNICEF donations. This widespread lack of adapted sanitation infrastructure increases the vulnerability of persons with disabilities, limiting their autonomy and dignity when accessing health services.

Figure 20: Accessibility of infrastructure (left to right): (a) USP Dakpankpergou – entrance ramp for persons with reduced mobility (PRM) without handrails; (b) USP Siou – entrance ramp for PRM equipped with handrails, 2025

a

b

(Photos: Own elaboration, 07/2025)

In summary, although the standard requires the installation of compliant ramps and elevators to ensure accessibility, the facilities observed are characterized by inadequate and unsafe ramps, the absence of elevators, and the near-total lack of accessible toilets. This situation reflects a clear non-compliance with the standard and exposes users with disabilities to a heightened risk of falling.

6.6. Comfort and privacy in USP maternity units

The assessment of maternity units in the USPs highlights significant shortcomings in acoustic comfort, directly affecting patients' peace and dignity.

In several sites, delivery rooms are cramped, accommodating only one patient at a time. This spatial limitation often forces multiple activities, i.e., labour, delivery, and post-partum care, into the same space, creating a noisy environment. The lack of room also prevents the installation of noise-reduction measures or the maintenance of minimal quiet.

The absence of internal partitions in post-partum wards is a major weakness: post-partum patients are placed in open areas without acoustic separation, exposed to corridor noise, medical discussions, and activities from other services. This compromises their rest, privacy, and dignity.

Moreover, distant sanitary facilities (often 10 to 20 meters from the maternity units) require women to make uncomfortable trips through noisy environments, often outdoors, further disrupting their recovery period.

Overall, the maternity and delivery rooms in the USPs show serious deviations from acoustic standards. Poor insulation, lack of partitioning, distant sanitation, and direct exposure to internal and external noise compromise patient tranquillity, rest, and dignity.

Figure 21: Delivery rooms (from left to right): (a) USP Tchalo – delivery bench; (b) USP Tenega – maternity unit with reduced lighting; (c) USP Tindjassi; (d) USP Sagbiebou, 2025

(Photos: Own elaboration, 07/2025)

7. Analysis of architecture and construction methods

Field visits revealed that most of the peripheral health units (USPs) share a relatively similar design, with some variations between sites. The walls are mostly built with cement blocks, providing satisfactory resistance to loads and typical stresses. The structural framework is generally reinforced concrete, ensuring building stability and long-term durability.

Two main roofing configurations are observed. The most common consists of galvanized corrugated sheets or steel decking, an economical and easy-to-install option. However, some units have concrete slab roofs, offering better resistance to weather, but limiting natural ventilation, and may increase indoor heat.

Floors are generally finished with smooth concrete. In sensitive areas such as delivery rooms or maternity wards, tiled surfaces are sometimes added to facilitate cleaning and improve hygiene. Joinery varies from site to site: some are made of local wood, which is accessible but vulnerable to humidity and termites, while others are metal, more durable but susceptible to corrosion if unprotected.

Interior finishes are most often wooden ceilings, providing some aesthetic appeal but limited thermal and acoustic insulation. In some cases, the metal or wooden framework remains exposed.

While the materials used are appropriate by type, their implementation often falls short of the general specifications and best construction practices. The strict application of technical requirements, including preventive wood treatment, roof insulation, improved finishes, and the selection of hygienic surfaces, is essential to ensure safe, durable, and climate-adapted health infrastructures suited to local conditions.

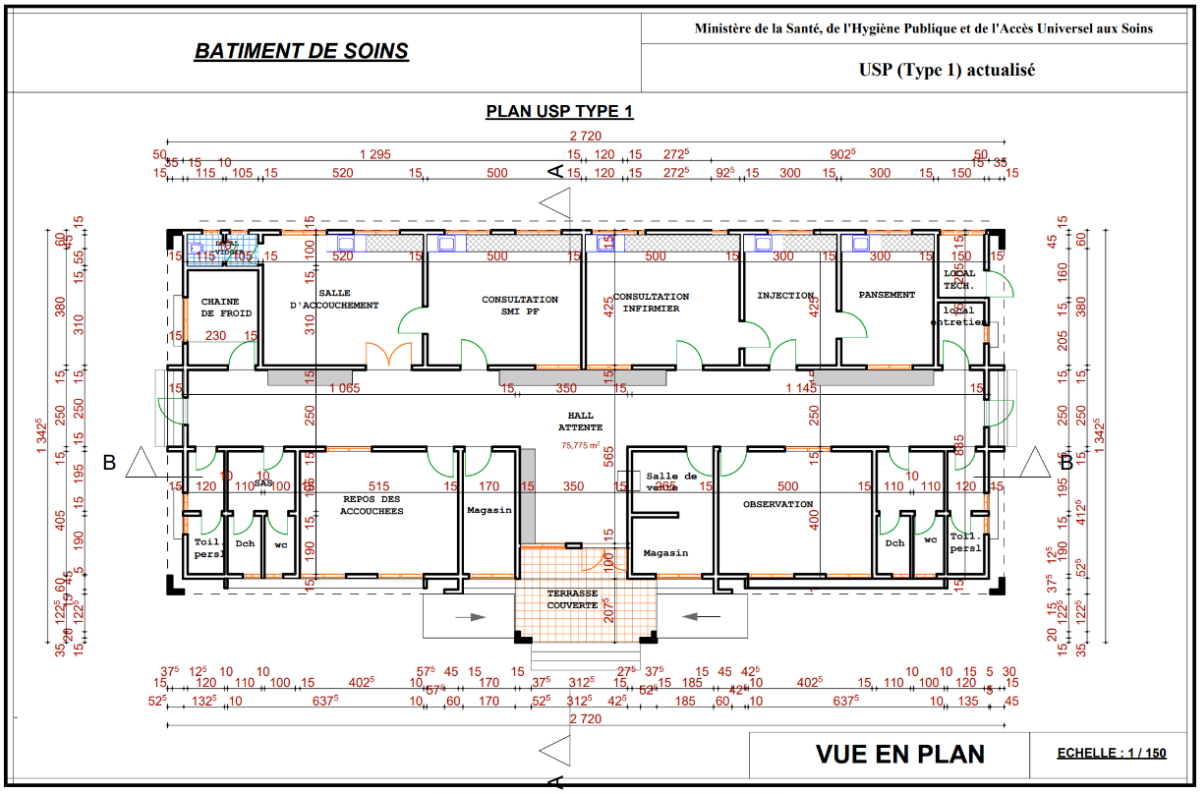
8. Analysis of standard health facility layouts

This analysis is based on a review of the current standard floor plans from the Ministry of Health.

8.1. Analysis of USP 1 standard floor plan

The figure below shows the standard maternity plan in USP 1, which will serve as the basis for the spatial analysis.

Figure 22: Type 1 USP floor plan.



(Source: MSHPCSUA, 2025)

Table 6: Summary of observations with recommendations for each aspect of the infrastructure

Designation	Components and characteristics	Observation
Floor plan	1. Layout centred around the delivery room. 2. Prenatal consultation room or midwife's office upstream. 3. Postpartum room attached but located far from the toilets. 4. Waiting and circulation areas in the form of corridors or verandas.	The plan is clear and functional, but lacks a strict separation of flows (patients, staff, waste). The postpartum room should be closer to the toilets.
Foundations	Strip footings in reinforced concrete, combined with basement walls.	Suitable solution for moderate loads of a single-story building. No visible drainage or protection against rising damp. Recommendation: Integrate a peripheral drain.
Section	Ceiling height of 3.4 m. Concrete slab roof.	Good height, but risk of overheating without under-roof ventilation. No ventilated double roof, limiting thermal comfort.

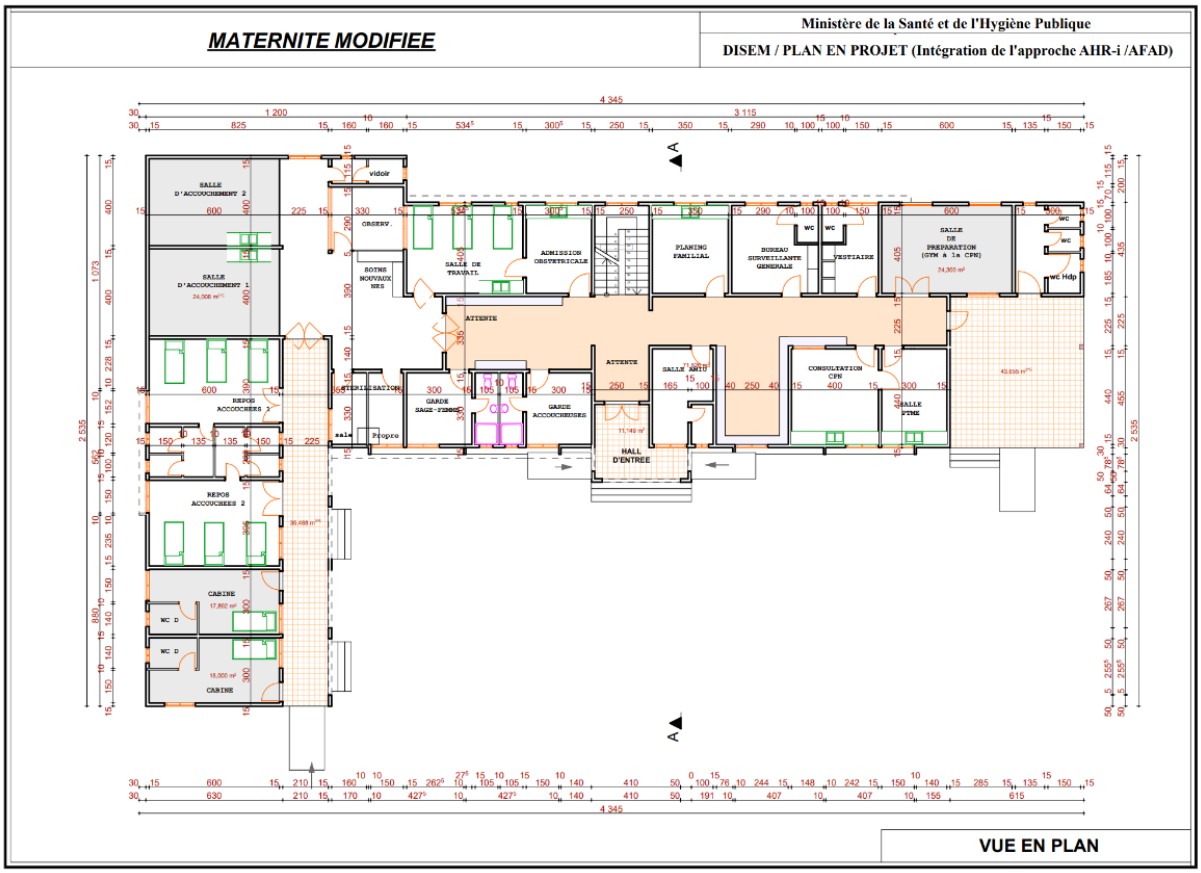
Façades	Regular openings allowing natural lighting. Moderate roof overhang.	Lack of solar protection (awnings/sunshades). Window orientation should be revised (avoid East/West exposure).
Suggestions	• Add a neonatal corner in the delivery room. • Provide an accessible toilet (PMR) adjacent to postpartum rooms. • Add protective sidewalks for drainage. • Separate clean/dirty flows in circulation areas. • Install hands-free sinks with soap in each care room. • Reinforce the roof with a ventilated double covering. • Provide sunshades and larger roof overhangs. • Standardize corridor and door widths (≥ 2 m, ≥ 0.90 m). • Provide 2 evacuation exits, fire extinguishers, and emergency lighting. • Integrate a modular grid for future expansion. • Outdoor layout integrated and adapted to the site and identified risks. • Improve medical functionality and hygiene, reinforce thermal comfort, and building safety. Adapt for the future evolution of infrastructure.	

(Source: Own elaboration, 07/2025)

8.2. Analysis of USP 2 standard maternity floor plan

The figure below shows the standard maternity floor plan in USP 2, which will serve as the basis for analysing the spaces, flows, and functionality of the facilities.

Figure 23: Standard maternity floor plan for USP 2 (CMS)



(Source: MSHPCSUA, 2025)

Table 7: Assessment of the organization and functionality of maternity unit infrastructure.

Criteria	Observation
General organization	The layout is organized around an entrance hall and an obstetric admission area that provides access to the different units. Several functional zones can be identified: • Obstetric block: two delivery rooms, one labour room, and one preparation room (exercise/ANC). • Postpartum block: two post-delivery recovery rooms, connected to the sanitary facilities. • Consultation and follow-up block: ANC consultation room, PMTCT room, family planning room. • Neonatal block: newborn care room. • Support block: sterilization room, sluice room, changing rooms, offices. • Sanitary facilities: toilets for users and staff, with some differentiated cubicles (including an accessible toilet).
Positive points	• Présence Presence of two delivery rooms, increasing service capacity. • Clearly identified newborn care room. • Clear functional separation between waiting areas, clinical spaces, and postpartum rooms. • Availability of specialised rooms: PMTCT, family planning, MVA. • Well-distributed sanitary facilities and the presence of a changing room. • Clear circulation layout with distinct waiting areas for patients and accompanying persons.
Observed limitations	• Insufficient separation of clean and dirty flows: a single circulation route serves sterilization, treatment areas, and work zones. • Post-partum rest areas are too small for the expected number of beds. • No dedicated space for biomedical waste and no technical room (electrical/water services). • PMR/accessible toilets are indicated, but real accessibility depends on actual ramp design and compliant dimensions. • Risk of proximity between waiting areas and sensitive clinical zones if access control is not adequately managed.
Functional assessment	The plan generally meets the standards for a type II medical centre with an expanded maternity unit. However, adjustments are required to achieve full compliance in terms of: • Hygienic flow management • Fire and technical safety • Universal accessibility • Support spaces (waste management, logistics)

(Source: Own elaboration, 07/2025)

In terms of climate resilience, several significant gaps were observed in the design of the health infrastructures, requiring particular attention:

- The buildings assessed are not systematically oriented with respect to prevailing winds, which limits natural air circulation and contributes to indoor heat accumulation.
- Windows are often poorly sized, insufficiently protected, or improperly oriented, leaving them exposed to direct sunlight in the morning and late afternoon, thereby increasing overheating in interior spaces.
- The metal roofs, lacking thermal protection and adequate overhangs, allow direct heat transfer and potential water infiltration, contrary to recommended practices for reducing solar radiation impacts.
- The absence of water-management features (gutters, drainage channels, protective walkways) increases the vulnerability of foundations and walls to heavy rainfall, compromising the sanitation and structural stability of the buildings.

While these health facilities remain functional, they do not meet the essential design requirements needed for the Togolese climatic context. Non-compliance in orientation, ventilation, and solar protection

increases thermal discomfort, reduces energy efficiency, and undermines the long-term durability of the structures.

8.3. Analysis of compliance with the standard plans

Table 8: Analysis of the compliance of USP facilities with the standard Type I and Type II layouts

N°	Health centre	Compliance with the standard type
Type 1	Most Type I USPs	• Organisation of blocks: Maternity services and general medicine are grouped without a clear separation of functions. • Insufficient dimensions: The delivery room and family planning room share a space of less than 20 m², separated only by light wooden partitions, below recommended standards (20.16 m² for a delivery room, 17.28 m² for a consultation room). • Circulation: Corridor widths are below 2.00 m, not meeting comfort and safety requirements for patient and staff movement. • Unseparated flows: Clean flows (patients, linen, medicines) and dirty flows (waste, soiled linen) are not differentiated, increasing cross-contamination risks. • Sanitary facilities: Toilets are not integrated into the main block, limiting access for postpartum women and people with reduced mobility. • Safety: Most buildings have at least one emergency exit, partially meeting minimum safety requirements.
Type 2	USP Atchangbade, Kolina Maternity, USP Siou	These two facilities comply with the Type II USP standard layout, featuring: • A clear separation between maternity services and general medicine. • A functional organization in accordance with the standards.

(Source: Own elaboration, 07/2025)

This analysis shows that while some facilities (Atchangbade, Siou, and Kolina) are generally compliant with the Type II USP standard plan, most Type I USPs exhibit significant deviations: undersized rooms, incomplete functional organization, non-compliant circulation and sanitation, and a lack of separation of flows.

8.4. Spatial organization and functional layout of health centres

The internal organization varies according to the size of the facilities. Large establishments (CMS Siou, USP Kolina) have a rational layout: wide corridors (~2 m) that ensure smooth circulation, clearly separated flows (patients, staff, technical areas), and functional distinction between General Medicine and Maternity units. Patient privacy is better preserved through secure enclosed cubicles, and the immediate proximity of toilets to the postnatal rooms improves postpartum care.

In contrast, smaller facilities (USP Kaza, USP Tenega, USP Tindjassi) suffer from undersized spaces and overcrowding, resulting in functional overlaps and poor differentiation of pathways. The absence of buffer zones and adequate circulation violates good layout practices. In several sites (USP Namare, USP Tchalo), toilets are located outside, sometimes ~20 m away, which reduces patient comfort and continuity of care. Maternity units are often constrained by insufficient annexes or poorly arranged layouts (e.g., USP Tenega).

In terms of equipment, only a few sites (USP Atchangbade, USP Kolina) have adequate lighting and proper thermal regulation. Laboratories, where present, are often undersized and partially equipped, limiting analytical capacity. The toilets in some facilities (notably CMS Sagbiebou) appear outdated and unsuitable for heavy use, highlighting deficits in sizing and durability.

Overall, centres such as CMS Siou and USP Kolina come closer to meeting standards in terms of spatial clarity, corridor sizing, and functional separation. However, the majority of USPs show significant gaps,

including undifferentiated flows, long distances between toilets and postnatal rooms, and under-equipped spaces. Targeted rehabilitation is required: widening circulation paths, relocating toilets closer to postnatal rooms, clearly separating functional blocks, improving ventilation and window placement, and upgrading equipment to align with architectural and health standards.

Figure 24: Maternity unit spatial organization and privacy: (a) USP Sagbiebou – areas separated by movable screens; (b) USP Siou – dedicated delivery room; (c) Improper medication storage, USP Dakpankpergou, 2025

(Photos: Own elaboration, 07/2025)

8.5. Analysis of the layout of buildings on site

The infrastructures of the USP and CMS are organized around two main functional blocks:

- The General Medicine (GM) block, which includes consultation activities, basic care, the management of simple emergencies, and, in some cases, administrative spaces.
- The Maternity block, which includes the antenatal consultation room, the delivery room, the post-partum room, and sometimes a space dedicated to the storage of obstetric equipment.

In some facilities, such as USP Kolina or CMS Siou, these two blocks are distinct and arranged in a rational manner, promoting smooth patient circulation and allowing better functional specialization of spaces. This configuration helps to limit interferences and to strengthen the functional clarity of the buildings.

Conversely, in most of the sites visited (USP Kaza, USP Tindjassi, USP Tenega, etc.), general medicine and maternity are grouped in the same building. This lack of clear separation leads to functional overlaps, increased proximity between different care activities, and limits the possibility of ensuring proper differentiation of flows (patients, staff, visitors).

In summary, only a few centres, such as USP Kolina and CMS Siou, approach the normative model, while most USPs do not comply with the prescribed configuration (linear arrangement, clear separation of blocks, complementary spaces). This situation highlights the need for restructuring of site plans and targeted rehabilitation to align the organization of buildings with expected functional standards.

9. Findings on building pathologies and equipment in health infrastructures

The building pathologies identified below refer to all the defects, deteriorations, or failures affecting the USPs visited.

9.1. Water infiltration and stagnation

The USPs visited have a simple single-storey layout, adapted to their rural vocation and allowing direct access for patients. However, several buildings do not have sufficient elevation above the natural ground level, which exposes their foundations and floors to water infiltration during the rainy season (e.g., USP Kaza and USP Namare). Others, such as USP Siou, benefit from a slight elevation, thus promoting natural drainage and improving floor durability.
The plinths provide basic protection against flooding. Some (such as USP Kaza) are undersized and lack waterproofing systems, increasing the risk of rising damp.

Figure 25: Capillary rise observed: (a) USP Sagbiebou; (b) USP Tindjassi

a b

(Photos: Own elaboration, 07/2025)

Most of the buildings do not have effective rainwater management systems. Gutters, drainage channels, and drainage systems are often absent or defective, leading to uncontrolled runoff and water stagnation around the buildings. This causes cracks in the walls and deteriorates the plaster. The protective elements are incomplete and not systematic, and the absence of protective walkways on some sites exposes the walls to splashing and rainwater infiltration.

9.2. Structural pathologies

Although the structures of the buildings may appear stable at first glance, the climate has a considerable impact on their durability. The buildings observed are mainly constructed with cement block masonry, with metal or wooden frames supporting sheet-metal roofs. Although this choice is common and economical, the quality of execution varies considerably. On several sites, the foundations appear undersized in relation to the bearing capacity of the soil, which leads to early structural disorders such as cracks at the base of the walls and localized settling. Conversely, some more recent or renovated centres (CMS Dakpankpergou, USP Siou) have a better-designed and more resistant structure, in line with current standards.

Figure 26: USP Atchangbade: Structural cracks in the slab

(Photo: Own elaboration, 07/2025)

Most of the structures are of a conventional type, but some, such as USP Kaza with a wooden roof structure, present increased risks of degradation linked to termites and humidity. The most frequently observed pathologies are as follows:

- Vertical and horizontal cracks in the walls, often caused by differential foundation movements or poor material quality (USP Kaza, USP Namare).
- Degradation of plaster and paint, encouraged by rising damp and rainwater infiltration.
- Corrosion of metal elements (doors, windows, roof structures) due to the absence of regular maintenance and anti-corrosion treatment.
- Roof deformations linked to the age of wooden frames and the use of thin metal sheets that expand significantly under the effect of heat (USP Tenega, USP Tchalo).
- Absence or deterioration of tiled floors, causing hygiene problems and risks to user safety (e.g., USP Kaza).
- Cracks and infiltrations reduce comfort and increase health risks (humidity, mosquitoes).

Although the absence of structural cracks indicates that the overall stability of the buildings is not compromised in the short term, the risks of deterioration remain without adequate preventive maintenance.

9.3. Degradation of floors and walls

The walls are made of hollow concrete blocks coated with cement mortar. In older buildings, the coating shows cracks, blisters, or areas that have detached. Some maternity wards also suffer from interior plaster that is neither smooth nor washable, making cleaning and disinfection difficult. At several sites, the paint is dull, flaking, or unhygienic, which reinforces the impression of aging. In areas exposed to humidity, mould and efflorescence are frequently observed.

Figure 27: Humidity and wall degradation at USP Sagbiebou: (a) Humidity stains and mold in the corner of the wall above the wall tiles; (b) Ceiling heavily damaged by humidity with blistering and peeling of the plaster, 2025

a b

(Photos: Own elaboration, 07/2025)

The observed sanitation infrastructures exhibit multiple deficiencies in materials and finishes, both inside and outside the buildings. These issues affect durability, hygiene, and comfort, as illustrated by the following observations:

- Floors: Mainly smooth concrete or tiles. On some sites, the concrete is cracked, porous, and difficult to clean. Where tiles are present, they are often cracked, loose, detached, or have damaged grout.
- Interior walls: Paint is generally of poor quality, non-washable, and peels quickly. In humid areas such as maternity wards and restrooms, the absence of wall tiling up to 1.50 m promotes dirt accumulation and mold growth.
- Exterior walls: Plaster is frequently damaged by rain, showing blistering and visible cracks.

Figure 28: Floor coverings in the USP (from left to right): (a) USP Namare – smooth screed; (b) USP Kaza – floor tiles and waiting area bench, tiles detached; (c) USP Tchalo – floor tiles; (d) Room non-functional due to broken tiles

(Photos: Own elaboration, 07/2025)

9.4. Door damage and impact on thermal comfort

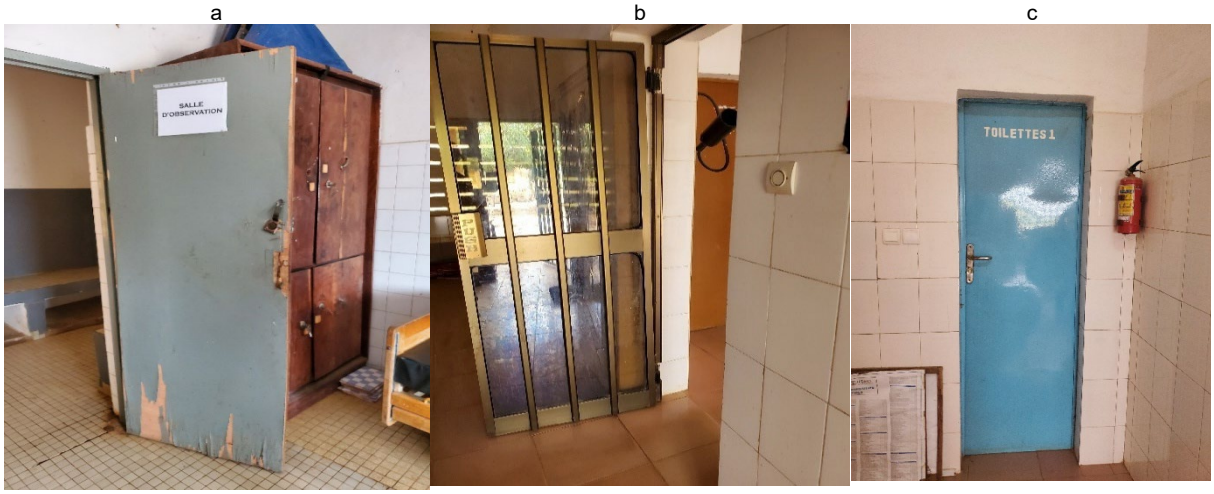
The climatic impact on doors is very noticeable. Seasonal temperature variations, particularly in the Sudanian climate, cause material expansion. The observed doors are mainly of two types:

- Wood: often warped, attacked by termites, swollen due to humidity, and becoming difficult to operate.
- Metal: more resistant, but frequently rusted, especially when exposed to weather, due to lack of maintenance and preventive measures (e.g., missing anti-rust paint).

Frequent closure defects compromise security, confidentiality, and patient privacy. In maternity wards, defective or missing doors compromise the privacy of women in labour. Aluminum doors, mainly used at main entrances, in office areas, and in pharmacies, provide moderate resistance (e.g., USP Atchangbade). The main issues concern fittings and opening mechanisms. While aesthetically appealing, they are thermally inefficient and relatively expensive. Aluminum, though lightweight, strong, and durable, is highly conductive, with low intrinsic thermal resistance; thermal breaks or insulation are required to use it effectively in construction.

Figure 29: Types of doors in the USPs (from left to right): (a) USP Dakpankpergou – metal door; (b) USP Kaza – degraded plywood wooden door; (c) USP Atchangbade – glazed aluminum door at the entrance

a b c



(Photos: Own elaboration, 07/2025)

9.5. Problems of window sealing and insulation

Windows are generally made of wood or metal, either hinged or sliding. Their condition varies by site: some are functional, but many have rusted hinges, cracked wood, or broken glass. The presence of mosquito screens is very limited: they are either missing or torn, allowing mosquitoes to enter. This poses a significant health risk, especially in malaria-endemic areas.

The glazed surface is sometimes too small, limiting natural light and reducing cross-ventilation. Louvered windows with glass and aluminum frames were also observed, for example, at USP Kolina. The current method of fixing mosquito screens makes maintenance difficult, and these often-closed grids also allow insects to enter. A solution facilitating maintenance should therefore be considered.

It was also noted that windows are poorly insulated, increasing indoor discomfort. This situation raises the need for ventilation or air conditioning. Moreover, the joints and sealants deteriorate due to prolonged sun exposure, and some windows deform or detach due to material expansion. Finally, water infiltration through windows is frequent in most health units.

Figure 30: USP Sagbiebou: louvered windows with glass and wooden frames used for room ventilation.

(Photo: Own elaboration, 07//2025)

Figure 31: Louvered windows for room ventilation: (a) USP Tchalo – louvered windows with glass and wooden frames; (b) USP Tenega – metal louvered windows

(Photos: Own elaboration, 07/2025)

9.6. Degradation of roofs and frames

Some roofs are concrete slabs, while others are made of corrugated galvanized sheets, zinc, or aluminum. At older sites, these roofs show signs of corrosion, perforations, and loosening of fasteners, directly resulting from climatic impacts. This leads to recurrent water infiltration in rooms, especially during the rainy season. Some wooden frames also show insect and fungal attacks, weakening the structural stability.

Figure 33 : USP Atchangbade: slab roof covering the general medicine building

(Photo: Own elaboration, 07//2025)

Figure 32: USP Tchalo: pitched roof with corrugated metal covering the general medicine building

(Photo: Own elaboration, 07//2025)

9.7. Absence and failure of rainwater drainage systems

The site assessment reveals the near absence of rainwater drainage systems. At most of the visited sites, no gutters or pipes have been installed. Rainwater flows directly along the façades, causing splashing and infiltration into the foundations. Water stagnation around the buildings promotes not only mosquito proliferation but also gradual soil erosion.

Figure 34: USP Tindjassi – existing rainwater drainage system but completely deteriorated and non-functional

(Photo: Own elaboration, 07/2025)

The few existing installations are defective: gutters are often clogged or not connected to drains. Moreover, the force of runoff water, combined with a lack of maintenance, damages the existing pipes.

Proper functioning of a rainwater drainage system is crucial to ensure the protection and durability of buildings.

This system includes:

- Catchment surface: roof correctly sloped toward the gutters.
- Collection elements: gutters that collect the water.
- Downspout elements: vertical pipes fixed along the walls, directing water to ground-level drainage systems.

It should be noted that two health centres, Tenega and Tchalo, have none of these systems, thus exposing their infrastructures to rainwater-related risks.

Figure 35: USP Tchalo – absence of a rainwater collection and drainage system at the building entrance

(Photo: Own elaboration, 07//2025)

9.8. Building waterproofing failures

The waterproofing of the buildings is compromised by perforated or poorly fixed roofs, cracked or detached plaster, and the absence of a waterproof barrier in the foundations.

These deficiencies allow water infiltration into ceilings and walls, creating a humid environment that is conducive to mould growth and material degradation. This problem is mainly due to certain slab areas that poorly drain rainwater, causing prolonged water stagnation.

Figure 36*: USP Atchangbade: waterproofing of the slab is locally deteriorated due to continuous presence of water on the slab, with no clear separation to ensure patient privacy, and a lack of effective drainage*

(Photos: Own elaboration, 07//2025)

9.9. Degradation of ceilings

In most sites (wood, plywood, PVC, or plasterboard ceilings), the ceilings are in a degraded state: signs of humidity and mold, loose or warped panels, and accumulation of dust. These issues often result from defective roofs that no longer provide adequate protection, allowing rainwater infiltration.

Figure 37: USP Tenega: roof in an advanced state of deterioration due to water infiltration from the roof

(Photo: Own elaboration, 07//2025)

The absence or deterioration of ceilings leads to poor thermal regulation, creating an uncomfortable indoor environment.

9.10. Failure of electrical systems and energy sources

Most health centres are connected to the CEET electrical network (USP Tchalo, USP Kolina, USP Atchangbade, CMS Sagbiebou). However, some centres, such as USP Tindjassi and USP Kaza, are not connected and rely exclusively on solar systems.

Sites without CEET connection must have robust and well-maintained solar systems, while those connected to the network remain exposed to frequent power outages.

Figure 38: Sources of electrical energy in the USPs – (a) USP Atchangbade, CMS powered by the CEET network; (b) USP Kaza, centre fully powered by solar energy; (c) USP Tenega, mixed solar and CEET installation

(Photo: Own elaboration, 07/2025)

Power outages are recurrent in almost all centres connected to the CEET network, notably at USP Tchalo and CMS Sagbiebou. These interruptions compromise the operation of medical equipment and the storage of vaccines. The frequent outages make CEET unreliable as the sole power source. It is therefore essential for these sites to provide alternative sources, such as solar energy or generators.

The main identified causes of these interruptions are weather-related events (rain and storms), causing voltage drops or line outages. In some cases, such as at CMS Dakpankpergou, interruptions are due to the instability of a recently installed solar system. These issues reveal the vulnerability of the installations, which are often outdoors and unprotected against climatic hazards.

Assessment of electrical installations and rehabilitation needs

Electrical installations are highly heterogeneous. For example, at USP Namare, the network is old and requires partial rehabilitation, whereas at USP Kolina, the installation is relatively recent and only requires routine monitoring.

The lack of regular maintenance leads to avoidable failures. It is essential to implement a periodic inspection plan to standardize the condition of the networks and ensure their proper functioning.

In several centres, such as USP Tindjassi and USP Namare, the installations need to be reinforced to guarantee safety and continuity of power supply. These interventions are a priority to prevent electrical hazards (fires, surges) and to secure healthcare delivery.

Assessment of the capacity and condition of solar systems

At some sites, such as USP Kolina and USP Kaza, the installed solar systems are correctly sized and adequately cover essential energy needs. In contrast, at USP Namare, the capacity is insufficient and does not meet all requirements, highlighting an undersizing issue. This recurring situation at certain sites emphasizes the need for precise assessment of actual consumption to better guide the design and sizing of installations.

Overall, existing solar systems are in good working condition, as seen at USP Kolina and USP Kaza. At USP Tindjassi, however, the system was not fully functional. Some sites, such as CMS Sagbiebou, still do not have an operational solar system. The reliability of these systems largely depends on the maintenance quality of the batteries and panels. The lack of regular technical monitoring compromises the durability of the installations and may significantly reduce their performance over time.

Assessment of energy needs and securing installations

Although it is difficult to precisely evaluate the condition of installed equipment, the expressed energy requirements vary from site to site: at USP Kaza, the solar energy system needs to be reinforced to power staff housing; at CMS Sagbiebou, a complete solar installation is required; at USP Tchalo, an alternative system is necessary in addition to the CEET supply. These needs indicate either insufficient planning during the initial design or evolving demands over time in response to new realities and constraints.

In summary, the observations show that current energy installations do not fully meet the standards for securing high-risk areas. Strengthening physical protection measures (barriers, shelters, fences, restricted access) should accompany any energy rehabilitation or extension to ensure the durability and safety of health centres.

Medical cold chain

The cold chain is present and operational in all visited facilities, powered either by solar energy (e.g., USP Kolina, Tenega, Namare, Kaza) or by the CEET network (e.g., USP Tindjassi, Tchalo, Atchangbade, CMS Siou, Sagbiebou), which generally ensures proper vaccine preservation. However, sites relying solely on the electrical network remain exposed to prolonged outages that could compromise vaccine integrity (notably at CMS Sagbiebou), and some facilities, such as CMS Dakpankpergou, have insufficient storage capacity. Furthermore, maintenance is not systematic, undermining the reliability and longevity of the cold chain.

Figure 39: Cold chain: (a) USP Tchalo, functional; (b) USP Tindjassi, solar direct drive.

(Photos: Own elaboration, 07/2025)

Solar thermal energy

At the Sagbiebou and Tenega sites, solar thermal systems (solar water heaters) are installed to supply hot water for the maternity units. Both systems show deficiencies in design and installation, with significant shading of the solar panels (under a slab or under a tree). Additionally, no maintenance service is in place. The system at USP Sagbiebou is non-functional, and the system at Tenega has an untreated water leak.

Figure 40: *Solar water heater installations: (a) USP Sagbiebou – non-functional system installed under a slab, limiting sunlight exposure; (b) system installed on an external slab with exposed collectors, 2025*

(Photos: Own elaboration, 07/2025)

10. Maintenance, monitoring, and alert system

Regarding maintenance, only four facilities carry out regular upkeep of their infrastructure. Four others perform only partial maintenance, while two facilities conduct none. Overall, maintenance management appears poorly organized and lacks proper structure.

Notably, there is an absence of a system to report maintenance needs and a lack of dedicated personnel, which explains the advanced state of degradation observed in some infrastructures.

Furthermore, most centres, i.e., seven out of ten, have no formal monitoring or alert system to record breakdowns or maintenance requirements. Only three facilities have implemented such a mechanism.

In conclusion, the widespread absence of formal monitoring and alert systems compromises the speed of response in the event of a failure, thereby weakening the long-term sustainability of the infrastructure.

11. Summary of the situational assessment of USPs with respect to standards

The safety analysis of the healthcare units highlights numerous structural and functional shortcomings, revealing a significant misalignment with the safety standards applicable to health infrastructures. These deficiencies concern both spatial organization and technical prevention measures, as well as the protection of users.

Regarding contamination safety, the internal layout of the health centres does not comply with the fundamental principles of isolation and separation of clean and dirty circuits. The absence of buffer zones, separate waiting rooms, and dedicated corridors leads to overlaps between contagious patients, pregnant women, and outpatients. This proximity creates a high risk of cross-infection and reflects a design unsuitable for contamination prevention.

Fire safety is also a critical vulnerability. Except for one centre equipped with fire extinguishers, almost all facilities lack evacuation plans, smoke detectors, and emergency exits. The absence of a 25-meter protection perimeter around the buildings, recommended for rural areas, together with poorly maintained electrical installations, further increases fire risks. These deficiencies seriously endanger both users and staff in the event of an incident.

Findings related to sanitation and hygiene also indicate widespread non-compliance. While water availability is generally ensured, supply interruptions are frequent, and wastewater drainage systems are often nonexistent. Biomedical waste incinerators are degraded or out of service, while solid waste management relies on unsafe practices. The lack of permanent rodent control and disinfection measures compromises overall hygiene on site.

Acoustic comfort and noise protection are largely neglected. Maternity units, often cramped and unpartitioned, expose patients to constant noise from medical activities and internal circulation. This lack of sound insulation affects the dignity, rest, and confidentiality of care.

Finally, accessibility of the infrastructure for persons with reduced mobility remains very limited. Although some structures have access ramps, these do not comply with the required slopes and handrails, making their use dangerous. Adapted sanitary facilities are rare, restricting the autonomy and safety of people living with disabilities.

Summary with respect to WHO guidelines

The WHO document Essential Environmental Health Standards in Healthcare Facilities (WHO, 2008) defines the standards that ensure minimum hygiene and safety conditions in health facilities, aiming to reduce healthcare–associated infections. It recommends practices to guarantee access to enough safe water, secure excreta disposal, appropriate medical waste management, proper ventilation, cleanliness of premises, food safety, and vector control. The text emphasizes planning, coordination among stakeholders, staff training, maintenance of facilities, and continuous monitoring. These guidelines serve as a foundation for developing national and local standards, with a progressive approach adaptable to available resources, particularly in low- and middle-income countries. Site visits revealed significant gaps compared to these standards and guidelines.

The proposed interventions in the USP, presented in Chapter 2, are based on the gaps observed relative to national and international standards, compliance with standard plans, and adherence to building resilience criteria. These interventions are presented below and can be classified as follows:

Indicates low compliance with the standard and significant observed gaps **(Low, unavailable, impossible)**.
Indicates moderate compliance, with partial implementation that needs to be strengthened **(Moderate, ongoing, incomplete)**.
Indicates full compliance approved by the standard, which should be maintained **(High, completed, achieved)**.

Table 9: Summary of current compliance criteria for USP and WASH infrastructure and required level of action.

N°	DESIGNATION	NIVEAU D'ACTION		
I	**CRITERES RELATIF AUX NORMES NATIONALES**			
I.1	L'Implantation	☐	☐	☑
I.2	Accessibilité	☐	☑	☐
I.3	Déclivité (relief) et risques	☐	☑	☐
I.4	Analyses climatiques	☑	☐	☐
I.5	Sécurité relative à la contamination	☑	☐	☐
I.6	Sécurité relative à l'incendie	☑	☐	☐
I.7	Sécurité relative à l'assainissement	☑	☐	☐
I.8	Sécurité relative à l'émission des bruits	☑	☐	☐
I.9	Sécurité relative à la protection aux endroits dangereux	☑	☐	☐
I.10	Sécurité relative à la protection des personnes vivant en situation de handicap	☐	☑	☐
I.11	Analyse relative aux matériaux de construction	☐	☑	☐
I.12	Analyse géographique et population	☐	☑	☐
I.13	Analyse sur base des dimensions	☑	☐	☐
I.14	Analyse sur l'agencement des bâtiments	☑	☐	☐
I.15	La chaine de froid médicale	☐	☑	☐
II	**CONFORMITE DES USP AVEC LES PLANS TYPE DES UNITES DE SOINS**			
II.1	Organisation des blocs	☐	☑	☐
II.2	Dimensions	☑	☐	☐
II.3	Circulations	☑	☐	☐
II.4	gesion des flux	☑	☐	☐
II.5	Sanitaires	☑	☐	☐
II.6	Sécurité	☑	☐	☐
III	**CONFORMITE AVEC LES CRITERES DE MISE A NIVEAU D'UNE INFRASTRUCTURE SANITAIRE RESILIENTE**			
III.1	Ressources humaines	☑	☐	☐
III.2	Eau, assainissement et hygiène (WASH)	☐	☑	☐
III.3	Énergie	☐	☑	☐
III.4	Infrastructures et technologies	☑	☐	☐
III.5	Gestion des risques et adaptation	☑	☐	☐

(Source: Own elaboration, 07/2025)

12. Expressed needs in peripheral health units

The needs identified during interviews and suggested by on-site staff can be summarized as follows: expansion of maternity units (e.g., USP Tenega), creation of laboratories and radiography spaces, construction of new maternity facilities (e.g., USP Namare), establishment of specialized blocks (ophthalmology, physiotherapy), acquisition of basic and specialized medical equipment, and improvement of furniture (beds, delivery tables, cabinets, desks, chairs).

The needs expressed in the field confirm numerous gaps compared with official standards:

- Insufficient maternity capacity (need for extension or new separate maternity units).
- Absence of laboratories in certain USP II (direct deviation from the standard).
- Incomplete or defective basic medical equipment (blood pressure monitors, beds, delivery tables, sterilization equipment).
- Insufficient or degraded furniture relative to standards.
- Some needs (radiography, specialized blocks) go beyond the standard, reflecting a desire for modernization and adaptation to actual public health needs.

13. Analysis of WASH infrastructure in schools

13.1. Analysis of WASH infrastructure in the school environment

13.1.1. Water supply facilities

The visit to the selected sample schools revealed that the water supply systems vary across sites: boreholes and wells equipped with manual or motorized pumps: 3/7; connection to the distribution network: 3/7 (the JEP of Tindjassi is connected to the local water distribution network) and borehole; wells equipped with solar pumps: 1/7; and one other (open well): 1/7.

Year-round water availability is as follows:

- 4/7 sites have water available throughout the year, with the following supply infrastructure:
    - Boreholes and wells with manual or motorized pumps: 2 sites (EPP Tindjassi and EPP & JEP Kolina)
    - Connection to the water distribution network: one site (JEP Tindjassi)
    - Boreholes and wells with solar pumps: one site (EPP & JEP Nadjak)
- 4/7 sites do not have year-round water availability, with the following supply infrastructure:
    - Boreholes and wells with manual or motorized pumps: one site (EPP Tchalo)
    - Connection to the water distribution network: 2 sites (EPP & JEP Djofaga and EPP Centrale & JEP Siou)
    - Boreholes and wells with solar pumps: one site (EPP & JEP Nadjak)
    - Other (open well): one site (EPP Centrale Atchangbade)

Schools without year-round water rely on nearby facilities (well, borehole, standpipe, etc.). However, 5 out of 7 schools manage the technical and financial operation of the water supply system, while two (EPP Tchalo and JEP Tindjassi) do not.

A simulation across all schools in the three regions (Centrale, Kara, and Savanes) indicates that water availability throughout the year depends on the type of supply source:

- Schools connected to the distribution network (Tde) experience intermittent water availability, often facing unscheduled cuts between January and April. During these periods, school managers source water from nearby functional boreholes. Schools with wells face difficulties if the water table is low or seasonal; wells may dry up during severe dry seasons, making it hard to find alternative nearby sources.
- Schools with manual or solar pump boreholes face supply issues only if:
    - The confined aquifer is insufficient or unproductive, or
    - A major failure occurred in the manual pump or in the installed solar system.

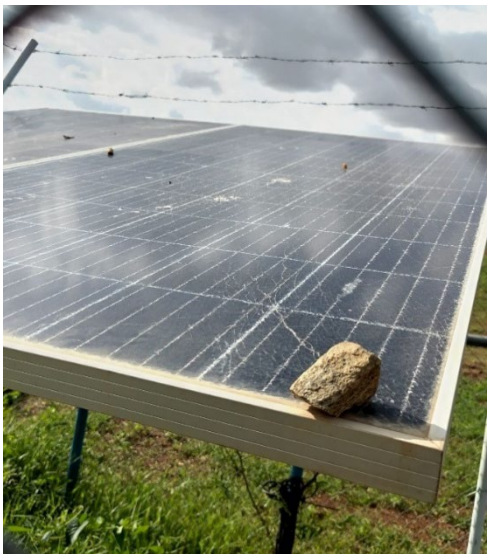
Boreholes with manual, solar, or electric pumps provide a reliable year-round water supply. Proper geophysical studies to locate productive aquifers before construction are essential for guaranteed water access.

Technical and financial management in the visited schools covers minor repairs (replacement of faulty taps and pipes) using local funds and labour from community contributions. Major breakdowns can leave schools without water for months or years while awaiting support from partners or the supervising ministry for funding or equipment replacement. Major failures are linked to the absence of a monitoring or alert system.

The evaluation shows that the water supply facilities in the sampled schools present structural deficiencies or issues related to vandalism.

Figure 41: Water supply devices in schools: (a) solar panels for feeding the borehole at the Nadjak EPP; (b) open-air water well at the Atchangbade EPP Centrale.

a b



(Photos: Own elaboration, 07/2025)

These photovoltaic panels were broken by the effect of stones thrown by unidentified individuals. Between now and the start of the school year, it is not certain that the solar energy will be sufficient to operate the submerged solar pump to get the water. Students will be forced to return home or to the neighbourhood in search of water.

13.1.2. Sanitation infrastructure

The seven schools visited only have VIP type dry toilets. These toilets were built during the 1980s and 1990s.

As a reminder, a VIP-type dry toilet in Togo is a direct-hole toilet with an alternating pit. The bottom of the pit is not watertight, allowing the feces to decompose, allowing the liquid to seep through the soil.

This type of toilet cannot be emptied using emptying trucks but is emptied manually. The frequency of emptying is often long, covering most of the time the life of the structure as a whole because of the mechanism of the alternating tank. In these establishments, the toilets have been designed with the gender aspect in mind. A portion of the block of two to four cabins is reserved for each of the two sexes with acceptable accessibility. Teachers often use the same toilets as students. Because of their dilapidation, these VIP dry toilets are not comfortable, and the construction did not consider climatic risks. The following table shows the ratio of users per toilet:

Table 10: Summary of the user ratio without each school visited

School Name	The ratio of users per washroom
EPP Tindjassi Group B	61-100
Tindjassi Public Kindergarten	26-60
Tchalo School	61-100
EPP Kolina	26-60
EPP Centrale Atchangbade G/A	>100
EPP Djofaga	61-100
EPP SIOU Central Office	>100
EPP Nadjak	26-60

(Source: Own elaboration, 07/2025)

The pathologies of these toilets are diverse depending on the site:

- Cracks over the entire envelope of the structures

The analysis of these cracks reveals several factors that failed during the construction phase, including:

  - The lack of laboratory tests on the aggregates used in the composition of concrete and the manufacture of aggregates for masonry, as well as mortar for joints
  - The choice and quality of aggregate-type materials (sand and gravel) used during construction
  - Under-dosing in binder (cement)
  - The lack of a geotechnical study of the ground on which the building is located. If the properties of the construction floor are not known, there may be differential settlements that are nothing more than uneven subsidence of the ground under a construction, causing cracks and structural damage.

- Advanced concrete degradation, including spalling, indicates deterioration of the structural reinforcement in load-bearing elements and denotes deficiencies in the quality of the coating materials (plaster and paint for our assessment). The bursting of concrete on a structure demonstrates inadequacies in structural calculation, material selection, constructive detailing, supervision during execution, as well as in the curing measures implemented.

- The advanced degradation of the roof slab allows rainwater to infiltrate. Rainwater leakage through slab roofs is a recurring problem observed in all three regions (Central, Kara, and Savanes). This is due to:

  - Excessive sunlight during the installation of these slabs causes a good part of the normal setting water to evaporate from the concrete. If proper curing measures are not used, the slab concrete will remain porous and allow rainwater infiltration. The choice and quality of aggregates (sand and gravel) used in the composition of concrete
  - The poor structural calculation of the slab can be detrimental to its strength.

- The non-closing of the cabin doors
  Most of the cabin doors are metal. Under the effect of the excessive heat due to the sun, these doors expand by increasing in size, which explains these closing difficulties.

- The deterioration of PVC pipes used as an aeration device
  The role of the ventilation pipes is to allow air exchange between the pit and the ambient air. These PVC pipes with a diameter of Φ100 deteriorate under the intense effect of sunlight. It is important to note that acts of vandalism (pure and simple cutting of these pipes) are often observed on some toilets at the EPP of Nadjak (Namare), for example

- Deflection of the septic tank slab
  The pronounced bending of the pit cover slab is often related to:
  - The choice and quality of the aggregates (sand and gravel) used in the composition of the concrete
  - Improper implementation of concrete during pouring
  - Poor formwork (shoring of the slab)
  - The poor structural calculation of the slab can be detrimental to its strength.

- The rise of water in the pit (the case of the toilets of the Central EPP of Siou)
  The upwelling of groundwater into the pit poses a significant environmental contamination risk. Indeed, according to the WASH specialists of DRS Kara and Savanes, VIP toilets with dry flushes are designed in such a way as not to contaminate (contaminate) the water table. During the construction phase of these structures, according to these experts, it is necessary to take all measures to excavate the pit so as not to touch the piezometric level of the water table.

Under these conditions, it is therefore essential to carry out a geotechnical study in order to assess the level of the water table in order to define the depth of the pit to be built. During our diagnosis, it was clear that at the 07 school sites, no geotechnical study had been carried out before building these toilets. Consequently, all wells and boreholes built in the vicinity of these toilets are exposed to the risk of contamination.

13.1.3. Faecal sludge management

At the 07 schools visited, the toilets are of the VIP dry flush type. The pit for this type of toilet is designed with a non-waterproof bottom so that the liquid contained in the faeces can seep through the seating floor. With its alternating pit system (generally, a cubicle has two pits; one remains in use, and as soon as it is filled, it is closed, leaving room for the other), the toilets that were the subject of our diagnosis have never been emptied.

13.1.4. Hygiene infrastructure

The sites subject to the diagnosis have toilets, including hand-washing devices. These hand basins are concrete tanks with a tap attached to the base and a concrete slab lid in which a hatch is reserved from which water is manually filled. Almost all of these concrete tanks are out of use. Schools currently use a hand-washing system consisting of a tap + tank (plastic pot) of mobile water placed in front of the classrooms for washing the hands of schoolchildren. The tank is filled with water manually, and the tap placed at the bottom of the tank allows water to be used under gravity. Next to these tanks, liquid soap is placed in plastic bottles, and all schoolchildren, including people with reduced mobility, have easy access. The sample of schools visited has handwashing facilities that are functional and used.

Figure 42: Handwashing devices: (a) faucet with fixed or mobile water tank; (b) "Tippy-Tap" device

a b

(Photos: Own elaboration, 07/2025)

In these schools, the same hand-washing devices are used by teachers.

Specific facilities for menstrual hygiene are not set up, and this is explained by:

- Lack of a strategy for integrating these facilities into the hygiene system, or
- The fact that the target (girls) to whom these facilities are dedicated is a relatively low age compared to girls of menstrual age.

In any case, it is crucial to set up menstrual hygiene facilities not only for schoolgirls of menstrual age but also for female teachers.

13.1.5. Management and financing of WASH services

Based on the sample of schools visited, the actors involved in the daily management of water, hygiene, and latrines are:

- The WASH committee set up in schools (EPP Tindjassi G/B, EPP Kolina, and EPP Atchangbade G/A), which manages WASH equipment in schools voluntarily.

- Schoolchildren and teachers from schools (École Tchalo, EPP Djofaga, and EPP Centrale SIOU) who deal with WASH issues as needed.
- Teachers (JEP Tindjassi), in kindergartens, are the teachers who deal with WASH issues since these are part of the job description when they are recruited.
- The Children's Government/Ministry of Health and Public Hygiene (EPP Nadjak). In this school, there is a children's government with a Minister of Health and Public Hygiene who oversees the WASH component in the school.

In schools where there is a WASH committee, a health club and a children's government, there is a monitoring or alert system to report breakdowns or the need for maintenance, while in other schools, breakdowns or the need for maintenance are repaired or made as soon as they arise or the need arises. Of all the schools diagnosed, the budget, which comes from contributions from the community, the National Grant, and partners (NGOs) for WASH services, if they exist, remains insufficient to cover the needs. The needs most often covered are:

- Toilet maintenance (cleaning, disinfection)
- Replacement of products (soap, cleaner)
- Replacement of equipment (faucets, flushing toilets, pipes)

The funds are monitored by the COGEP (Primary School Management Committee), the Inspectorate's Accounting Department, and APE (Parents' Association), which authorise the purchase and payment of services.

The needs that are not covered and that are of capital necessity for good hygiene are:

- Emptying of the pits and
- Solid waste management

It should be noted that in practice, there is a glaring lack of funds to adequately address the needs of WASH services in public schools that have children in the age group between 6 and 13 years of age who are most vulnerable to diarrhoeal and vector-borne diseases (malaria).

13.2. WASH infrastructure in DPS

The DPS chosen for the diagnosis are**:**

- The DPS of MO and
- Kozah's DPS.

These two each have specific particularities:

- The DPS of MO in the Central Region does not have a dedicated administrative building in which the staff work. The staff in the CHP (Prefectural Hospital Centre) of Djarkpanga. The consultation room dedicated to the doctor is at the same time the office of the DPS. Neither the Infrastructure Manager nor the Administrative and Financial Director has an office. As a result, this DPS does not have WASH facilities. The WASH facilities that exist are those of the CHP.
- The DPS of Kozah in the Kara region has a building block used as administrative offices. This building is within the grounds of the Kara Polyclinic. The DPS (Prefectural Director of Health) is also the Head of the Polyclinic. In the administration building, there are WASH facilities.

The analysis will only focus on the WASH facilities of the Kozah DPS because the WASH diagnostic mission only concerns the DPS.

13.2.1. Water supply infrastructure

The main source of water supply within the DPS is the Tde, which is a structure for distributing water through its installed network. During water cuts by the Tde, often in the dry season, the DPS uses the Polyclinic's borehole. Spare parts, especially plumbing elements (tap, pipes, etc.), can be found on the local market with qualified workers who carry out the installation. In the DPS, there is also a WASH committee whose position of President is held by the Prefectural Director, and the Infrastructure Manager holds the position of Rapporteur. This committee watches over the facilities to anticipate potential breakdowns. The basic budget is sufficient to cover basic needs. The DPS accountant and the COGES are responsible for monitoring and managing the funds allocated for the maintenance of the water supply infrastructure.

13.2.2. Sanitation infrastructure

The toilets set up within the centre are mechanically flushed toilets connected to a septic tank and are inside the building. These are the same toilets that visitors use. These washrooms are functional, accessible, and comfortable for users (staff and visitors), and the ratio of users per cabin is 1-25. The pits are easily drainable, and the construction of the toilets partially takes into account climatic risks (elevation, flooding, lack of water).

13.2.3. Faecal sludge management infrastructure

The Municipality of Kara is responsible for emptying the pits of the DPS with a frequency of emptying once every 3 years. The average cost of emptying is 15,000 CFA francs, but there is no budget line of the DPS dedicated to this task. The faecal sludge is transported to the treatment centre located 15 km from the DPS.

13.2.4. Hygiene infrastructure

The handwashing device installed at the DPS that staff and visitors use is a sink connected to the water network. The soap is not currently deposited near the sink because of the theft. The sink, as it is installed, is not accessible to everyone (children, patients, people with reduced mobility). There are no specific facilities for menstrual hygiene.

13.2.5. Management and financing of WASH services

The WASH Committee and DPS staff are the actors involved in the day-to-day management of water, hygiene and latrines, which are tasks that are part of the staff job descriptions. There is a budget that takes care of the WASH line for the main WASH expenses incurred, including the emptying of pits, solid waste management, replacement of products (soap, cleaner), maintenance of toilets (cleaning, disinfection), and replacement of equipment (taps, flushing, pipes). The budget is sufficient and is under the management of the DPS accountant.

13.3. WASH infrastructure in markets

13.3.1. Infrastructure

WASH infrastructure in markets is sized according to the size of the market. The three markets visited (Tindjassi Market, Sokode Grand Market, and Namare Market) have WASH infrastructure as follows:

- one Latrine block with 2 toilets and a shower for men, one Latrine block with 2 toilets and a shower for women, for the Tindjassi market.
- one Latrine block with 4 toilets and one cabin for PRM for men and one Latrine block with 4 toilets and one cabin for PRM for women for the market of Sokode (Grand Marché de Sokodé).
- 2 Cabins for men and 2 cabins for women for the Namare market.

The WASH infrastructure in these markets is new and functional. The availability of soap for handwashing varies depending on whether the market is municipal or regional. In the rural communal markets (Namare and Tindjassi), which operate once or twice a week, the attendance rate is quite low, and there is no possibility of having an optimized hygiene service, while in the regional markets (Grand Marché de Sokodé), the attendance is quite high (1,500 users).

In general, WASH infrastructure is built with climate risks in mind. The type of toilets installed in the markets depends on the urban or rural aspect of the site. VIP dry-flush toilets are installed in rural markets (Namare and Tindjassi) while Turkish pot-flush toilets with manual flushing connected to a septic tank are installed in urban markets (Grand Marché de Sokodé). The same is true for water supply infrastructure, which is for urban markets, the distribution network, and wells or boreholes for rural markets. VIP dry flush toilets installed in rural markets are alternating pit, and most often, emptying is manual. For regional markets, septic tanks are easily drained.

13.3.2. Service Management

The sanitary infrastructures of the markets are the property of the municipality, whether rural or urban, and thus, the daily management of the treatment operations and the maintenance of the infrastructures

are carried out by the Technical Services Department of the City Council through its employees or associations under contract from the City Council.

The main tasks of operational management, upkeep, and maintenance of these sanitary blocks are:

- Maintenance of the premises
- Reception and orientation of customers, and
- Disinfection of the premises

Users are informed and sensitized on the correct use of sanitary facilities through awareness campaigns in the market and by the staff in charge of managing toilets.
The major challenges encountered in the daily management of the sanitary blocks are:

- Lack of water nearby (for rural markets)
- Awareness raising on the correct use of toilets
- Water cut by the Togolese water company
- Security problem related to the closure of the market (case of the Grand Marché de Sokodé)

13.3.3. Financing

The sources of funding for the management and improvement of the sanitary infrastructure are provided by the municipality, but the financial contributions of the users or traders of the market for the operation of the sanitary block are a reality for the urban markets (50 francs for the urinal and 100 francs for the toilets), while for the rural markets there are no contributions from the users.

The main items of expenditure are:

- Purchase of water during power cuts
- Purchase of disinfectant products
- Tile cleaning products
- Payment of water bills
- Plumbing maintenance
- Payment of assigned personnel

Emptying has an average price of 30,000 CFA francs for the sanitary blocks of the urban markets, while for the rural markets, the pits are alternated.

13.4. Faecal sludge treatment centres

The three regions of northern Togo threatened by climate change have faecal sludge treatment centres in their capital, namely:

- The Sokodé faecal sludge treatment centre in the Central region
- The Kara faecal sludge treatment centre in the Kara region, and
- The Dapaong faecal sludge treatment centre in the Savanes region.

Faecal sludge from the emptying of septic tanks in the surrounding urban and semi-urban municipalities is transported to these centres.

13.4.1. Infrastructure

The faecal sludge from the septic tanks collected by a dump truck is dumped on the beds, which have Φ150 plastered pipes at the bottom covered by sand, and then paving stones. The leaching from the settling at the bed level is taken to the tanks for final treatment. The water from this treatment is discharged into nature. The rest of the solid material is dried and used as compost for its recovery as green manure in agricultural fields. In the three faecal sludge treatment centres, only the solid material (dried sludge) is used.

These three operate below their capacity:

- For the Sokode mud treatment centre, the capacity is 15 to 20 truck trips of 12 m3 per month for a planned capacity of 30 truck trips of 12 m3 per month
- For the Dapaong Mud Treatment Centre, the capacity is 3 truck trips of 12 m3 per week, with a planned capacity is 5 trucks per week

The construction of the infrastructure of these three centres takes into account climate risks (elevation, ventilation, lack of water, etc.).

13.4.2. Service Management

The project owners of these treatment centres are the town halls in which they are built. Thus, the Technical Services Department (DST) of each Town Hall that has benefited from these centres is responsible for the daily management of treatment operations and the maintenance of the infrastructure.

The main tasks of operational management, upkeep, and maintenance of the processing centre are:

- Sludge collection service
- Processing Service
- Maintenance service

According to the technical referents of these centres, the effluents resulting from treatment are sampled and analysed in the laboratory to ensure their good characteristics before they are discharged into the environment.

The staff in charge of these centres are trained through the GEDEC project through capacity building training on the use of tools and the management of operational tasks.

The acceptability of the populations surrounding these centres is unquestionable. Awareness campaigns were carried out through CDQ, CVD, CCD, and fairground sensitizations, as well as programs on community radios.

The main challenges encountered in the management of these centres are, for the most part:

- Lack of maintenance of equipment
- Lack of operational staff (maintenance workers)
- The corruption of the agents in charge of sludge collection, and
- The lack of hierarchical involvement of the municipality.

13.4.3. Financing

The main sources of funding for the management and maintenance of these treatment centres are:

- The own funds of the town halls concerned
- Partners or associations supporting the municipality concerned
- 40% of the budget is financed by GEDEC (for the Kara and Dapaong centres), and this will end in 2026

The main items of expenditure are:

- The payment of staff
- The fuel consumption of the machines
- Light repair of machinery

Normally, it is the municipal council that should allocate the funds, but currently it is EXPERTISE France via the GEDEC project that pays the 2 referents (Technical and Financial) for the Sokode treatment centre while the City Halls allocate 50% (budget line) and the GEDEC project allocates 40% (this support ends in 2026) for the Kara and Dapaong treatment centres.

Due to a lack of resources, the town halls in which these treatment centres are built have not yet put in place the transparency and accountability mechanisms. Since these centres are public services, they will not be profitable. Today, awareness-raising is done to encourage private operators who are in the collection of faecal sludge to transport it to these centres to limit uncontrolled dumping, which threatens hygiene and the environment.

14. Households and vector control measures

As part of the assessment of domestic infrastructure and the identification of measures against vector-borne diseases (particularly malaria), the mission examined two samples in the localities visited. The purpose of these visits is to identify risk factors (habitat condition, water and waste management, potential breeding sites, protection practices) and to assess their exposure and vulnerability. The findings guide the prioritisation of prevention measures and developments adapted to the local context.

14.1. Presentation of the sites visited

14.1.1. Case 1: Cleaning in the village of Tindjassi

The first household is located in the village of Tindjassi and consists of the concession of a family occupying three blocks of buildings comprising four households (each brother with his family).

Immediate environment: The site has several water stagnation sites linked to the discharge of wastewater from the showers. No sanitation system or functional toilets are present.

Buildings: Of the three blocks, only one has protective fencing on windows and doors, thus reducing the risk of mosquito intrusion. The other blocks are not protected. The walls are mostly made of banco, some covered with cement mortar, others left bare.

Roofing: Buildings are covered with sheet metal, protecting them from the elements. However, the wooden beams are attached to the walls with galvanized wires, which weakens the walls and creates openings for mosquitoes to pass through.

Figure 43: The visited household in the Tindjassi site

(Photos: Own elaboration, 07/2025)

14.1.2. Case 2: Cleaning in the village of Bidigou

The second household visited is located near the Tenega USP and consists of a two-room house housing five people.

Structure:
Like most of the buildings in the village, the house is built of banco and plastered with cement mortar. Cracks appear at the junction between the walls and the wooden frame, constituting entry points for mosquitoes.

Openings:
Doors and windows do not have protective mesh.

Immediate environment:
Wastewater from showers stagnates around the house, promoting the proliferation of mosquitoes.

Figure 44: Household visited Bidigou site: plastered wall with pathologies (cracks)

(Photo: Own elaboration, 07//2025)

14.2. Assessment of environmental and structural factors influencing vector control in visited households

Table 11: Summary of the different aspects observed in households

Aspect	Observation	Key Observation
Immediate environment and sanitation	The stagnation of wastewater from showers in Tindjassi and Tanega is a major factor in the proliferation of mosquitoes.	Stagnant water creates an environment conducive to the development of larval sites in the immediate vicinity of dwellings.
Physical protection of homes	In Tindjassi, only one of the three blocks has fences on the windows and doors. In Bidigou, no protection (fences, fixed mosquito nets) is present.	There are almost no physical barriers that prevent vector transmission within homes.
Wall quality and structural risks	The walls of the banco, sometimes plastered with cement, have cracks, especially at the junctions with the framework. Construction is limited to the essentials for the inhabitant, without any protective measures or planning.	The fragility of the materials and the lack of regular maintenance amplify the risk of exposure.
Roof and framework	Sheet metal roofs offer good protection from rain, but timber frame fasteners with galvanized wires create gaps in the walls.	The technical design of roofs, if not suitable, becomes an indirect factor favouring the intrusion of mosquitoes.
Impacts on vector control	External breeding sites, due to a lack of sanitation, a lack of passive protection (fixed mosquito nets, wire mesh), and structural weaknesses, facilitate the entry of mosquitoes.	These factors aggravate vector transmission.

(Source: Own elaboration, 07/2025)

15. Maintenance needs and technical expertise for the rehabilitation of health and WASH infrastructure

15.1. Maintenance needs

Table 12: Summary of the different needs in curative and preventive maintenance to ensure the sustainability of health infrastructures

	Description	Key Observation
Curative maintenance needs	• **Weakened load-bearing structures**: Cracks, infiltration, and advanced degradation require immediate intervention to prevent collapse. • **Dilapidated or leaky roofs**: Repair or partial replacement to prevent infiltration and maintain hygiene. • **Faulty electricity**: Risks of fire or breakdown, urgent interventions necessary. • **Degraded and non-functional sanitary facilities**: Rapid restoration to guarantee hygiene.	The infrastructure requires urgent interventions to ensure the safety and proper functioning of the equipment, including the repair of roofs and the maintenance of electrical installations.
Preventive maintenance needs	• **Roof maintenance and drainage systems**: Regular cleaning of gutters and overhaul of roofs. • **Inspection of electrical installations**: Periodic inspection to avoid short circuits and the securing of electrical panels. • **Maintenance of walls and coverings**: Regular painting to limit wear and improve hygiene. • **Maintenance of biomedical equipment and furniture**: Technical monitoring of equipment such as solar fridges and delivery tables.	Preventive maintenance is insufficient. It is essential to have a structured plan in place to avoid major repairs in the medium term.
Needs for specialized technical expertise	• **Structural studies**: In-depth diagnosis of cracks, foundations, and stability of buildings. • **Expertise in electrical and fire safety**: Audit of installations and plan to bring them up to standard. • **Studies in HVAC and thermal engineering**: Bioclimatic solutions to improve thermal comfort. • **Hydraulic and WASH expertise**: Design of systems for drinking water, sanitation, and biomedical waste management.	These assessments are necessary in the short and medium term to properly guide rehabilitation and extension projects.

(Source: Own elaboration, 07/2025)

Key trends and priorities for action

By grouping the observations, three main trends and two priority actions emerge:

- Prevalence of curative emergencies: The priority is to secure the buildings, repair the roofs, rehabilitate the sanitary facilities, and guarantee the reliability of the electrical system.
- Widespread lack of preventive maintenance: The lack of a structured maintenance plan leads to rapid degradation of infrastructure.

- Need for strategic technical expertise: Some old or poorly designed infrastructures require in-depth studies before making any investment.

Actions to be implemented:

- Urgent (curative) component: Ensure immediate safety and repairs to guarantee continuity of care.
- Structuring component (preventive and expertise): Implement a regular maintenance program and use specialized expertise to plan the sustainable rehabilitation and modernization of infrastructure.

15.2. Expertise needs for public WASH infrastructure and in USPs

There is a clear need for expertise for WASH infrastructure in USPs. These needs concern both the diagnosis, the technical design, and the implementation of adapted and sustainable solutions. They can be grouped as follows.

Table 13: Summary of Expertise Needs for WASH Infrastructure

Criterion	Description	Key Observation
Expertise in drinking water	• Hydrogeological studies to identify new water sources (boreholes, wells, catchments). • Sizing and design of pumping, storage (water towers, tanks), and distribution systems. • Assessment of water quality and implementation of treatment systems (chlorination, filtration).	Expertise is needed to ensure a sustainable and secure water supply that is tailored to the needs of USPs.
Sanitation Expertise	• Design and rehabilitation of toilets to standards (accessibility, ventilation, gender separation). • Studies for the implementation of ecological sanitation systems (improved latrines, biofilter septic tanks, biodigesters). • Planning of the upkeep and maintenance of existing structures.	Interventions are essential to improve sanitation and toilet management, adhering to accessibility and hygiene standards.
Expertise in wastewater and stormwater management	• Technical studies for the establishment of effective drainage networks adapted to topographical contexts. • Design of wastewater management systems (planted filters, settling ponds). • Assessment of the impact of water stagnation on health (vectors, mosquitoes) and proposals for corrective developments.	Effective wastewater and stormwater management is crucial to prevent health risks related to water stagnation and disease vectors.

(Source: Own elaboration, 07/2025)

16. Development of intervention scenarios

16.1. Methodology

Development methodology

The methodology adopted is based on the gaps identified and aims to bring the care units up to national and international standards in the context of our projections. It consists of verifying compliance with standards, integrating resilience measures adapted to the context, and proposing specific WASH interventions (water, sanitation, hygiene).

Areas of intervention

The development of intervention scenarios is based on five key axes, adapted to local realities and climate resilience issues:

- Functional programme and surface areas: adequacy of spaces to normative needs (maternity, general medicine, complementary services).
- Outdoor developments: accessibility, drainage, internal circulation, landscape, and environmental integration.
- Organization and layout: architectural scenarios envisaged (rehabilitation, extension, or construction of a separate block).
- WASH infrastructure: water availability and quality, adequate sanitation, functional hygiene, compliant and usable sanitation.
- Resilience measures: integration of bioclimatic solutions for improved thermal comfort (double roof, cross-ventilation, sunshades), use of renewable energies, and durability of materials.

16.2. Proposal of intervention scenarios in the USPs (rehabilitation, extension, construction)

This section proposes, for each type of USP, the most relevant intervention scenario considering the technical-functional diagnosis (status, compliance, flow, WASH/energy, ventilation/lighting) cross-referenced with degradation/functionality thresholds, service demand, and life cycle costs.

Table 14: Summary of the built areas and the sites of the USPs visited

Name of the institution	Built area (m^2)	Site area (m^2)
USP Tindjassi	305	40,000
USP Tchalo	411	10,000
USP Kolina	430	11,727
USP Kaza	328	11,000
USP Atchangbade	323	10,000
USP Tenega	412	20,000
CMS Siou	1,240	2,690
USP Namare	229	11,221
CMS Dakpankpergou	563	28,523
CMS Sagbéabou	214	40,000

(Source: Own elaboration 07/2025)

16.2.1. USP Type 1

The inventory highlighted several care units that did not comply with national and international standards. The following planning aims to upgrade WASH capacity, layout, and infrastructure, while incorporating context-specific resilience measures.

Table 15: Aspects of interventions to be considered to improve the infrastructure of care units, while integrating resilience and sustainability measures, particularly in the areas of hygiene, accessibility, and thermal comfort

Aspect	Description	Key Observation
Functional program and surfaces	• Target capacity: 6 beds in total (2 general medicine beds, 4 maternity beds). • Objective: To resize and clearly distinguish the spaces (consultations, labour, delivery, postpartum) to meet the standards, resulting in a table of revised surfaces.	Rethinking the layout to ensure surfaces and functionalities comply with standards.
Outdoor	• Install effective drainage slopes for the evacuation of stormwater and runoff. • Foresting/revegetating sites to limit erosion and improve microclimatic comfort. • Structure the routes (users, PRM, service vehicles). • Integrate compliant ramps with handrails and landings.	Improve stormwater management and accessibility for all.
Organization and layout	Three scenarios considered: • Case 1: Rehabilitation with expansion (maintenance of two services). • Case 2: Specialization of the operating rooms (a general medicine block and a maternity block). • Case 3: Construction of new blocks, incorporating climate resilience measures.	Choose the most appropriate approach according to the constraints and needs of the sites.
WASH infrastructure	• Integrate the sanitary facilities into the building: 4 toilets minimum, additional sanitary	Rehabilitate the sanitary facilities to guarantee

(water, sanitation, hygiene)	facilities near the maternity ward, dedicated PRM sanitary facilities. • Water availability: Borehole, storage tank(s) or internal connection. • Improvement of hygiene practices: Awareness-raising, provision of consumables. • Replacement of VIP latrines: Rehabilitation or replacement with water-efficient toilets or septic tank toilets	hygiene and accessibility for all.
Resilience measures (buildings, comfort, energy)	• Foundations: Treatment of the layer under screed to prevent capillary rise. • Thermal comfort: Ventilated double roof, sunshade, roof overhang. • Materials: Use of compressed earth bricks (BTC) for better thermal inertia. • Ventilation: Orientation of openings for cross-ventilation. • Renewable energies: Solar water heater, photovoltaic system for critical loads.	Integrate sustainable solutions to improve the climate resilience of infrastructure.
Protection and fencing	• Plant fence (living hedge) to delimit the site, channel access, and improve safety while preserving landscape integration.	Securing the infrastructure while respecting aesthetics and landscape integration.

(Source: Own elaboration 07/2025)

Basis of calculation

Table 16: Normative requirements and observed results in terms of WASH surfaces and infrastructure

Criterion	Description	Key Observation
USP Usable Area	According to the standard, the total usable area for a Type 1 USP must be 361 m², divided between: • Maternity: 140 m² (39%) • Treatment block: 221 m² (61%).	The inventory shows that the average usable area of type 1 USPs is 352 m², comprising: - Maternity: 137 m² (39%) - Care block: 215 m² (61%).
Most unfavourable surface (USP Namare)	The USP of Namare has a total usable area of 229 m², distributed as follows: • Maternity: 89 m² (39%) • Treatment block: 140 m² (61%).	The USP in Namare has a surface area below the standards, with reduced spaces for the maternity ward and the care block.
WASH Infrastructure	• Each centre has an average of 2 toilets. • Planned standards: Construction of 8 toilets. • Toilets for men and women: 3 cubicles for each, and one PRM cabin per gender. • 2 PRM toilets for staff and 2 PRM toilets for patients. • Toilet annex exterior: 2 toilets in the annex exterior.	The USP of Namare, like the other sites, must be brought into compliance in terms of the number of toilets and PRM structures.
Septic tank and sumps	The standard provides for one septic tank for 100 users and 2 sumps of 2m in diameter for each centre.	Wastewater management facilities must be properly sized to ensure the hygiene and sustainability of the infrastructure.

(Source: Own elaboration 07/2025)

Surfaces revised according to WHO recommendations:

The surfaces provided for in the national standard have been revised in the light of the WHO recommendations. This revision aims to ensure better functionality, enhanced accessibility, and compliant and adapted care. It takes into account the actual dimensions of the equipment, universal accessibility standards, and the principles of resilience of health infrastructure.

Table 17: Adjustments to improve compliance with the standard

Space	Description	Key Observation
Motherhood	• Humanized childbirth: Adoption of rooms with a rest area and reception of the accompanying person. • Integrated sanitary facilities: Toilets and showers directly accessible from the delivery rooms and maternity suites. • Accessibility: Dimensioning of circulation and spaces (doors ≥ 90 cm, turning zones ≥ 1.50 m) for easy access with a medical bed or wheelchair. • Functional separation: Clear distinction between the workspace (preparation, dilation) and the delivery space. • Neonatal corner: Specific space of 4 to 6 m² in each delivery room, equipped for the resuscitation and immediate care of the newborn.	These adjustments aim to improve the functionality, accessibility, and quality of care by ensuring more respectful care adapted to the needs of users.
Healing Block	• Technical spaces: Insertion of rooms for biomedical equipment, energy (solar panels, inverters), and maintenance. • Adapted storage spaces: Creation or resizing of stores and depots to securely store medicines and consumables. • Circulation and flow: Upgrading of corridors (≥ 2 m wide), clearances, and crossing areas to allow the simultaneous passage of stretchers and wheelchairs. • Comfort and hygiene: Installation of "hands-free" handwashing stations in each treatment room and near the consultation areas.	The update of the organisation of the operating rooms aims to improve the efficiency of flows and the safety of users, while guaranteeing a hygienic and accessible environment.
Gaps between national standards and the WHO	• The analysis comparing national standards (USP type 1) and the revised WHO recommendations highlights significant differences in terms of space dimensions, accessibility, and equipment to ensure optimal care for users.	Revisions based on WHO recommendations identified potential improvements, including in the separation of spaces and the addition of new equipment to meet health and resilience needs.

(Source: Own elaboration 07/2025)

Considering the components of a PSU1 in the national standard, the following differences in terms of functional surfaces emerge:

Table 18: Deviation of the current surface area of the maternity ward from WHO recommendations

Block / Room	Current area (m²)	Recommended surface area (m²)	Deviation
SMI multipurpose room	20	20	0
Delivery/labour room	25	25 + 6 (shower room) + 3 (accompanying person) = 34	+9 m²
Rest room for childbirth	20	35	+15 m²

Neonatal corner	0	4	Absent
Patient toilets/showers	8	20	+12 m²

(Source: Own elaboration 07/2025)

Table 19: Deviation of the current surfaces of the Care Block from the WHO recommendations

Block / Room	Current area (m²)	Recommended surface area (m²)	Deviation
Curative consultation room	20	20	0
Treatment room/sterilization	15	18	+3 m²
Minor surgery room	15	18	+3 m²
Observation Room (2 beds)	20	24	+4 m²
Pharmacy/Store	11	15	+4 m²
Isolation room with toilet/shower	16	20	+4 m²
Main circulation	≈1.8 m (width)	≥2 m (width)	Non-compliant

(Source: Own elaboration 07/2025)

Table 20: Summary of the revised surfaces of the Care Block and the maternity ward

Category	Current National Standard Area (m²)	Revised area (m²)
Care Block	97	115
Maternity Block	73	113

(Source: Own elaboration 07/2025)

Table 21: Reformulation of the calculation of the surface areas of the maternity ward and the care block

Component	Initial surface area (national standard)	Surface to be overhauled	New surface in view of the WHO recommendations	Revised total area	Key Observation
Maternity	140 m²	73 m² (elements to be improved)	113 m² (after revision according to WHO recommendations: humanized delivery, integrated sanitary facilities, adapted circulation, neonatal corner, etc.)	**180 m²**	The upgrade increases the usable surface area to better meet the functional, accessibility, and comfort requirements of patients.
Healing Block	221 m²	97 m² (elements to be improved)	115 m² (after revision according to WHO recommendations: accessibility, technical spaces, thermal comfort, enhanced hygiene)	**239 m²**	The expansion aims to integrate technical and storage spaces that comply with modern requirements for safety and efficiency of care.

(Source: Own elaboration 07/2025)

Explanatory summary:

The revision of the surfaces, based on the recommendations of the WHO, makes it possible to:

- Improve the functionality and resilience of spaces.
- To strengthen universal accessibility and patient comfort.
- To integrate technical, neonatal, and sanitary spaces directly connected to the care areas.

Thus, the overall total surface area increases from 361 m² (national standard) to around 420 m² after revision, an average increase of +16.6%, corresponding to the integration of new health, ergonomic, and climate resilience needs.

Table 22: Summary of the new surfaces obtained for USP Namare

	Current status (USP Namare)	Surface according to the current standard	Surfaces revised according to WHO recommendations
Motherhood	89m² Promiscuity, non-compliant spaces in terms of 60m² space, privacy problem, low capacity in some sites (lack of beds)	140 m² Based on the standard plan	182 m² Considering humanized childbirth And toilets, integrated showers/circulation Consider the width of a bed or wheelchair, etc (min 1.5m) Separate work and delivery area, neonatal corner
MG Treatment Block	140m²	221 m²	306 m² Including technical areas, storage space, and circulation

(Source: Own elaboration 07/2025)

16.2.2. USP Type 2

Proposal of intervention scenarios:

The inventory of fixtures has highlighted that several care units comply with national standards at the level of the plan in terms of surface areas. However, the following planning aims to upgrade WASH capacities and infrastructure, while integrating resilience measures adapted to the context and a review of some spaces and their layouts.

Table 23: Aspects of interventions to be considered to improve the infrastructure of care units, while integrating resilience and sustainability measures, particularly in the areas of hygiene, accessibility, and thermal comfort

Aspects	Description	Key Observation
Functional program and surfaces	• Target capacity: 16 beds (8 general medicine beds, 8 maternity beds). • Objective: To improve working conditions and use by patients by resizing and clearly distinguishing spaces (consultations, labour, delivery, postpartum). • Proposal: Add a neonatal corner, improve the separation of flows (clean/dirty), and increase the surface area of the rest areas for women who have given birth. • Deliverable: Table of revised areas (by room) annexed to the report.	Rethinking the layout to ensure surfaces and functionalities comply with standards.
Outdoor	• Install drainage slopes for stormwater and runoff. - Foresting/revegetating sites to limit erosion and improve microclimatic comfort.	Improve stormwater management and accessibility for all.

	• Structure the pathways: lanes dedicated to users, PRM, and service vehicles. • Integrate compliant ramps with handrails and landings.	
Organization and layout	• **Case 1**: Rehabilitation with expansion, maintenance of two departments (general medicine and maternity). • **Case 2**: Specialization of the operating rooms (one block for general medicine and one for maternity). • **Case 3**: Construction of new blocks by integrating climate resilience measures.	Choose the most appropriate approach according to the constraints and needs of the sites.
WASH infrastructure (water, sanitation, hygiene)	• Integrate the sanitary facilities into the building: 4 toilets minimum (2 for staff and 2 for patients) + additional sanitary facilities for the public/visitors. • Add sanitary facilities for postpartum women near/integrated into the maternity ward. • Rehabilitate or replace VIP latrines with water-efficient toilets. • Improve water availability (boreholes, storage tanks, connections). • Awareness of good hygiene practices.	Rehabilitate the sanitary facilities to guarantee hygiene and accessibility for all.
Resilience measures (buildings, comfort, energy)	• Review natural ventilation: orientation of openings, sunshades. • Treat foundations and capillary rise (polyethylene film, capillary cuts). • Thermal comfort: ventilated double roof with secondary insulating layer. • Use of materials such as compressed earth bricks (BTC) for better thermal inertia. • Install renewable energy systems (solar water heaters, photovoltaics).	Integrate sustainable solutions to improve the climate resilience of infrastructure.
Protection and fencing	• Install a plant fence (hedge) to delimit the site, channel access, and improve safety while preserving landscape integration.	Securing the infrastructure while respecting aesthetics and landscape integration.

(Source: Own elaboration 07/2025)

Basis of calculation:

Table 24: Normative requirements and observed results in terms of WASH surfaces and infrastructure

	Description	Key Observation
Distribution of areas	• Total usable area for the USP type 2: 672 m², divided between: • Maternity: 252 m² • Care Block,336 • Case of Atchangbade (total usable area: 323 m²): • Maternity: 145 m² • Treatment block: 178 m²	Rethink the layout to optimize the use of space and meet the needs of the departments. Review some spaces and their dimensions.
WASH Infrastructure	**Toilets for users**: • 3 male cabins + one PMR cabin. • 3 women's cabins + one PMR cabin.	Total required: 8 toilets, with PRM equipment and menstrual hygiene facilities.

	Staff washrooms: • 2 toilets for staff (men and women) + toilets for people with reduced mobility. **Outdoor outhouse**: • 2 toilets.	
Septic tank and sumps	• **Septic tank**: Built for 100 users. • **Sumps**: 2 sumps of 2 m in diameter for drainage.	To ensure proper wastewater management and to guarantee adequate capacity for users.
Menstrual hygiene facility	Provide specific facilities for menstrual hygiene in the toilets.	Meeting menstrual hygiene needs while optimizing sanitary space.
Accessibility for people with reduced mobility	Provide toilets adapted for people with reduced mobility in each category (men, women, and staff).	Compliance with accessibility standards for people with reduced mobility.

(Source: Own elaboration 07/2025)

Revised surfaces:

In this scenario, the areas provided for in the national standard were revised considering the WHO recommendations. This revision aims to ensure better functionality, improved accessibility, and more respectful care for users. It considers the actual dimensions of the equipment, universal accessibility standards, and the principles of resilience of health infrastructure.

Table 25: The proposed adjustments for maternity and curative care spaces, considering the standards of accessibility, comfort, and fluidity of flows

Space/Appearance	Description	Key Observation
Maternity: Humanized Childbirth	Adoption of delivery rooms with integrated rest areas. Possibility of welcoming the companion during the birth.	To create a more humane and comfortable environment for patients and their companions.
Integrated sanitary facilities	Addition of toilets and showers directly accessible from the delivery rooms and maternity suites.	To improve the autonomy of patients and guarantee their comfort during labour and the rest of the birth.
Accessibility	Sizing of the circulation and spaces to accommodate a medical bed or a wheelchair (doors ≥ 90 cm, turning zones ≥ 1.5 m).	To ensure accessibility for people with reduced mobility and fluidity of movement.
Functional separation	Clear distinction between the labour space (preparation, dilation) and the delivery space.	Improve the fluidity of flows and optimize the efficiency of care.
Neonatal corner	Integration of a specific space of 4 to 6 m² in each delivery room, equipped for the resuscitation and immediate care of the newborn.	To guarantee immediate and quality care for the newborn, with rapid resuscitation.
Curative Care Block: Technical Spaces	Inclusion of rooms for biomedical equipment, energy (inverters, solar panels), and maintenance.	Provide the necessary infrastructure for medical and energy equipment.
Healing Block: Storage Spaces	Creation or resizing of warehouses and depots for the secure storage of medicines, consumables, and equipment.	Ensure secure and optimized storage of medical supplies and equipment.
Curative Care Block: Circulations and Flows	Upgrading of corridors (≥ 2 m wide), corridors, and crossing areas, for the	Ensuring fluidity and accessibility for patients and medical staff.

	simultaneous passage of stretchers and wheelchairs.	
Healing Block: Comfort and Hygiene	Integration of "hands-free" handwashing stations in each treatment room and near the consultation areas.	Improve hygiene practices and facilitate access to hygiene for caregivers and patients.

(Source: Own elaboration 07/2025)

By considering the components of a USP2 (national standards) and international recommendations. Some spaces need to be revised, and the following discrepancies emerge:

Table 26: Differences observed at the maternity level

Designation	Current surface area (m²)	Revised area (m²)
Waiting hall for companions	20	25
Work room (2 beds)	15	24
Neonatal corner	12	15
Rest for childbirth (2 bedrooms x 4 beds)	30	72

(Source: Own elaboration 07/2025)

Table 27: Summary of surface deviations

Block	Area in the national standard (m²)	Revised area total (m²)	Variance (m²)
Maternity Block	252	290	38

(Source: Own elaboration 07/2025)

Reformulation of the surface area calculation:

The initial total area planned for the maternity ward according to the national standard is 252 m².
After revision and upgrading of these components according to WHO criteria (humanized delivery, integrated sanitary facilities, adapted circulation, etc.), the corresponding surface area is increased to 290 m².

Table 28: Summary of the surfaces obtained after revision - USP Atchangbade case

	Current status	Surface according to the current standard	Surfaces revised in view of WHO recommendations
Motherhood	145 m² Promiscuity, non-compliant spaces in terms of 60m² space, privacy problem, low capacity in some sites (lack of beds)	252 m² Based on the standard plan	290 m² Including humanized childbirth And toilets, integrated showers/circulation Consider the width of a bed or wheelchair, etc Separation of the workspace and the delivery area, and addition of the neonatal corner
MG Block	178 m²	336 m²	356 m² with traffic improvement (+20 m²)

(Source: Own elaboration 07/2025)

16.3. Intervention scenarios: WASH infrastructure in schools, DPS, and markets

More frequent and intense extreme weather events are impacting WASH infrastructure and require special attention. In Togo, the three regions most impacted by this climate change are the Central Region, the Kara region, and the Savanes region. The construction of WASH-like infrastructure in these regions must consider the frequent and intense higher temperatures, droughts, floods, and more severe storms.

The construction of WASH infrastructure will inherently need to consider two contexts:

- Urban and rural areas close to the service area of a faecal sludge treatment centre and
- Rural and urban areas far from the service area of a faecal sludge treatment centre.

The sanitation infrastructure of schools and markets in rural communes in these three regions is mostly VIP type dry flush toilets. This model of toilet is being abandoned by the state bodies in charge of education, decentralization, and health. It is therefore essential that the type of toilet to be designed is the one with a septic tank and drainable sump, whether in urban or rural areas.

The proposed interventions (Construction or Rehabilitation) for WASH infrastructure incorporate the following components:

16.3.1. Water infrastructure

It will be necessary to:

- Construct or rehabilitate boreholes by integrating a solar submersible pump in each establishment, market, or USP concerned by the project.
- Construct the support (superstructure) in reinforced concrete or steel structure on which a polyethylene tank will be placed.
- Provide a photovoltaic field for the energy supply of the pump to be installed above the tank to avoid acts of vandalism on the installations.
- Make a small water supply from the tank to the WASH structures.

16.3.2. Sanitation infrastructure

For schools, markets, and USPs with VIP dry flush toilets, the following will be discussed:

- Proceed with demolition and replacement with planting of trees on the previously backfilled pit.
- Proceed with the construction of new sanitary blocks with septic tanks and drainable sump sized according to the size of the school and the market, considering their evolution over time. The sanitary block to be built will consider the gender and PRM aspect and will be set up so that teachers have a view of the entire structure, as far as the schools are concerned.
- Install toilet bowls and toilet seats that offer a good, resilient option that is accepted by users.

In the sanitary industry, there are solutions such as the SATO pan and SATO stool toilets or equivalents that offer:

- Alternative to the classic manual flush toilet
- Toggle valve system opens under the effect of the weight of excreta
- Reduced amount of water for flushing
- Reduction of the odour of the pits and pipes in the cab and vector protection
- Different models and the possibility of customising or adapting
- Availability in the market

Girls' or women's toilets should be spacious enough to incorporate menstrual hygiene devices.

Another possibility of building sanitary facilities that are more innovative and adapted to certain realities of the three regions (Central, Kara, and Savanes) is to adopt a standard model of "prefabricated" sanitary block, the advantages of which are:

- Construction elements manufactured using moulds (on-site)
- On-site assembly
- Modular system facilitating specific sizing (number of cabins)
- Smooth concrete façades (no need for cladding; painting is possible
- Reduced construction time and material needs, resulting in lower costs
- Easy scalability
- Systematic integration of aeration and ventilation solutions

Figure 45: Prefabricated model of the walls of the concrete sanitary facilities

(Photo: Own elaboration 07/2025)

16.3.3. Hygiene infrastructure

The planned infrastructure is:

- Plan the construction of masonry and the installation of handwashing devices near the toilets connected to the water from the borehole on the one hand, and in front of the classrooms on the other hand
- Maintain the handwashing facilities currently available in schools by strengthening the maintenance system.
- Provide menstrual hygiene facilities in all girls' or women's booths in each school, market, or USP involved in the project.

16.3.4. WASH Services in markets

For the construction of sanitary blocks in the markets, it will be wise to integrate the following services to make the management of these infrastructures more efficient:

- Water sale
- Kiosk to buy snacks, credit, etc.
- Phone charging service

The integration of these services must be done based on a cost-effectiveness study. Also, the integration of these services can help to increase the use of toilets, which remains low.

In the context of our study, we recommend constructing standardized latrine blocks consisting of:

- 3 cabins for men + one cabin for persons with reduced mobility (PRM)
- 3 cabins for women + one cabin for PRM, spacious enough to accommodate menstrual hygiene facilities

On both the boys' and girls' sides, there is a privacy wall with a 1.5 m-wide corridor.

Interior dimensions:

- Men's cabin: 1.2 m × 1.2 m
- Men's cabin for PRM: 1.5 m × 1.2 m
- Women's cabin: 1.5 m × 1.5 m
- Women's cabin for PRM: 1.5 m × 1.5 m

16.3.5. Faecal sludge management

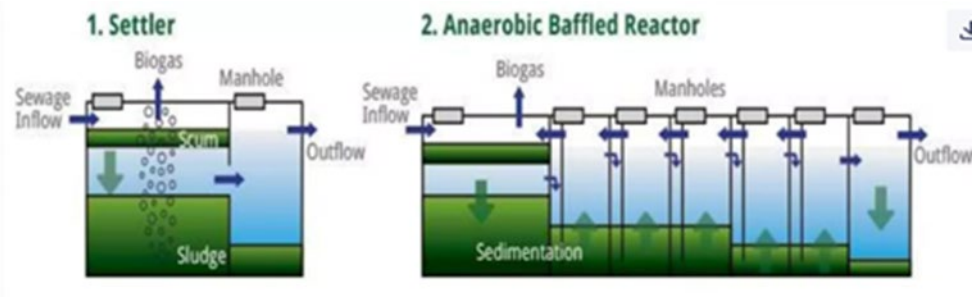
Scenario 1: *WASH infrastructure in urban and rural areas within a radius of 20 km or less from the faecal sludge treatment centre*

For this scenario, there is already a faecal sludge treatment centre that is within the radius of the type of infrastructure (school and market) to be served. The faecal sludge will be transported to the treatment centre for treatment.

Scenario 2: *WASH infrastructure in urban and rural areas within a radius of more than 20 km from the faecal sludge treatment centre*

For this scenario, it will be a question of planning the construction of the decentralized faecal sludge treatment system (DEWATS) for the treatment of faecal sludge that will come from the built pits. The DEWATS system consists of a Decanter + Anaerobic Filter + Plantine Bed. (International, 2019).

Figure 46: The explanatory diagram of the DEWATS system



(Source: Anaerobic Baffled Reactor, Solidarités International, https://octopus.solidarites.org/2019-06-anaerobic-baffled-reactor)

In the localities where the schools, the market, and the USP covered by the project are nearby, it will be wise to build a common DEWATS system for the treatment of faecal sludge from these different WASH infrastructures.

16.4. Recommendations for Household Vector Control

Based on the samples visited, the recommended interventions aim to reduce users' exposure to mosquitoes and other disease vectors through an integrated approach combining physical protection, building improvement, and occupant comfort:

- Identification of mosquito entry points:

Carry out a precise diagnosis of penetration areas (doors, windows, gaps, unprotected openings).

- Opening protection

Install metal screens or screens on doors and windows to limit the intrusion of insects. Treat high openings and ventilation in particular.

- Correcting construction defects

Intervene at the junctions between the roof and the walls to eliminate uncontrolled passages.
Install ceilings to reduce direct exposure to insects and, at the same time, improve indoor thermal comfort.

- Improved ventilation

Optimize natural ventilation through well-oriented and protected openings (cross ventilation).
The goal is to ensure sufficient comfort inside buildings, reducing the need to open unprotected doors and windows, which exposes occupants to mosquitoes.

17. Intervention approach

17.1. Architectural design

For our intervention, whether it is the rehabilitation or the design of new structures, the resilience of sanitary buildings (USP) is the common thread.

The resilience of Peripheral Care Units is based on an integrated approach, which simultaneously considers planning, resource management, the environment, and the robustness of the infrastructure.

Planning: This is the essential first step in designing the right infrastructure, including climate risk analysis, proper site selection, and integration of resilient building solutions.

Energy and water plan: energy sustainability and efficient water management are major levers. This involves the adoption of renewable solutions (solar, biogas), water storage, as well as reduction and recycling schemes.

Environment: Considering environmental impacts reduces vulnerabilities. The integration of waste management systems, the strengthening of water drainage, and the use of local ecological materials strengthen sustainability.

Infrastructure and technologies: the structural robustness of buildings, their ability to withstand climatic shocks (strong winds, rain, extreme heat), as well as the integration of innovative technologies (natural ventilation, double roofing, insulation) are priorities.

Thus, the resilience of the building is not limited to physical strength but encompasses a coherent set of planned measures to guarantee the continuity of health services even in the face of climatic and environmental hazards.

17.2. Resilient Construction Solutions & Techniques

The resilience of Peripheral Care Units (PSUs) is based on a series of architectural and technical measures aimed at strengthening the sustainability of buildings in the face of climatic and environmental hazards. These measures not only preserve the infrastructure but also ensure a healthy and comfortable environment for users.

Roofing: The use of technical solutions that strengthen ventilation, such as double and ventilated roofs, thermal insulation, and materials resistant to strong winds and heavy rains, can limit indoor overheating, reduce premature deterioration of buildings, and ensure better thermal comfort, while contributing to energy efficiency.

(Photo: Own elaboration, 07/2025)

Walls: Reinforcing walls with moisture- and crack-resistant materials, as well as treating basements against erosion and water infiltration, extends the life of infrastructure and reduces maintenance costs.

Windows and doors: The integration of resistant joinery, equipped with mosquito nets and weather protection, improves user safety, limits the proliferation of vectors, and promotes natural and cross-ventilation of spaces, thus reducing dependence on energy for air conditioning.

Landscaping: Stormwater management, appropriate landscaping, and the implementation of effective drainage devices enhance the protection of buildings. These measures reduce the risk of flooding, improve accessibility, and promote a healthier and safer environment for patients and staff.

Energy: The integration of renewable energy sources, such as solar panels and energy recovery systems, helps reduce the energy dependency of USPs while ensuring a stable supply. These solutions build resilience by allowing infrastructure to continue to operate efficiently in the event of power outages or other grid disruptions.

By combining these five components – roofing, walls, openings, landscaping, and energy – the design and rehabilitation of the USPs is part of a comprehensive resilience approach, ensuring the continuity of health services and the well-being of communities.

18. Resilience measures

Technical recommendations are formulated in terms of resizing, choice of materials, orientation of buildings, and energy sources.

This plan proposes a series of technical recommendations prioritized by trade, designed to be directly applicable to USPs and CMSs.

Earthworks & rainwater drainage

- The objective: to eliminate stagnation and protect the underpinning.
- Cleaning of the surroundings, minimal reprofiling of the slopes (≥ 2% outwards).
- Temporary building foot ditches + cleanliness tiles at the entrances.
- Installation of gutters + downspouts to masonry gutters or drainage trenches (gravel bed + geotextile).
- Creation of peripheral protective sidewalks (≥ 60 cm, slope 1–2%).
- Infiltration basin / vegetated valleys at the low points of the site.

Structural works & Structure

- The objective: stabilise, repair, and prevent structural issues.
- Crack assessment (mapping, plaster monitoring). Seal non-structural cracks (mortar + resin).
- Localized shoring in case of localized settlement (safety measure).
- Repair structural cracks (epoxy/grout injection, stainless-steel stitching).
- Repair sunken soils/floors (re-compaction / ground beams).
- Local reinforcement (stiffeners, horizontal/vertical ties) based on the diagnostic assessment.to diagnosis.

Waterproofing & roofing

- The objective: to eliminate infiltration and secure the roof.
- Replacement of perforated sheets, fixing of ridges, and repair of visible leaks.
- Anti-rust treatment of exposed steel joinery.
- Revision of wooden frames (purging of rotten parts, wood-boring treatment, reinforcements).
- If concrete slab: waterproofing (bituminous/PU layer + lifts).
- Standardisation of roofs (thick Alu/Alu-zinc sheet ≥ 0.5 mm) + under-roof insulation (reflective films).

Walls (types & pathologies)

- The objective: to restore the integrity and durability of the walls.
- Stripping wetlands/saltpetre, local haircuts when possible.
- Filling of micro-cracks (hydraulic coating + water repellent).
- Water-repellent exterior coatings + mud flaps on the bare supports.
- Washable interior paints in maternity wards/MG (sanitary class).
- Occasional replacements of altered agglomerations + upgrading of chains.

Exterior joinery (doors/windows), mosquito nets

- The objective: to secure, ventilate, and protect against vectors.
- Installation/retention of mosquito nets on all windows of the treatment/maternity rooms.
- Adjustment of hinges/locks, sealing of the days.
- Standardisation of installation: steel/aluminium windows with thermal break “with slats + mosquito net;” marine-varnished metal/hardwood doors.
- Integration of high/low ventilation grilles (mosquito net profile).
- Replacement of the dilapidated sash blocks; diffused lighting in the corridors.

Interior ceilings

- Objective: cleanliness, safety, acoustic/thermal comfort.
- Immediate: purge of wet patches, antifungal treatment.
- Washable PVC/HPL false ceilings in maternity wards/treatment rooms; technical traps.
- Sound insulation in waiting areas if required.

Coverings (floors & walls)

- Objective: hygiene, resistance, ease of maintenance.
- Immediate: repair of damaged joints, patching of dangerous areas.
- Non-slip floors (R10 min) in the maternity ward, sanitary facilities, patient circuits; Raised skirting boards.
- Earthenware wetland walls (≥1.2 m); PU resin in sensitive premises.

Ventilation & Thermal Comfort

- The objective: to reduce heat and odours, and to improve patient comfort.
- Immediate: ceiling fans/foot in maternity ward & after childbirth.
- Cross ventilation (opposite openings), low consumption extractors in sanitary facilities; Silent air fans.
- Ventilated roof or double roof
- Reflective films/clear roofing; Targeted air conditioning (delivery room) with maintenance protocol.

Accessibility for people with reduced mobility & Patient pathways

- The objective: universal accessibility and a step forward.
- Temporary ramps ≤ 5% on critical accesses; clear signage.
- Compliant ramps (slope ≤ 8%, landing/length, guardrails), PRM sanitary facilities (2 pilot sites first).
- Separation of GP/Maternity flows; Near women's toilets – suite of diapers (≤ 5 m).

Waterproofing (walls/slabs) & Associated pathologies

- The objective: to cut off rising humidity and infiltration.
- Immediate: local rework (PU putty, mud flaps).
- Waterproofing facades, anti-capillary barriers (injection if feasible).
- Waterproofing of roof terrace slabs (membrane + lifts), annual checks.

Wastewater & Waste Management (WASH Top-Up)

- Objective: hygiene, control of infectious risks.
- Sorting at source (3 color-coded bins), securing sharp objects.
- Dirty/clean circuit materialized; ban on open burning; Pit/incinerator improvement (refractories).
- Mini station (settling, filter) if volumes justify it.

Energy Management

- The objective: to improve energy efficiency and reduce the carbon footprint of USPs.
- Needs studies
- Installation of renewable energy systems (solar panels, solar water heaters) to power essential equipment.
- Implementation of energy management systems to optimize electricity consumption.
- Use of insulating materials in construction to reduce heating and cooling requirements.
- Raising awareness of the rational use of energy for staff and users

19. Operational Planning

This section discusses operational planning, detailing:

- The recommended implementation steps (studies, CAD, supervision).
- Integration of modular and local solutions.
- The role of the various partners (DISEM, DHAB, municipalities, delegated project owner).

The planning for the implementation of resilient health infrastructure is structured as follows:

19.1. Recommended Implementation Steps

Preparatory phase

- Validation of sites and land tenure security with local authorities.
- Carrying out feasibility studies (topographical, geotechnical, environmental, social).
- Development of the functional program and financial estimate (surface areas, equipment, energy, and water needs).

Design and planning phase

- Development of architectural and technical preliminary projects integrating resilience measures.
- Preparation of Tender Documents (RFP) with integration of technical clauses of sustainability and local solutions.
- Validation of projects in consultation with the technical services (DISEM and DHAB)

Handover and mobilization phase

- Tendering and selection of companies based on their technical capacity and commitment to employing local labour.
- Supply planning (e.g., equipment, materials, and prefabricated modules).
- Signing contracts and planning deadlines.

Execution and supervision phase

- Construction or rehabilitation of infrastructure (architecture, structure, electricity, WASH, outdoor facilities).
- Regular monitoring and coordination with the technical services.
- External supervision and quality control of the work.

Reception and transfer phase

- Provisional acceptance of the works and transfer to the communes and health districts.
- Training of maintenance personnel and managers.
- Final acceptance after warranty period

19.2. Integration of modular and local solutions

- Prefabricated modules: sanitary blocks, light metal frames, covered galleries.
- Local solutions: use of stabilised earth bricks, double roofing to limit heat, rainwater recovery systems, and natural cross ventilation.
- Energy: installation of scalable modular solar kits.
- WASH: Establishment of compact wastewater treatment systems and biomedical waste management.

19.3. Role of the different institutional partners

DISEM (Department of Infrastructure, Equipment and Maintenance) or Delegated Project Manager

- Development of technical standards and validation of plans.
- Technical supervision and quality monitoring.

- Coordination of post-construction maintenance activities.

DHAB (Directorate of Basic Hygiene and Sanitation)

- Integration of WASH standards into design.
- Monitoring of water, sanitation, and waste management systems.
- Training and awareness raising of communities on hygiene.

Municipalities and prefectures

- Provision and securing of the land.
- Community monitoring of construction sites.
- Proximity management of infrastructure after transfer.

19.4. Required expertise

The overall review of the data shows that most of the infrastructures examined have intersecting needs in terms of technical expertise, reflecting the need for an integrated and multidisciplinary approach.

Table 29: Needs for technical expertise for interventions

Areas of expertise	Description	Key Observation
Expertise in civil engineering and architecture	Most USPs and WASH infrastructures require specialized interventions for the assessment of building structure (walls, foundations, roofs) and the design of spaces adapted to health needs.	Cracks, infiltrations, and wear and tear of materials require in-depth diagnostics and architectural expertise to improve the functionality and resilience of spaces.
Expertise in energy and electrical installations	Several centres reveal failures in the energy supply, including undersized solar systems and weakened electrical installations.	Expertise in renewable energy and electrical engineering is essential to recalculate the capacity of solar systems and secure electrical installations.
Water, Sanitation, and Hygiene (WASH) Expertise	The main challenges are water supply, the absence or failure of sanitation systems (toilets, pits, drainage), and wastewater management.	WASH expertise is needed to properly size boreholes, rehabilitate drainage systems, and integrate sustainable, adapted, and innovative sanitation solutions to avoid health risks.
Expertise in topography and soil study	Some sites are located in low-lying or poorly drained areas, causing erosion and flooding problems.	The intervention of specialists in topography and geotechnics is essential to assess the bearing capacity of the soil, prevent structural risks, and recommend appropriate solutions.
Global expertise needs	The need for expertise goes beyond simple maintenance, requiring a multidisciplinary approach involving civil engineering, architecture, energy, hydraulics, and sanitation.	These various areas of expertise must be integrated to guarantee the safety, functionality, and resilience of health infrastructures in the face of climatic hazards and the growing needs of populations.

(Source: Own elaboration, 07/2025)

In conclusion, the need for expertise goes beyond simple maintenance: the recommended approach requires a multidisciplinary intervention mobilizing civil engineering, architecture, energy, hydraulics, and sanitation. This diversity illustrates the need for integrated interventions to ensure that health infrastructure is met in response to the needs formulated, and that health infrastructure is safe and resilient to climatic hazards.

20. Local market and implementation approach

This component focuses on the analysis of the local construction market, identifying:

- Opportunities related to local employment and prefabrication.
- Logistical, land, and supply risks likely to influence the implementation of the works.

Table 30: Local market analysis and implementation approach

Areas of analysis	Opportunities	Risks	Mitigation measures
Local construction market	• Presence of local construction companies. • Availability of traditional materials (cement, steel, wood, sheet metal). • Skilled labour in traditional trades.	• Poor mastery of bioclimatic and resilience techniques. • Dependence on imports for certain specific materials (thermal insulation, solar equipment, water treatment systems).	• Strengthen the training of craftsmen. • Introduce specifications integrating resilience solutions. • Develop partnerships for the grouped import of specific materials.
Local employment and prefabrication	• Direct and indirect job creation. • Development of a local prefabrication sector (blocks, frameworks, sanitary modules). • Reduced costs and lead times thanks to local production.	• Lack of equipped local workshops. • Risk of variable quality of local products. • Weak structuring of the value chain.	• Support small prefabrication units. • Standardize production (quality control). • Integrate local employment into contractual clauses.
Logistics and accessibility	• Regional integration dynamics (roads, logistics corridors) • Possibility of mobilizing local resources for transport.	• Difficulties in accessing landlocked sites. • Delays in the delivery of imported materials. • Seasonal dependency (roads are impassable in the rainy season).	• Plan supplies according to the seasons. • Favor locally available materials. • Anticipate buffer stocks for sensitive equipment.
Land and site availability	• Possible collaboration with local authorities for the identification of land. • Community integration fostered.	• Recurrent land conflicts. • Lack of clear land titles. • Long administrative procedures.	• Legally secure the land before launch. • Involve local authorities from the planning phase. • Provide for a land mediation mechanism.

(Source: Own elaboration, 07/2025)

21. Conclusion

The study made it possible to draw up an inventory of the health infrastructure in the targeted areas. It highlights:

- A high vulnerability of buildings to climatic hazards (extreme heat, floods, strong winds, high humidity, and water stress).
- Significant needs for rehabilitation, particularly in terms of roofs, foundations, and ventilation systems.
- Inadequacies in WASH infrastructure (water, sanitation, hygiene, waste management) that compromise the quality of care and disease prevention.
- Deficits in biomedical equipment, energy, and adapted storage systems (cold chain, drug storage).
- A functional organisation that is often inadequate, with cramped spaces or poorly adapted to care services, particularly in maternity services
- The need to integrate climate resilience measures into any new construction or rehabilitation (such as double roofing, covered galleries, sunshades, sustainable water and energy management, etc.).

A consolidation of the national standard for sanitary infrastructure is necessary to ensure a clear and practical orientation defining precise requirements related to the multidisciplinary planning of spaces and equipment, resilience measures, construction materials, and execution methods, as well as the control and management of construction sites.

In this conclusion, we also emphasize the crucial importance of the management of construction work in healthcare settings. Whether it is a question of new infrastructure or rehabilitation, intervening in such a sensitive environment requires:

- Careful planning to limit disruptions to operations and ensure the safety of patients, staff, and visitors.

- A key hazard assessment that includes contamination of the air by dust, noise, vibration, water, or electricity interruptions, and exposure to hazardous materials.

- Definition of risk mitigation measures: It is essential to set up a zoning system with demarcation, construction fence, and visible signage of work zones, separate traffic routes for workers, and a phasing of the work adapted to medical schedules.

- Waste management in a studied way: sorting, reuse, and regulatory landfill.

- Protection of medical areas by tarpaulins, airlocks, daily cleaning, and strict dust management (industrial vacuum cleaners, sprinklers, barriers).

- Ensure secure electricity supply and protection of existing equipment.

- Ongoing communication with stakeholders, regular inspections, and an emergency management plan.

It is recommended to work with experts and companies specialized or experienced in health infrastructure in the Togolese context, to document all procedures and to carry out a risk assessment before, during, and after the work to ensure compliance and quality of interventions.

Capacity building in the field of infrastructure construction and maintenance, especially in landlocked sites, is an important element that will allow for better quality of construction as well as better management of the maintenance of infrastructure and equipment.

The establishment and improvement of WASH (Water, Sanitation, and Hygiene) infrastructure in schools is an urgent matter and an essential lever for strengthening hygiene and creating an environment conducive to learning. However, the management of this work must take into account the specificity of

the school environment, where the safety of the children and the continuity of educational activities are a priority, and this involves:

- Work should be scheduled and managed to minimise disruption to classes and to protect children from construction hazards. Some of the main risks include accidental access to work zones, material-related injuries, and temporary pollution generated by dust or waste. To mitigate these risks, it is essential to implement a thoughtful, fast, and modular approach and work area protection with demarcation, clear signage, and an organisation adapted to the school rhythm.

- Rigorous management of waste, storage of materials, and water points is necessary to also contribute to preserving the quality of the environment.

- Regular coordination between the school, the client, the company, and the school management committee helps to anticipate challenges and maintain compliance with WASH standards.

- Before commissioning, technical checks must be carried out to ensure that the installations are working properly.

Finally, maintenance plays a central role in guaranteeing the durability of the structures through preventive actions and regular monitoring. Reactive, systematized, and timely maintenance will limit the health risks related to leaks, obstructions, or contamination. The training of local staff and the existence of a dedicated budget are essential to establish sustainable management.

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Appendices

Appendix 1 - Table of supply infrastructure in the seven schools

Schools	Photos of supply infrastructure	
EPP Tindjassi Group B	 Well, without a pulley	 Overview
Tindjassi Public Kindergarten	 Tap connected to the Tde network	
EPP Atchamgbade G/A	 Open well	 The appearance of the well

EPP Djofaga	 Tap connected to the Tde network	
EPP SIOU Central Office	 Tap connected to the Tde network	
EPP Nadjak	 Manually driven pump	 Elevated tank powered by a solar pump to allow gravity flow at the terminals

Appendix 2 - Photos of the supply infrastructure carried out in the seven schools

Schools	Sanitation infrastructure photos	
EPP Tindjassi Group B	 VIP dry flush toilet	 Toilet condition
Tindjassi Public Kindergarten	 Toilet covered with vegetation	 A Turkish potty installed in the VIP toilet
Tchalo School		

EPP Kolina	 Completely degraded latrine block (out of use)	 Side view
JEP Kolina	 Dry flush toilet	 Toilet overview
EPP Atchamgbade G/A	 VIP Washroom	 VIP Washroom

EPP Djofaga	 VIP dry-flush latrine block	 Side view
EPP Siou Centrale	 VIP dry flush toilet	 Toilet overview
EPP Nadjak	 ECOSAN dry-flush toilet for kindergarten	 Overview of VIP Primary School Toilets

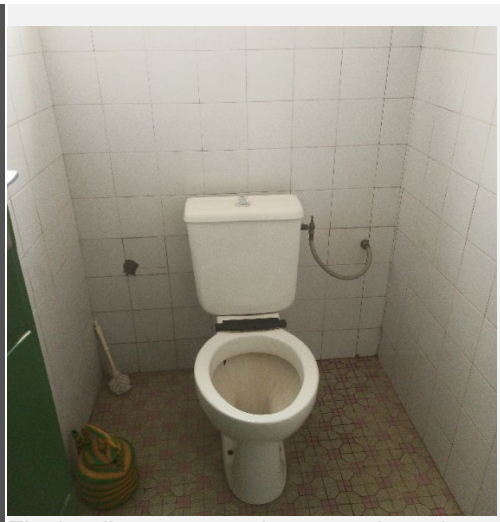
Appendix 3 - Photos of hygiene infrastructure in schools

Schools	Photos of hygiene infrastructure	
EPP Tindjassi Group B		
	Non-functional hand wash device	Open-air room reserved for menstrual hygiene
Tchalo School		
	Hand washing device	
EPP Kolina		
	Hand-washing device	Hand-wash device with soap

JEP Kolina	 Non-functional handwashing device	
EPP Atchamgbade G/A	 Handwashing basin device currently in use	 Non-functional handwashing tank
EPP Djofaga	 Handwashing device	 Another handwashing device

EPP Nadjak	 Handwashing device	 Tippy tap (here, the canisters are used)

Appendix 4 - Photos of the DPS sanitation infrastructure

DPS	Sanitation infrastructure photos	
DPS Mo (CHP Djarkpanga)	 Dry-flush latrine block for patients and companions belonging to the CHP	 Non-functional septic flush toilet for HPC patients
DPS Kozah (Kara polyclinic)	 Flush toilet connected to a septic tank	

Appendix 5 - Photos of hygiene facilities in DPS

DPS	Photos of hygiene infrastructures	
DPS Mo (CHP Djarkpanga)	 Non-functional handwashing device owned by the HPC	 Sink connected to the non-functional septic tank owned by the CHP
DPS Kozah (Kara Polyclinic)	 Sink connected to a sump	

Appendix 6 - Photos of the state of the infrastructure of the markets visited

Markets	Infrastructure photos	
Tindjassi Market	 Latrine block overview	 Dry flush toilet
Large Sokode Market	 Manual flush Turkish pot toilet	 Mechanical flush toilet for people with reduced mobility
Namare Market	 VIP restrooms for men	 VIP restrooms for women

Appendix 7 - Photos of faecal sludge treatment centres

Centres	Infrastructure photos	
GEDEC Sokode		
	Final leachate treatment basin	Residual sludge drying bed
GEDEC Kara		
	Residual sludge drying bed	Final leachate treatment basin
GEDEC Dapaong		
	Final leachate treatment basin	Residual sludge drying bed

Appendix 8 -Summary table of the length of the seasons/months covering Togo

Location	Rainy seasons	Estimated	Dry seasons	Estimated	Dominant characteristics
North (Savanes, Kara, North Central)	May to October (concentrated rainfall)	5-6 months	November to April (dry season marked by the Harmattan)	6-7 months	Sudanese climate, clear dry/rainy alternation, high interannual variability, frequent droughts
South (Maritime, Plateaux, Lomé)	Two rainy seasons: April-July and September-November	6-7 months accumulated	Two dry seasons: December-March (large dry) and August (small dry)	5-6 months accumulated	Sub-equatorial climate, higher humidity, more regular rainfall, risk of flooding

Appendix 9 - Presentation of Infrastructure Maintenance in the centres visited

Establishment Mom	Infrastructure maintenance	Frequency of infrastructure maintenance	Is there a tracking system to flag maintenance needs?	Description
USP Tindjassi	Yes	Only if needed	YES	Staff inform nurses if a facility breaks down or malfunctions
USP Tchalo	Yes	Only if needed	NO	Observation made by USP staff
USP Kolina	Yes	Regular	YES	Yes, staff statement
USP Kaza	Partial	Only if needed	NO	By observation of the USP staff
USP Atchangbade	No	Only if needed	NO	Staff findings
USP Tenega	Partial	Only if needed	NO	By staff report
CMS Siou	Yes	Regular	YES	The hygiene assistant handles maintenance
USP Namare	No	Only if needed	NO	By observation of the USP staff
CMS Dakpankpergou	Partial	Only if needed	NO	No monitoring system; it’s based on staff observations
CMS Sagbiebou	Partial	Only if needed	NO	By staff report

Appendix 10 - Table presenting the risks at the sites visited

Name of the institution	Flood	Harmattan	Vandalism	Network disconnection	Erosion	Deposits of water stagnation	Comments	Animal presence
USP Tindjassi	NO	NO	YES	NO	NO	YES		YES
USP Tchalo	YES	NO	NO	NO	NO	NO	A strong wind uncovered the roof at the beginning of the rainy season	YES
USP Kolina	YES	NO	NO	YES	NO	YES		YES
USP Kaza	NO	NO	NO	NO	YES	NO		NO
USP Atchangbade	NO	NO	YES	NO	NO	NO		YES
USP Tenega	NO	NO	NO	NO	NO	YES		YES
CMS Siou	YES	NO	NO	NO	NO	YES		NO
USP Namare	YES	NO	NO	NO	YES	NO	Water stagnation and the rainy season, especially in August	YES
CMS Dakpankpergou	NO	NO	NO	NO	YES	NO		YES
CMS Sagbiebou	NO	YES	NO	YES	YES	YES		YES

Appendix 11 -Table relating to the year of construction of USP spaces

Name of the institution	Built area (m2)	Site area (m2)	Year of construction	Other to be specified	Fence	Description of the condition
USP Tindjassi	305	40,000	The General Medicine building was built in 1985, and the maternity ward was built in 2015	The toilets were built in 1985 and fitted out in 1993	NO	No fence
USP Tchalo	411	10,000	1990		NO	
USP Kolina	430	11,727	1988 for the general medicine building, 2020 for the maternity ward		NO	
USP Kaza	11	328.08	1992		NO	
USP Atchangbade	323	10,000	There is only one functional block, built in 2013		NO	N/A
USP Tenega	412	2,000	Building 1 (care block with maternity) and the extension (laboratory, pharmacy, store)		NO	No fence on the site
CMS Siou		2,690	Maternity 1953 / new medical building in 2015, laboratory, pharmacy 2020	Former Togo Pharma building	YES	Fenced in masonry
USP Namare	229	11,221	A care block combines maternity, vaccination rooms, sanitary facilities, and accommodation in one.		NO	
CMS Dakpankpergou		28,523	Built in 2014 and renovated in 2022	Housing	NO	
CMS Sagbiebou	214	40,000	2007 construction of the general medicine block and rehabilitation by SSECQU 2021, the presence of an unfinished building on the site		NO	Fenced just for 100 m

Appendix 12 -Table presenting the diagnosis of water supply infrastructure in schools

Entity Name	Type of main water source	Year-round availability (including dry season)	If not, how do you get your water during these periods?	Is the school in charge of the technical and budgetary management of the water supply system?	Is there a local maintenance capacity (spare parts available, trained personnel)?	Is there a tracking or alerting system to report breakdowns or maintenance needs?	If no, specify why	Is the budget sufficient to cover basic needs?	Where do these financial resources come from?	How are the funds managed and monitored?
EPP Tindjassi Group B	Drilling and wells equipped with manual or motorized pumps (Pulley wells)	YES		YES	YES	YES		NO	Community membership fee	COGEP and APE
Tindjassi Public Kindergarten	Connection to the water distribution network (Tde)	YES		NO	YES	NO		NO		
Chalo School	Drilling and wells equipped with manual or motorized pumps	NO	Nearby structures (well, borehole, fire hydrant, etc.)	NO	NO	NO	Lack of funds	NO		
EPP Kolina	Drilling and wells equipped with manual or motorized pumps	YES	Nearby structures (well, borehole, fire hydrant, etc.)	YES	NO	YES		NO	Community membership fee	OCDI, COGEP, and APE
JEP kolina										
EPP Atchamgbade G/A	Open Well	NO	Nearby structures (well, borehole, fire hydrant, etc.)	YES	NO	NO	The source is the well	NO		
EPP Djofaga	Connection to the water distribution network	NO	Nearby structures (well, borehole, fire hydrant, etc.)	YES	YES	NO		NO	National Grant	COGEP and APE
EPP SIOU Central Office	Connection to the water distribution network	NO	Nearby structures (well, borehole, fire hydrant, etc.)	NO	YES	NO		NO		COGEP and APE
EPP Nadjak	Boreholes and wells equipped with solar pumps	YES		YES	YES	YES	No line for maintenance	NO		

Appendix 13 -Table presenting the diagnosis of sanitation infrastructure in schools

Entity Name	What type of toilet do patients/school children use?	Is the toilet used by the staff different?	Is the toilet used by teachers different?	Do users (mainly patients) find the toilets accessible?	Do users find the toilet comfortable and adapted to their specific needs (e.g., postpartum women)?	Are the pits easily drainable (volume, access for trucks, etc.)?	What is the ratio of toilets to users? (Divide the maximum number of users by the number of toilet stalls.)	Are the toilets functional?	Does the construction of the toilets consider climatic risks (elevation, ventilation, lack of water, etc)
EPP Tindjassi Group B	VIP dry toilet	NO	NO	YES	NO (premises giving off the smell)	NO	61-100	Yes	No
Tindjassi Public Kindergarten	Manual flush toilet	NO	NO	YES	YES	YES	26-60	Yes	Partial
Chalo School	VIP dry toilet	NO	NO	YES	YES	YES	61-100	Partial	No
EPP Kolina	VIP dry toilet	NO					26-60	No	No
JEP Kolina	VIP dry toilet	NO	NO	YES	NO (to have pots)	YES	1-25	Yes	Yes
EPP Atchamgbade G/A	VIP dry toilet	YES	NO	YES	YES	YES	>100	Yes	Partial
EPP Djofaga	VIP dry toilet	NO	NO	YES	NO	YES	61-100	Partial	Yes
EPP Siou Centrale	VIP dry toilet	NO							
EPP Nadjak	VIP dry toilet	NO					26-60	Yes	No

Appendix 14 - Table presenting the diagnosis of faecal sludge management in schools

Entity Name	Who is in charge of the pit-emptying service?	How often is the oil change carried out?	Is there a budget for the emptying of the pits?	Where do these financial resources come from?	Is the budget sufficient to cover basic needs?	How are the funds managed and monitored?	Where is faecal sludge transported?
EPP Tindjassi Group B	There has been no emptying yet	Not applicable	NO	Community membership fee	NO	COGEP	Not known
Tindjassi Public Kindergarten	There has been no emptying yet	Not applicable	NO	Community membership fee	NO	COGEP	Not applicable
Chalo School	There has been no emptying yet	Not applicable	NO	National Grant	NO	COGEP	
EPP Kolina	There has been no emptying yet	Not applicable	NO	The toilets are out of order	NO	COGEP	Not known
JEP Kolina	There has been no emptying yet	Not applicable	NO	National Grant	NO	COGEP	Not known
EPP Atchamgbade G/A	There has been no emptying yet	Not applicable	YES	National Grant	NO	COGEP	Not known
EPP Djofaga	There has been no emptying yet	Not applicable	NO	National Grant	NO	COGEP	Agricultural field
EPP Siou Centrale	There has been no emptying yet	Not applicable	NO	National Grant	NO	COGEP	
EPP Nadjak	There has been no emptying yet	Not applicable	NO	National Grant	NO	COGEP	Not applicable

Appendix 15 - Table presenting the diagnosis of hygiene infrastructures in schools

Entity Name	What handwashing devices do students use?	Is soap available near the handwashing device?	Are the washing devices used by teachers different?	Q404: Are the handwashing devices functional and used?	Are soap and water available in sufficient quantities?	Are handwashing facilities accessible to everyone (children, patients, people with reduced mobility)?	Are specific facilities for menstrual hygiene in place?
EPP Tindjassi Group B	Tap + water tank (fixed or mobile)	NO	YES	NO	NO	NO	YES
Tindjassi Public Kindergarten	Tap + water tank (fixed or mobile)	NO		NO	NO	NO	NO
Chalo School	Tap + water tank (fixed or mobile)	NO		YES	YES	YES	NO
EPP Kolina	Tap + water tank (fixed or mobile)	NO		YES	YES	YES	NO
EPP Atchamgbade G/A	Tap + water tank (fixed or mobile)	NO		YES	YES	YES	NO
EPP Djofaga	Tap + water tank (fixed or mobile)	NO		YES	YES	NO	NO

EPP SIOU Central Office	Tap + water tank (fixed or mobile)	NO	YES	YES	YES	YES	NO
EPP Nadjak	Tippy-Tap	NO	YES	YES	YES	YES	NO

Appendix 16 -Table presenting the diagnosis of the financing of WASH services in schools

Entity Name	Who are the actors involved in the daily management of water, hygiene and latrines?	If other, specify	What is their motivation?	What are the main WASH expenses incurred	What expenses are not currently covered	Is there a tracking or alerting system to report breakdowns or maintenance needs?	Is there a budget for managing WASH services?	Where do these financial resources come from?	Is the budget sufficient to cover basic needs?	How are the funds managed and monitored?
EPP Tindjassi Group B		Establishment's health clubs	Voluntary work	- Replacement of products (soap, cleaner) - Maintenance of toilets (cleaning, disinfection)	- Emptying of pits - Solid waste management - Replacement of equipment (taps, flushing toilets, pipes)	YES	NO	Community membership fee	NO	COGEP
Tindjassi Public Kindergarten	staff		Part of the job description	- Replacement of products (soap, cleaner) - Maintenance of toilets (cleaning, disinfection)	- Emptying of pits - Solid waste management - Replacement of equipment (taps, flushing toilets, pipes) - Other	NO	NO	Community membership fee	NO	COGEP
Chalo School	Users Staff		Voluntary work	- Replacement of products (soap, cleaner)	- Emptying of pits - Solid waste management	NO	YES	National Grant	NO	Inspector Accountant COGEP

				- Maintenance of toilets (cleaning, disinfection)	- Replacement of equipment (taps, flushing toilets, pipes)					
EPP Kolina	Users Staff WASH Committee		Voluntary work	- Replacement of products (soap, cleaner) - Replacement of equipment (faucets, flushing toilets, pipes)	- Toilet maintenance (cleaning, disinfection) - Pit emptying - Solid waste management - Other	YES	NO		NO	COGEP
EPP Atchamgbade G/A	WASH Committee		Voluntary work	- Toilet maintenance (cleaning, disinfection) - Replacement of products (soap, cleaner) - Replacement of equipment (taps, flushing, pipes)	- Pit emptying - Solid waste management - Other	YES	YES	National Grant Other (specify)	NO	COGEP
EPP Djofaga		Children's Government	Voluntary work	- Replacement of equipment (faucets, flushing toilets, pipes) - Replacement of products (soap, cleaner)	- Toilet maintenance (cleaning, disinfection) - Pit emptying - Solid waste management - Other	NO	NO	National Grant	NO	COGEP APE Treasury
EPP SIOU Central Office	Users Staff		Voluntary work	- Replacement of equipment (faucets, flushing, pipes) - Replacement of products (soap, cleaner) - Maintenance of toilets (cleaning, disinfection)	- Pit emptying - Solid waste management - Other	NO	YES	National Grant Partner Grant Other (specify)	NO	COGEP
EPP Nadjak		Children's Government	Voluntary work	- Replacement of equipment (faucets, flushing, pipes) - Replacement of products (soap, cleaner) Maintenance of toilets (cleaning, disinfection)	- Pit emptying - Solid waste management - Other	YES	YES	National Grant	NO	COGEP

Appendix 17 - Table presenting the diagnosis of sanitation infrastructures in the DPS

Entity Name	What type of toilet is used by staff?	Toilets used by staff are at	What type of toilets are used by the staff	Is the toilet used by visitors (accompanying person) different?	Do users find the washrooms accessible?	Do users find the toilets comfortable and adapted to their specific needs?	Are the pits easily drainable (volume, access for trucks, etc.)?	What is the ratio of toilets to users?	Are the toilets functional?	Does the construction of the toilets take into account climatic risks (elevation, ventilation, lack of water, etc)
DPS Mo (CHP Djarkpanga)	Does not exist	Does not exist	Does not exist	Does not exist	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
DPS Kozah (Kara Polyclinic)	Mechanical flush toilet connected to a septic tank	The interior	Mechanical flush toilet connected to a septic tank	YES	YES	YES	YES	1-25	Partial	Partial

Appendix 18 - Table presenting the diagnosis of faecal sludge management (DPS)

Entity Name	Who is in charge of the pit-emptying service?	How often is the oil change carried out?	Is there a budget for the emptying of the pits?	How are the funds managed and monitored?	Where is faecal sludge transported?	What is the average cost of an oil change?
DPS Mo (CHP Djarkpanga)					Not applicable	
DPS Kozah (Kara polyclinic)	Municipality	onetime every 3 years	NO	COGES	Treatment centre	15,000

Appendix 19 - Table presenting the diagnosis of hygiene infrastructures in the DPS

Entity Name	Is soap available near the handwashing device?	Are the washing devices used by visitors different?	Are the handwashing devices functional and used?	Are soap and water available in sufficient quantities?	Are handwashing facilities accessible to everyone (children, patients, people with reduced mobility)?	Are specific facilities for menstrual hygiene in place?

DPS Mo (CHP Djarkpanga)						
DPS Kozah (Kara Polyclinic)	NO	NO	YES	YES	NO	NO

Appendix 20 -Table presenting the diagnosis of the financing of WASH services in DPS

Entity Name	Who are the actors involved in the daily management of water, hygiene and latrines?	What is their motivation?	What are the main WASH expenses incurred?	Is there a tracking or alerting system to report breakdowns or maintenance needs?	Is there a budget for managing WASH services?	Is the budget sufficient to cover basic needs?	How are the funds managed and monitored?
DPS Mo (CHP Djarkpanga)							
DPS Kozah (Kara polyclinic)	Staff WASH Committee	Part of the job description	Emptying of pits Solid waste management Replacement of products (soap, cleaner) Maintenance of toilets (cleaning, disinfection) Replacement of equipment (taps, flushing, piping)	YES	YES	YES	DPS Accountant

Appendix 21 -Table presenting the diagnosis of water supply and sanitation infrastructure in the markets

Entity Name	What sanitary facilities are available in this sanitary block?	Are all the infrastructures functional?	Is soap available near the handwashing device?	Does infrastructure take climate risks into account?	What type of toilet was chosen and why?	What is the capacity of the sanitary facilities, and how is it determined?	Describe the water supply system and wastewater collection process for this comfort station. How is water supplied, and how is wastewater discharged?	Are sanitary facilities accessible to all?	Are specific facilities for menstrual hygiene in place?	Are the sanitary facilities comfortable and clean?	Are the tanks (if applicable) easily drainable?
Tindjassi Market	- 1 Latrine block with 2 toilets and a shower for men - 1 Latrine block with 2 toilets and a shower for women	YES	NO	YES	VIP dry toilet	Since the commissioning, attendance has been low because of anthropological reasons (it is not convenient according to the culture of the natives to go to the market and fulfill their needs). Those who use them often come from far away.	Water is supplied from the mosque's well, located in the neighbourhood. These toilets use alternating pits. There has not yet been any emptying.	No, these toilets are built without access for children and PRM in mind.	NO	YES	YES
Sokode Market	- one Latrine block with 4 toilets and onecubicle for people with reduced mobility	YES	YES	YES	Turkish Pot Toilet with Manual Flush Connected to Septic Tank	These toilets are sized according to the population of the market, which is estimated at 1,500 users of all types.	Water is supplied from taps connected to an elevated tank connected to the Tde network. There is also a reserve of water	YES	NO	YES	YES

	- One Latrine block with 4 toilets and one cubicle for people with reduced mobility for women						contained in an underground tank. Wastewater is collected by the City Hall's emptying trucks.				
Namare Market	- 2 Men's cabins - 2 cabins for women	YES	NO	YES	VIP dry toilet	There is no adequate management. The number of cabins can meet local needs because the market is rural.	The water is supplied by a good lady hairdresser from a borehole in the neighbourhood. These toilets are in alternating pits. There has not yet been an emptying.	No, these toilets are built with access for children and PRM in mind.	NO	YES	YES

Appendix 22 -Table presenting the diagnosis of the management of WASH services in the markets

Entity Name	Who is the project manager of the sanitary block (who owns the structure)?	Who is responsible for the day-to-day management of processing operations and infrastructure maintenance?	What are the main tasks of operational management, upkeep, and maintenance of these toilet blocks?	Is water available all year round? If not, how do you get your water during these periods?	How is the management of wastewater generated by the sanitary blocks (mains drainage, or regular emptying, etc.) organised?	How often is the pit emptied (not applicable if the block is connected to the sewerage system)?	Where is wastewater transported?	How are users informed and made aware of the correct use of sanitary facilities?	What are the major challenges encountered in the day-to-day management of this sanitary block, and how are they overcome?
Tindjassi Market	Town hall	The Technical Services Department provides maintenance An employee of the Town Hall takes care of the maintenance	Maintenance of the premises. Reception and orientation of customers	NO Supply from nearby boreholes	VIP type dry toilet, so not applicable	Not applicable	Not applicable	By raising awareness in the market	Lack of water nearby Awareness raising on the correct use of toilets
Sokode Market	Town hall	The Technical Services Department provides maintenance AFMUCAB takes care of the maintenance	Maintenance of the premises. Reception and orientation of customers Disinfection of the premises	NO Supply from nearby boreholes	By regular emptying	Not drained yet	At the municipality's faecal sludge treatment centre	For each block, there is an agent who is responsible for guiding and explaining to users	Water shut off Security issue related to the Market Closure
Namare Market	Town hall	The Technical Services Department provides maintenance A female volunteer takes care of the maintenance	Maintenance of the premises	NO Supply from nearby boreholes	VIP type dry toilet, so not applicable	Not applicable	Not applicable	By raising awareness in the market	Lack of water nearby Awareness raising on the correct use of toilets

Appendix 23 -Table presenting the diagnosis of financing of WASH services in the markets

Entity Name	What are the sources of funding for the management and improvement of health infrastructure?	Are there any financial contributions from users or traders of the market for the operation of the sanitary block? If so, what are the rates or amounts of contributions?		What are the main items of expenditure?	What is the average cost of an oil change?	How is revenue managed? Is there a business plan?	What are the transparency and admissibility mechanisms in the financial management of this health block?	Is this kind of infrastructure profitable?
Tindjassi Market	Town hall	NO	Payment of staff present on the sanitary blocks	Not applicable	No revenue No business plan	Not applicable	Not applicable	
Sokode Market	Town hall	YES (XOF 50 for urinating and XOF 100 for toileting)	Purchase of water during power cuts. Purchase of disinfectant products. Tile washing products. Payment of water bills Plumbing maintenance. Payment of assigned personnel	XOF 30,000				
Namare Market	Town hall	NO	NO	Not Applicable	No revenue No business plan	Not applicable	Not applicable	

Appendix 24 - Table presenting the diagnosis of the infrastructures of faecal sludge treatment centres

Entity Name	Describe the technologies and processes used for wastewater and faecal sludge treatment?	Where is the treated effluent discharged?	Are there processes for the recovery of treated products (irrigation water, liquid and solid fertilizers, etc.)?	What is the centre's current processing capacity and planned capacity?	Where does the wastewater and faecal sludge treated in the centre come from (the information must make it possible to map the extent of the service)?	Does the infrastructure take into account climate risks (elevation, ventilation, lack of water, etc.)?
GEDEC Sokode	The faecal sludge from the septic tanks collected by a dump truck is dumped on the beds, which have the Φ150 plastered pipes covered by sand, and then the paving stones. Here, there are 3-bed compartments. The leachate from sedimentation at the beds is directed into tanks for final treatment. The water from this treatment is discharged into the environment. The remaining solid material is treated and will be used as compost.	The treated effluent is discharged into the environment.	Yes, but only the dried sludge is used as compost	The capacity is 15 to 20 truck trips of 12m3 per month The planned capacity is 30 truck trips of 12 m3 per month	- The urban area of the commune of Tchaoudjo 1 (canton of Sokode and Kpangalam). - The other communes, in particular Tchaoudjo 2, 3, and 4, as well as the communes of Bassar	Yes, the chosen site is made on the basis of environmental and climatic studies.
GEDEC Kara	Town hall					
GEDEC Dapaong	The faecal sludge from the septic tanks collected by a dump truck is dumped on the beds, which have the Φ150 plastered pipes covered by the sand, and then the paving stones. Here, there are 8 settling basins connected in series using manholes. The leachate flow system is gravity-based. The water from this treatment is discharged into nature. The rest of the solid material is processed and used as compost.	The treated effluent is discharged into the environment.	Solid products from processing are recovered by 2 operators (AFI TOGO and ISU TOGO).	The capacity is 3 truck trips of 12 m3 per week. The planned capacity is 5 trucks per week.	- Municipality of Tone 1, 2, 3, and 4. - Municipality of Cinkassé 1 and 2.	Yes, the chosen site is made on the basis of environmental and climatic studies.

Appendix 25 - Table presenting the diagnosis of the management of faecal sludge treatment centre services

Entity Name	Who is the project manager of the processing centre (who owns the structure)?	Who is responsible for the day-to-day management of processing operations and infrastructure maintenance?	What are the main tasks of operational management, service, and maintenance of the processing centre?	What measures are taken to ensure the quality and safety of treated water before it is discharged or reused?	How are staff trained and prepared to manage processing centre operations?	How is the acceptability of the neighbouring populations? Have there been any outreach activities to inform them of the activities of the treatment centre?	What are the main challenges faced in the management of the centre, and how are they overcome?
GEDEC Sokode	Sokode Town Hall	The Technical Services Department (DST) of the City Hall	• Sludge collection service, • Processing Service • Maintenance service • Maintenance service	The treated water is taken and analysed before being discharged into the environment. But, currently, according to the Technical Referent, the analysis of this water has not been carried out for some time	The staff is trained through the GEDEC project through capacity-building training on the use of the tools.	The acceptability of the neighbouring populations is good. Awareness-raising was done against them through CDQ, CVD, CCD, and community radio stations	• Lack of maintenance of equipment, • Lack of operational staff (maintenance workers) • Corruption of sludge collection officers • Lack of hierarchical involvement
GEDEC Kara	Kara Town Hall	The Technical Services Department (DST) of the City Hall	• Sludge collection service, • Processing Service • Maintenance service • Maintenance service	The treated water is taken and analysed before being discharged into the environment.	The staff is trained through the GEDEC project through capacity-building training on the use of the tools.	The acceptability of the neighbouring populations is good. Awareness-raising was done against them through CDQ, CVD, CCD, and community radio stations.	
GEDEC Dapaong	Dapaong City Hall	The Technical Services Department (DST) of the City Hall	• Sludge collection service, • Processing Service • Maintenance service • Maintenance service	The treated water is taken and analysed before being discharged into the environment	The staff is trained through the GEDEC project through capacity-building training on the use of the tools.	The acceptability of the neighbouring populations is good. Awareness-raising was done against them through CDQ, CVD, CCD, and community radio stations	• Vandalism • Theft of faucets

Appendix 26 - Table presenting the financing diagnosis of faecal sludge treatment centres

Entity Name	What are the main sources of funding for the management and maintenance of the treatment centre?	Are there financial contributions from users, local businesses (dump trucks), or municipalities to support the centre's operations? If so, what are the rates or amounts of contributions?	What are the main items of expenditure?	How are funds allocated and managed to ensure the proper functioning and continuous improvement of the centre? Is there a business plan?		What transparency and accountability mechanisms are in place for the financial management of the centre?	Is this kind of infrastructure profitable?
GEDEC Sokode	• The City Hall's own fund • Partners or associations	NO	Paying agents The faecal sludge treatment plant is invited to an association called FECAQSO.	Normally, it is the municipal council that should allocate the funds, but currently, it is EXPERTISE France that pays the 2 referents (Technical and Financial) No, there is no business plan.	Due to a lack of resources, the City Council has not yet put in place the transparency and accountability mechanism.	No, the centre is a public service.	
GEDEC Kara	• The City Hall's own fund • 40% of the budget is financed by GEDEC	NO	• Fuel consumption • Light repair of machinery	• The City Council allocates 50% (budget line). • GEDEC allocates 40% (this support ends in 2026).	Due to a lack of resources, the City Council has not yet put in place the transparency and accountability mechanism.	Yes, but from 2030, according to GEDEC	

GEDEC Dapaong	• The City Hall's own fund • 40% of the budget is financed by GEDEC	NO	• Fuel consumption • Light repair of machinery	• The City Council allocates 50% (budget line) • GEDEC allocates 40% (this support ends in 2026 • There is a business plan	Due to a lack of resources, the City Council has not yet put in place the transparency and accountability mechanism.	Yes, but from 2030, according to GEDEC

Appendix 27: Data collection forms

Enquête WASH - USP

(à intégrer dans le formulaire principal USP)

Localisation de l'USP
Région :
Commune :
Nom de l'USP:
Nom de la personne interrogée
Fonction de la personne interrogée
Prendre les coordonnés GPS de l'USP *(Placez-vous à l'extérieur, proche du bâtiment principal)*

Infrastructure pour l'approvisionnement en l'eau				
101	Quelle est la source principale d'eau ?	Forage et puits équipés de pompes manuelles ou motorisées Mini adduction d'eau potable (AEP) Bornes-fontaines Connection au réseau de distribution d'eau Forage et puits équipés de pompes solaires Réservoir rempli par camion-citerne Autres (spécifier)	1 2 3 4 6 7 8	
102	Est-elle disponible toute l'année (y compris en saison sèche) ?	Oui Non	1 2	→ *Q1021*
1021	Si non, comment vous approvisionnez-vous en eau durant ces périodes ?	Achat d'eau par camion-citerne Structures (puit, forage, borne-fontaine, etc.) avoisinantes Autres (spécifier)	1 2 3	
103	L'USP est-il en charge de la gestion technique et budgétaire du système d'approvisionnement en eau ?	Oui Non	1 2	
104	Existe-t-il une capacité locale de maintenance (pièces de rechange disponible, personnel formé) ?	Oui Non	1 2	
105	Existe-t-il un système de suivi ou d'alerte pour signaler les pannes ou besoin d'entretien	Oui Non	1 2	
106	Y a-t-il un budget pour la maintenance du système d'approvisionnement en eau	Oui Non (spécifier pourquoi)	1 2	→ *Q1061 et 1062 et 1063*
1061	D'où proviennent ces ressources financières ?	Ligne budgétaire de l'USP Cotisation communauté Fonds communaux Subvention nationale Subvention partenaire Autres (spécifier)	1 2 3 4 5 6	
1062	Le budget est-il suffisant pour couvrir les besoins de base	Oui Non	1 2	
1063	Comment sont gérés et suivis les fonds ?			
107	Prendre une photo du système d'approvisionnement en eau			

Infrastructure d'assainissement				
201	Les toilettes utilisées par les patients sont à	L'extérieur L'intérieur	1 2	
202	Quel est le type de toilettes utilisées par les patients ? *(extérieur et intérieur du bâtiment principal)*	Toilette sèche de type VIP Toilette à chasse manuelle Toilette à chasse mécanique connecté à une fosse septique Toilette à chasse mécanique connecté au tout à l'égout Autres (spécifier)	1 2 3 4 5	
203	Est-ce que les toilettes utilisées par le personnel est différent ?	Oui Non	1 2	→ Q2031 et 2032
2031	Les toilettes utilisées par le personnel sont à	L'extérieur L'intérieur	1 2	
2032	Quel est le type de toilettes utilisées par le personnel ? *(extérieur et intérieur du bâtiment principal)*	Toilette sèche de type VIP Toilette à chasse manuelle Toilette à chasse mécanique connecté à une fosse septique Toilette à chasse mécanique connecté au tout à l'égout Autres (spécifier)	1 2 3 4 5	
204	Est-ce que les toilettes utilisées par les visiteurs (accompagnant) est différent ?	Oui Non	1 2	→ *Q2041 et 2042*
2041	Les toilettes utilisées par les visiteurs sont à	L'extérieur L'intérieur	1 2	
2042	Quel est le type de toilettes utilisées par les visiteurs accompagnant ? *(extérieur et intérieur du bâtiment principal)*	Toilette sèche de type VIP Toilette à chasse manuelle Toilette à chasse mécanique connecté à une fosse septique Toilette à chasse mécanique connecté au tout à l'égout Autres (spécifier)	1 2 3 4 5	
205	Les usagers (patients principalement) trouvent-ils les toilettes acoessibles,	Oui Non (spécifier pourquoi)	1 2	
206	Les usagers trouvent-ils les toilettes confortables et adaptées à leurs besoins spécifiques (ex. femmes en post-partum) ?	Oui Non (spécifier pourquoi)	1 2	
207	Les fosses sont-elles facilement vidangeables (volume, accès pour les camions, etc.)?	Oui Non (spécifier pourquoi) Non applicable	1 2 3	
208	Quel est le ratio toilette par usager ? *(diviser le nombre maximal de patients par le nombre de cabine de toilettes)*	1-25 26-60 61-100 >100	1 2 3 4	
209	Est-ce que les toilettes sont fonctionnelles ?	Oui Non (spécifier pourquoi) Partiellement (spécifier)	1 2 3	
210	La construction des toilettes tient elle en compte les risques climatiques (élévation, ventilation, manque d'eau, etc.)	Oui (spécifier comment) Non (spécifier pourquoi) Partiellement (spécifier)	1 2 3	
211	Prendre une photo des infrastructures d'assainissement			

Gestion des boues de vidange (non applicable si toilettes connectées au tout à l'égout)				
301	Qui se charge du service de la vidange des fosses ?	Entreprise privée / Entrepreneur Municipalité Il n'y pas encore eu de vidange Ne s'applique pas (connecté au réseau d'égout) Autres (spécifier)	1 2 3 4 5	
302	A quelle fréquence s'effectue la vidange ?	2 fois par an et plus 1 fois par an 1 fois tous les deux ans	1 2 3	

		1 fois tous les 3 ans	4	
		1 fois tous les 4 ans	5	
		1 fois tous les 5 ans et plus	6	
		Non applicable	7	
303	Y a-t-il un budget pour la vidange des fosses ?	Oui	1	→ Q3031 et 3032 et 3033
		Non (spécifier pourquoi)	2	
3031	D'où proviennent ces ressources financières ?	Ligne budgétaire de l'USP	1	
		Cotisation communauté	2	
		Fonds communaux	3	
		Subvention nationale	4	
		Subvention partenaire	5	
		Autres (spécifier)	6	
3032	Le budget est-il suffisant pour couvrir les besoins de base	Oui	1	
		Non	2	
3033	Comment sont gérés et suivis les fonds ?			
304	Où sont transportées les boues de vidange ?	Centre de traitement	1	
		Site de dépotage	2	
		Champ agricole	3	
		Non applicable	4	
		Non connu	5	
		Autres (spécifier)	6	
305	Quel est le coût moyen d'une vidange ?			

Infrastructure d'hygiène				
401	Quelles sont les dispositifs de lavage des mains utilisées par les patients ?	Robinet + réservoir d'eau (fixe ou mobile)	1	
		Robinet + évier connecté au réseau d'eau	2	
		Seau d'eau + gobelet + bassine	3	
		Tippy-Tap	4	
		Autres (spécifier)	5	
402	Est-ce que du savon est disponible à proximité du dispositif de lavage des mains ?	Oui	1	
		Non	2	
403	Est-ce que les dispositifs de lavage utilisés par le personnel est différent ?	Oui	1	
		Non	2	→ Q4031
4031	Quelles sont les dispositifs de lavage des mains utilisées par le personnel ?	Robinet + réservoir d'eau (fixe ou mobile)	1	
		Robinet + évier connecté au réseau d'eau	2	
		Seau d'eau + gobelet + bassine	3	
		Tippy-Tap	4	
		Autres (spécifier)	5	
404	Les dispositifs de lavage des mains sont-ils fonctionnels et utilisés ?	Oui	1	
		Non (spécifier pourquoi)	2	
405	L'eau et le savon sont-ils disponibles en quantité suffisante ?	Oui	1	
		Non (spécifier pourquoi)	2	
406	Les dispositifs de lavage des mains sont-ils accessibles pour tous (enfants, patientes, personnes à mobilité réduite) ?	Oui	1	
		Non (spécifier pourquoi)	2	
407	Prendre une photo des dispositifs de lavage des mains			
408	Des installations spécifiques pour l'hygiène menstruelle sont-elles en place ?	Oui	1	
		Non (spécifier pourquoi)	2	
409	Prendre une photo des installations pour l'hygiène menstruelle (si applicable)			
410	Quels sont les produits d'hygiène distribués dans les maternités pour les femmes en post-partum ?	Serviettes hygiéniques	1	
		Culottes de maternité	2	
		Kit de maternité contenant articles de toilette	3	
		Aucun	4	

Gestion et financement des services WASH				
501	Qui sont les acteurs impliqués dans la gestion quotidienne de l'eau, de l'hygiène et des latrines ?	Usagers	1	
		Personnel	2	
		Comité « WASH »	3	
		Prestataire externe	4	

		Personne	5	
		Autres (spécifier)	6	
502	Quelle est leur motivation ?	Contre paiement	1	
		Faisant partie de la description de poste	2	
		Travail volontaire	3	
		Autres (spécifier	4	
503	Quelles sont les principales dépenses WASH engagées	Entretien des toilettes (nettoyage, désinfection)	1	
		Vidange des fosses	2	
		Gestion des déchets solides	3	
		Remplacement des produits (savon, nettoyant)	4	
		Remplacement des équipement (robinets, chasse d'eau, tuyauterie)	5	
		Autres	6	
504	Quelles dépenses ne sont pas couvertes actuellement	Entretien des toilettes (nettoyage, désinfection)	1	
		Vidange des fosses	2	
		Gestion des déchets solides	3	
		Remplacement des produits (savon, nettoyant)	4	
		Remplacement des équipement (robinets, chasse d'eau, tuyauterie)	5	
		Autres	6	
505	Existe-t-il un système de suivi ou d'alerte pour signaler les pannes ou besoin d'entretien	Oui	1	
		Non	2	
506	Y a-t-il un budget pour la gestion des services WASH ?	Oui	1	→ Q5061 et 5062 et 5063
		Non (spécifier pourquoi)	2	
5061	D'où proviennent ces ressources financières ?	Ligne budgétaire de l'USP	1	
		Cotisation communauté	2	
		Fonds communaux	3	
		Subvention nationale	4	
		Subvention partenaire	5	
		Autres (spécifier)	6	
5062	Le budget est-il suffisant pour couvrir les besoins de base	Oui	1	
		Non	2	
5063	Comment sont gérés et suivis les fonds ?			

Enquête WASH – Ecoles et jardins d'enfants

Localisation de l'école
Région :
Commune :
Nom de l'école :
Nom de la personne interrogée
Fonction de la personne interrogée
Prendre les coordonnés GPS de l'école *(Placez-vous à l'extérieur, proche du bâtiment principal)*

Infrastructure pour l'approvisionnement en l'eau				
101	Quelle est la source principale d'eau ?	Forage et puits équipés de pompes manuelles ou motorisées Mini adduction d'eau potable (AEP) Bornes-fontaines Connection au réseau de distribution d'eau Forage et puits équipés de pompes solaires Réservoir rempli par camion-citerne Autres (spécifier)	1 2 3 4 6 7 8	
102	Est-elle disponible toute l'année (y compris en saison sèche) ?	Oui Non	1 2	→ *Q1021*
1021	Si non, comment vous approvisionnez-vous en eau durant ces périodes ?	Achat d'eau par camion-citerne Structures (puit, forage, borne-fontaine, etc.) avoisinantes Autres (spécifier)	1 2 3	
103	L'école est-elle en charge de la gestion technique et budgétaire du système d'approvisionnement en eau ?	Oui Non	1 2	
104	Existe-t-il une capacité locale de maintenance (pièces de rechange disponible, personnel formé) ?	Oui Non	1 2	
105	Existe-t-il un système de suivi ou d'alerte pour signaler les pannes ou besoin d'entretien	Oui Non	1 2	
106	Y a-t-il un budget pour la maintenance du système d'approvisionnement en eau	Oui Non (spécifier pourquoi)	1 2	→ *Q1061 et 1062 et 1063*
1061	D'où proviennent ces ressources financières ?	Ligne budgétaire de l'école Cotisation communauté Fonds communaux Subvention nationale Subvention partenaire Autres (spécifier)	1 2 3 4 5 6	
1062	Le budget est-il suffisant pour couvrir les besoins de base	Oui Non	1 2	
1063	Comment sont gérés et suivis les fonds ?			
107	Prendre une photo du système d'approvisionnement en eau			

Infrastructure d'assainissement				
201	Quel est le type de toilettes utilisées par les écoliers ?	Toilette sèche de type VIP Toilette à chasse manuelle Toilette à chasse mécanique connecté à une fosse septique Toilette à chasse mécanique connecté au tout à l'égout Toilette à diversion (type ECOSAN) Autres (spécifier)	1 2 3 4 5 6	
202	Est-ce que les toilettes utilisées par les enseignants est différent ?	Oui Non	1 2	→ Q2021
2021	Quel est le type de toilettes utilisées par les enseignants ?	Toilette sèche de type VIP Toilette à chasse manuelle Toilette à chasse mécanique connecté à une fosse septique Toilette à chasse mécanique connecté au tout à l'égout Toilette à diversion (type ECOSAN) Autres (spécifier)	1 2 3 4 5 6	
203	Les usagers trouvent-ils les toilettes accessibles,	Oui Non (spécifier pourquoi)	1 2	
204	Les usagers trouvent-ils les toilettes confortables et adaptées à leurs besoins spécifiques ?	Oui Non (spécifier pourquoi)	1 2	
205	Les fosses sont-elles facilement vidangeables (volume, accès pour les camions, etc.)?	Oui Non (spécifier pourquoi) Non applicable	1 2 3	
206	Quel est le ratio toilette par usager ? *(diviser le nombre maximal de d'écoliers par le nombre de cabine de toilettes.)*	1-25 26-60 61-100 >100	1 2 3 4	
207	Est-ce que les toilettes sont fonctionnelles ?	Oui Non (spécifier pourquoi) Partiellement (spécifier)	1 2 3	
208	La construction des toilettes tient elle en compte les risques climatiques (élévation, ventilation, manque d'eau, etc.)	Oui (spécifier comment) Non (spécifier pourquoi) Partiellement (spécifier)	1 2 3	
209	Prendre une photo des infrastructures d'assainissement			

Gestion des boues de vidange (non applicable si toilettes connectées au tout à l'égout ou ECOSAN)				
301	Qui se charge du service de la vidange des fosses ?	Entreprise privée / Entrepreneur Municipalité Il n'y pas encore eu de vidange Ne s'applique pas (connecté au réseau d'égout) Autres (spécifier)	1 2 3 4 5	
302	A quelle fréquence s'effectue la vidange ?	2 fois par an et plus 1 fois par an 1 fois tous les deux ans 1 fois tous les 3 ans 1 fois tous les 4 ans 1 fois tous les 5 ans et plus Non applicable	1 2 3 4 5 6 7	
303	Y a-t-il un budget pour la vidange des fosses ?	Oui Non (spécifier pourquoi)	1 2	→ Q3031 et 3032 et 3033
3031	D'où proviennent ces ressources financières ?	Ligne budgétaire de l'école Cotisation communauté Fonds communaux Subvention nationale Subvention partenaire Autres (spécifier)	1 2 3 4 5 6	
3032	Le budget est-il suffisant pour couvrir les besoins de base	Oui Non	1 2	

3033	Comment sont gérés et suivis les fonds ?			
304	Où sont transportées les boues de vidange ?	Centre de traitement Site de dépotage Champ agricole Non applicable Non connu Autres (spécifier)	1 2 3 4 5 6	
305	Quel est le coût moyen d'une vidange ?			

Infrastructure d'hygiène				
401	Quelles sont les dispositifs de lavage des mains utilisées par les écoliers ?	Robinet + réservoir d'eau (fixe ou mobile) Robinet + évier connecté au réseau d'eau Seau d'eau + gobelet + bassine Tippy-Tap Autres (spécifier)	1 2 3 4 5	
402	Est-ce que du savon est disponible à proximité du dispositif de lavage des mains ?	Oui Non	1 2	
403	Est-ce que les dispositifs de lavage utilisés par les enseignant est différent ?	Oui Non	1 2	→ Q4031
4031	Quelles sont les dispositifs de lavage des mains utilisées par les enseignants ?	Robinet + réservoir d'eau (fixe ou mobile) Robinet + évier connecté au réseau d'eau Seau d'eau + gobelet + bassine Tippy-Tap Autres (spécifier)	1 2 3 4 5	
404	Les dispositifs de lavage des mains sont-ils fonctionnels et utilisés ?	Oui Non (spécifier pourquoi)	1 2	
405	L'eau et le savon sont-ils disponibles en quantité suffisante ?	Oui Non (spécifier pourquoi)	1 2	
406	Les dispositifs de lavage des mains sont-ils accessibles pour tous (enfants, personnes à mobilité réduite) ?	Oui Non (spécifier pourquoi)	1 2	
407	Prendre une photo des dispositifs de lavage des mains			
408	Des installations spécifiques pour l'hygiène menstruelle sont-elles en place ?	Oui Non (spécifier pourquoi)	1 2	
409	Prendre une photo des installations pour l'hygiène menstruelle (si applicable)			

Gestion et financement des services WASH				
501	Qui sont les acteurs impliqués dans la gestion quotidienne de l'eau, de l'hygiène et des latrines ?	Ecoliers Enseignants Parents d'élèves Comité « WASH » Prestataire externe Personne Autres (spécifier)	1 2 3 4 5 6 7	
502	Quelle est leur motivation ?	Contre paiement Faisant partie de la description de poste Travail volontaire Autres (spécifier	1 2 3 4	
503	Quelles sont les principales dépenses WASH engagées	Entretien des toilettes (nettoyage, désinfection) Vidange des fosses Gestion des déchets solides Remplacement des produits (savon, nettoyant) Remplacement des équipement (robinets, chasse d'eau, tuyauterie) Autres	1 2 3 4 5 6	
504	Quelles dépenses ne sont pas couvertes actuellement	Entretien des toilettes (nettoyage, désinfection) Vidange des fosses	1 2	

		Gestion des déchets solides Remplacement des produits (savon, nettoyant) Remplacement des équipement (robinets, chasse d'eau, tuyauterie) Autres	3 4 5 6	
505	Existe-t-il un système de suivi ou d'alerte pour signaler les pannes ou besoin d'entretien	Oui Non	1 2	
506	Y a-t-il un budget pour la gestion des services WASH ?	Oui Non (spécifier pourquoi)	1 2	→ Q5061 et 5062 et 5063
5061	D'où proviennent ces ressources financières ?	Ligne budgétaire de l'école Cotisation communauté/parents d'élèves Fonds communaux Subvention nationale Subvention partenaire Autres (spécifier)	1 2 3 4 5 6	
5062	Le budget est-il suffisant pour couvrir les besoins de base	Oui Non	1 2	
5063	Comment sont gérés et suivis les fonds ?			

Enquête WASH – DPS

Localisation du DPS
Région :
Commune :
Nom du DPS :
Nom de la personne interrogée
Fonction de la personne interrogée
Prendre les coordonnés GPS du DPS *(Placez-vous à l'extérieur, proche du bâtiment principal)*

Infrastructure pour l'approvisionnement en l'eau				
101	Quelle est la source principale d'eau ?	Forage et puits équipés de pompes manuelles ou motorisées Mini adduction d'eau potable (AEP) Bornes-fontaines Connection au réseau de distribution d'eau Forage et puits équipés de pompes solaires Réservoir rempli par camion-citerne Autres (spécifier)	1 2 3 4 6 7 8	
102	Est-elle disponible toute l'année (y compris en saison sèche) ?	Oui Non	1 2	→ *Q1021*
1021	Si non, comment vous approvisionnez-vous en eau durant ces périodes ?	Achat d'eau par camion-citerne Structures (puit, forage, borne-fontaine, etc.) avoisinantes Autres (spécifier)	1 2 3	
103	Le DPS est-il en charge de la gestion technique et budgétaire du système d'approvisionnement en eau ?	Oui Non	1 2	
104	Existe-t-il une capacité locale de maintenance (pièces de rechange disponible, personnel formé) ?	Oui Non	1 2	
105	Existe-t-il un système de suivi ou d'alerte pour signaler les pannes ou besoin d'entretien	Oui Non	1 2	
106	Y a-t-il un budget pour la maintenance du système d'approvisionnement en eau	Oui Non (spécifier pourquoi)	1 2	→ *Q1061 et 1062 et 1063*
1061	D'où proviennent ces ressources financières ?	Ligne budgétaire du DPS Cotisation communauté Fonds communaux Subvention nationale Subvention partenaire Autres (spécifier)	1 2 3 4 5 6	
1062	Le budget est-il suffisant pour couvrir les besoins de base	Oui Non	1 2	
1063	Comment sont gérés et suivis les fonds ?			
107	Prendre une photo du système d'approvisionnement en eau			

Infrastructure d'assainissement				
201	Les toilettes utilisées par le personnel sont à	L'extérieur L'intérieur	1 2	
202	Quel est le type de toilettes utilisées par le personnel?	Toilette sèche de type VIP Toilette à chasse manuelle Toilette à chasse mécanique connecté à une fosse septique Toilette à chasse mécanique connecté au tout à l'égout Autres (spécifier)	1 2 3 4 5	
203	Est-ce que les toilettes utilisées par les visiteurs sont différentes ?	Oui Non	1 2	→ Q2031 et 2032
2031	Les toilettes utilisées par les visiteurs sont à	L'extérieur L'intérieur	1 2	
2032	Quel est le type de toilettes utilisées par les visiteurs ?	Toilette sèche de type VIP Toilette à chasse manuelle Toilette à chasse mécanique connecté à une fosse septique Toilette à chasse mécanique connecté au tout à l'égout Autres (spécifier)	1 2 3 4 5	
204	Les usagers trouvent-ils les toilettes accessibles,	Oui Non (spécifier pourquoi)	1 2	
205	Les usagers trouvent-ils les toilettes confortables et adaptées à leurs besoins spécifiques ?	Oui Non (spécifier pourquoi)	1 2	
206	Les fosses sont-elles facilement vidangeables (volume, accès pour les camions, etc.)?	Oui Non (spécifier pourquoi) Non applicable	1 2 3	
207	Quel est le ratio toilette par usager ? *(diviser le nombre maximal d'usagers par le nombre de cabine de toilettes.)*	1-25 26-60 61-100 >100	1 2 3 4	
208	Est-ce que les toilettes sont fonctionnelles ?	Oui Non (spécifier pourquoi) Partiellement (spécifier)	1 2 3	
209	La construction des toilettes tient-elle en compte les risques climatiques (élévation, ventilation, manque d'eau, etc.)	Oui (spécifier comment) Non (spécifier pourquoi) Partiellement (spécifier)	1 2 3	
210	Prendre une photo des infrastructures d'assainissement			

Gestion des boues de vidange (non applicable si toilettes connectées au tout à l'égout)				
301	Qui se charge du service de la vidange des fosses ?	Entreprise privée / Entrepreneur Municipalité Il n'y pas encore eu de vidange Ne s'applique pas (connecté au réseau d'égout) Autres (spécifier)	1 2 3 4 5	
302	A quelle fréquence s'effectue la vidange ?	2 fois par an et plus 1 fois par an 1 fois tous les deux ans 1 fois tous les 3 ans 1 fois tous les 4 ans 1 fois tous les 5 ans et plus Non applicable	1 2 3 4 5 6 7	
303	Y a-t-il un budget pour la vidange des fosses ?	Oui Non (spécifier pourquoi)	1 2	→ Q3031 et 3032 et 3033
3031	D'où proviennent ces ressources financières ?	Ligne budgétaire du DPS Cotisation communauté Fonds communaux Subvention nationale Subvention partenaire Autres (spécifier)	1 2 3 4 5 6	

3032	Le budget est-il suffisant pour couvrir les besoins de base	Oui Non	1 2	
3033	Comment sont gérés et suivis les fonds ?			
304	Où sont transportées les boues de vidange ?	Centre de traitement Site de dépotage Champ agricole Non applicable Non connu Autres (spécifier)	1 2 3 4 5 6	
305	Quel est le coût moyen d'une vidange ?			

Infrastructure d'hygiène				
401	Quelles sont les dispositifs de lavage des mains utilisées par les écoliers ?	Robinet + réservoir d'eau (fixe ou mobile) Robinet + évier connecté au réseau d'eau Seau d'eau + gobelet + bassine Tippy-Tap Autres (spécifier)	1 2 3 4 5	
402	Est-ce que du savon est disponible à proximité du dispositif de lavage des mains ?	Oui Non	1 2	
403	Est-ce que les dispositifs de lavage utilisés par les visiteurs est différent ?	Oui Non	1 2	→ Q4031
4031	Quelles sont les dispositifs de lavage des mains utilisées par les visiteurs ?	Robinet + réservoir d'eau (fixe ou mobile) Robinet + évier connecté au réseau d'eau Seau d'eau + gobelet + bassine Tippy-Tap Autres (spécifier)	1 2 3 4 5	
404	Les dispositifs de lavage des mains sont-ils fonctionnels et utilisés ?	Oui Non (spécifier pourquoi)	1 2	
405	L'eau et le savon sont-ils disponibles en quantité suffisante ?	Oui Non (spécifier pourquoi)	1 2	
406	Les dispositifs de lavage des mains sont-ils accessibles pour tous (enfants, personnes à mobilité réduite) ?	Oui Non (spécifier pourquoi)	1 2	
407	Prendre une photo des dispositifs de lavage des mains			
408	Des installations spécifiques pour l'hygiène menstruelle sont-elles en place ?	Oui Non (spécifier pourquoi)	1 2	
409	Prendre une photo des installations pour l'hygiène menstruelle (si applicable)			

Gestion et financement des services WASH				
501	Qui sont les acteurs impliqués dans la gestion quotidienne de l'eau, de l'hygiène et des latrines ?	Personnel DPS Prestataire externe Comité « WASH » Personne Autres (spécifier)	1 2 3 4 5	
502	Quelle est leur motivation ?	Contre paiement Faisant partie de la description de poste Travail volontaire Autres (spécifier	1 2 3 4	
503	Quelles sont les principales dépenses WASH engagées	Entretien des toilettes (nettoyage, désinfection) Vidange des fosses Gestion des déchets solides Remplacement des produits (savon, nettoyant) Remplacement des équipement (robinets, chasse d'eau, tuyauterie) Autres	1 2 3 4 5 6	
504	Quelles dépenses ne sont pas couvertes actuellement	Entretien des toilettes (nettoyage, désinfection) Vidange des fosses	1	

		Gestion des déchets solides Remplacement des produits (savon, nettoyant) Remplacement des équipement (robinets, chasse d'eau, tuyauterie) Autres	2 3 4 5 6	
505	Existe-t-il un système de suivi ou d'alerte pour signaler les pannes ou besoin d'entretien	Oui Non	1 2	
506	Y a-t-il un budget pour la gestion des services WASH ?	Oui Non (spécifier pourquoi)	1 2	→ Q5061 et 5062 et 5063
5061	D'où proviennent ces ressources financières ?	Ligne budgétaire du DPS Cotisation communauté Fonds communaux Subvention nationale Subvention partenaire Autres (spécifier)	1 2 3 4 5 6	
5062	Le budget est-il suffisant pour couvrir les besoins de base	Oui Non	1 2	
5063	Comment sont gérés et suivis les fonds ?			

Enquête WASH – Ecoles et jardins d'enfants

Localisation de l'école
Région :
Commune :
Nom de l'école :
Nom de la personne interrogée
Fonction de la personne interrogée
Prendre les coordonnés GPS de l'école *(Placez-vous à l'extérieur, proche du bâtiment principal)*

Infrastructure pour l'approvisionnement en l'eau				
101	Quelle est la source principale d'eau ?	Forage et puits équipés de pompes manuelles ou motorisées Mini adduction d'eau potable (AEP) Bornes-fontaines Connection au réseau de distribution d'eau Forage et puits équipés de pompes solaires Réservoir rempli par camion-citerne Autres (spécifier)	1 2 3 4 6 7 8	
102	Est-elle disponible toute l'année (y compris en saison sèche) ?	Oui Non	1 2	→ *Q1021*
1021	Si non, comment vous approvisionnez-vous en eau durant ces périodes ?	Achat d'eau par camion-citerne Structures (puit, forage, borne-fontaine, etc.) avoisinantes Autres (spécifier)	1 2 3	
103	L'école est-elle en charge de la gestion technique et budgétaire du système d'approvisionnement en eau ?	Oui Non	1 2	
104	Existe-t-il une capacité locale de maintenance (pièces de rechange disponible, personnel formé) ?	Oui Non	1 2	
105	Existe-t-il un système de suivi ou d'alerte pour signaler les pannes ou besoin d'entretien	Oui Non	1 2	
106	Y a-t-il un budget pour la maintenance du système d'approvisionnement en eau	Oui Non (spécifier pourquoi)	1 2	→ *Q1061 et 1062 et 1063*
1061	D'où proviennent ces ressources financières ?	Ligne budgétaire de l'école Cotisation communauté Fonds communaux Subvention nationale Subvention partenaire Autres (spécifier)	1 2 3 4 5 6	
1062	Le budget est-il suffisant pour couvrir les besoins de base	Oui Non	1 2	
1063	Comment sont gérés et suivis les fonds ?			
107	Prendre une photo du système d'approvisionnement en eau			

Infrastructure d'assainissement				
201	Quel est le type de toilettes utilisées par les écoliers ?	Toilette sèche de type VIP Toilette à chasse manuelle Toilette à chasse mécanique connecté à une fosse septique Toilette à chasse mécanique connecté au tout à l'égout Toilette à diversion (type ECOSAN) Autres (spécifier)	1 2 3 4 5 6	
202	Est-ce que les toilettes utilisées par les enseignants est différent ?	Oui Non	1 2	→ Q2021
2021	Quel est le type de toilettes utilisées par les enseignants ?	Toilette sèche de type VIP Toilette à chasse manuelle Toilette à chasse mécanique connecté à une fosse septique Toilette à chasse mécanique connecté au tout à l'égout Toilette à diversion (type ECOSAN) Autres (spécifier)	1 2 3 4 5 6	
203	Les usagers trouvent-ils les toilettes accessibles,	Oui Non (spécifier pourquoi)	1 2	
204	Les usagers trouvent-ils les toilettes confortables et adaptées à leurs besoins spécifiques ?	Oui Non (spécifier pourquoi)	1 2	
205	Les fosses sont-elles facilement vidangeables (volume, accès pour les camions, etc.)?	Oui Non (spécifier pourquoi) Non applicable	1 2 3	
206	Quel est le ratio toilette par usager ? *(diviser le nombre maximal de d'écoliers par le nombre de cabine de toilettes.)*	1-25 26-60 61-100 >100	1 2 3 4	
207	Est-ce que les toilettes sont fonctionnelles ?	Oui Non (spécifier pourquoi) Partiellement (spécifier)	1 2 3	
208	La construction des toilettes tient elle en compte les risques climatiques (élévation, ventilation, manque d'eau, etc.)	Oui (spécifier comment) Non (spécifier pourquoi) Partiellement (spécifier)	1 2 3	
209	Prendre une photo des infrastructures d'assainissement			

Gestion des boues de vidange (non applicable si toilettes connectées au tout à l'égout ou ECOSAN)				
301	Qui se charge du service de la vidange des fosses ?	Entreprise privée / Entrepreneur Municipalité Il n'y pas encore eu de vidange Ne s'applique pas (connecté au réseau d'égout) Autres (spécifier)	1 2 3 4 5	
302	A quelle fréquence s'effectue la vidange ?	2 fois par an et plus 1 fois par an 1 fois tous les deux ans 1 fois tous les 3 ans 1 fois tous les 4 ans 1 fois tous les 5 ans et plus Non applicable	1 2 3 4 5 6 7	
303	Y a-t-il un budget pour la vidange des fosses ?	Oui Non (spécifier pourquoi)	1 2	→ Q3031 et 3032 et 3033
3031	D'où proviennent ces ressources financières ?	Ligne budgétaire de l'école Cotisation communauté Fonds communaux Subvention nationale Subvention partenaire Autres (spécifier)	1 2 3 4 5 6	
3032	Le budget est-il suffisant pour couvrir les besoins de base	Oui Non	1 2	

3033	Comment sont gérés et suivis les fonds ?			
304	Où sont transportées les boues de vidange ?	Centre de traitement Site de dépotage Champ agricole Non applicable Non connu Autres (spécifier)	1 2 3 4 5 6	
305	Quel est le coût moyen d'une vidange ?			

Infrastructure d'hygiène				
401	Quelles sont les dispositifs de lavage des mains utilisées par les écoliers ?	Robinet + réservoir d'eau (fixe ou mobile) Robinet + évier connecté au réseau d'eau Seau d'eau + gobelet + bassine Tippy-Tap Autres (spécifier)	1 2 3 4 5	
402	Est-ce que du savon est disponible à proximité du dispositif de lavage des mains ?	Oui Non	1 2	
403	Est-ce que les dispositifs de lavage utilisés par les enseignant est différent ?	Oui Non	1 2	→ Q4031
4031	Quelles sont les dispositifs de lavage des mains utilisées par les enseignants ?	Robinet + réservoir d'eau (fixe ou mobile) Robinet + évier connecté au réseau d'eau Seau d'eau + gobelet + bassine Tippy-Tap Autres (spécifier)	1 2 3 4 5	
404	Les dispositifs de lavage des mains sont-ils fonctionnels et utilisés ?	Oui Non (spécifier pourquoi)	1 2	
405	L'eau et le savon sont-ils disponibles en quantité suffisante ?	Oui Non (spécifier pourquoi)	1 2	
406	Les dispositifs de lavage des mains sont-ils accessibles pour tous (enfants, personnes à mobilité réduite) ?	Oui Non (spécifier pourquoi)	1 2	
407	Prendre une photo des dispositifs de lavage des mains			
408	Des installations spécifiques pour l'hygiène menstruelle sont-elles en place ?	Oui Non (spécifier pourquoi)	1 2	
409	Prendre une photo des installations pour l'hygiène menstruelle (si applicable)			

Gestion et financement des services WASH				
501	Qui sont les acteurs impliqués dans la gestion quotidienne de l'eau, de l'hygiène et des latrines ?	Ecoliers Enseignants Parents d'élèves Comité « WASH » Prestataire externe Personne Autres (spécifier)	1 2 3 4 5 6 7	
502	Quelle est leur motivation ?	Contre paiement Faisant partie de la description de poste Travail volontaire Autres (spécifier	1 2 3 4	
503	Quelles sont les principales dépenses WASH engagées	Entretien des toilettes (nettoyage, désinfection) Vidange des fosses Gestion des déchets solides Remplacement des produits (savon, nettoyant) Remplacement des équipement (robinets, chasse d'eau, tuyauterie) Autres	1 2 3 4 5 6	
504	Quelles dépenses ne sont pas couvertes actuellement	Entretien des toilettes (nettoyage, désinfection) Vidange des fosses	1 2	

		Gestion des déchets solides Remplacement des produits (savon, nettoyant) Remplacement des équipement (robinets, chasse d'eau, tuyauterie) Autres	3 4 5 6	
505	Existe-t-il un système de suivi ou d'alerte pour signaler les pannes ou besoin d'entretien	Oui Non	1 2	
506	Y a-t-il un budget pour la gestion des services WASH ?	Oui Non (spécifier pourquoi)	1 2	→ Q5061 et 5062 et 5063
5061	D'où proviennent ces ressources financières ?	Ligne budgétaire de l'école Cotisation communauté/parents d'élèves Fonds communaux Subvention nationale Subvention partenaire Autres (spécifier)	1 2 3 4 5 6	
5062	Le budget est-il suffisant pour couvrir les besoins de base	Oui Non	1 2	
5063	Comment sont gérés et suivis les fonds ?			

Enquête WASH – Bloc sanitaire public

Localisation du DPS
Région :
Commune :
Nom du bloc sanitaire :
Nom de la personne interrogée
Fonction de la personne interrogée
Prendre les coordonnés GPS du bloc sanitaire *(Placez-vous à l'extérieur, proche du bâtiment principal)*

Infrastructures

1. Quelles sont les infrastructures sanitaires disponibles dans ce bloc sanitaire (nombre de toilettes pour hommes et pour femmes, le nombre de cabines de douche, et le nombre de robinets disponibles) ?
2. Est-ce que toutes les infrastructures sont fonctionnelles ?
3. Est-ce que du savon est disponible à proximité du dispositif de lavage des mains ?
4. Est-ce que les infrastructures prennent en compte les risques climatiques (élévation, ventilation, manque d'eau, etc.)
5. Quel type de toilettes a été choisi et pourquoi ?
6. Quelle est la capacité d'accueil des installations sanitaires et comment est-elle déterminée ?
7. Décrire le système d'approvisionnement en eau et le processus de collecte des eaux usée pour ce bloc sanitaire. Comment l'eau est-elle fournie et comment les eaux usées sont-elles évacuées ?
8. Les installations sanitaires sont-elles accessibles pour tous (enfants, patientes, personnes à mobilité réduite) ? Si oui, comment les infrastructures sont-elles adaptées pour répondre aux besoins spécifiques des différents usagers, y compris les personnes à mobilité réduite ?
9. Des installations spécifiques pour l'hygiène menstruelle sont-elles en place ? Si oui lesquelles ?
10. Les installations sanitaires sont-elles confortables et propres ?
11. Les fosses (si applicables) sont-elles facilement vidangeables ?

12. Prendre des photos des infrastructures sanitaires, y compris façade extérieur, accès, toilettes homme et femme, dispositif de lavage des mains, cabine de douche, cabine d'hygiène menstruelle, cabine du gestionnaire, etc.

Gestion des services

1. Qui est le maître d'œuvre de ce bloc sanitaire (à qui appartient la structure) ?
2. Qui se charge de la gestion quotidienne des opérations de traitement et l'entretien des infrastructures ?
3. Quels sont les principales tâches de gestion opérationnelle, d'entretien et de maintenance de ces blocs sanitaires ?
4. L'eau est-elle disponible toute l'année, si non comment vous approvisionnez-vous durant ces périodes ?
5. Comment est organisé la gestion des eaux usées généré par le blocs sanitaire (tout à l'égout, ou vidange régulière, etc.) ?
6. A quelle fréquence s'effectue la vidange des fosses (non applicable si bloc connecté au tout à l'égout) ?
7. Où sont transportées les eaux usées ?
8. Comment les usagers sont-ils informés et sensibilisés sur l'utilisation correcte des installations sanitaires ?
9. Quels sont les défis majeurs rencontrés dans la gestion quotidienne de ce bloc sanitaire et comment sont-ils surmontés ?

Financement

1. Quelles sont les sources de financement pour la gestion et l'amélioration des infrastructures sanitaires ?
2. Y a-t-il des contributions financières des usagers ou des commerçants du marché pour le fonctionnement du bloc sanitaire ? Si oui quels sont les tarifs ou montants des contributions ?
3. Quels sont les principaux postes de dépenses ?
4. Quel est le coût moyen d'une vidange ?
5. Comment sont gérés les revenus ? Y a-t-il un plan d'affaire (business plan) ?
6. Quels sont les mécanismes de transparence et de redevabilité dans la gestion financière de ce bloc sanitaire ?
7. Est-ce que ce genre d'infrastructure est rentable ?

Enquête WASH – Centre de traitement des boues de vidange (GEDEC)

Localisation du DPS
Région :
Commune :
Nom du centre de traitement :
Nom de la personne interrogée
Fonction de la personne interrogée
Prendre les coordonnés GPS du centre de traitement *(Placez-vous à l'extérieur, proche du bâtiment principal)*

Infrastructures

1. Décrire les technologies et processus utilisés pour le traitement des eaux usées et des boues de vidange ?
2. Où sont évacués les effluents traités ?
3. Y a-t-il des processus de valorisation des produits traités (eau d'irrigation, engrais liquide et solide, etc.) ?
4. Quelle est la capacité de traitement actuelle du centre et la capacité planifiée ?
5. D'où proviennent les eaux usées et boues de vidange traitées sur centre (l'information doit permettre de cartographier l'étendu du service) ?
6. Est-ce que les infrastructures prennent en compte les risques climatiques (élévation, ventilation, manque d'eau, etc.)
7. Prendre des photos des infrastructures de collecte et traitement des eaux usées et boues de vidange

Gestion des services

1. Qui est le maître d'œuvre du centre de traitement (à qui appartient la structure) ?
2. Qui se charge de la gestion quotidienne des opérations de traitement et l'entretien des infrastructures ?
3. Quels sont les principales tâches de gestion opérationnelle, d'entretien et de maintenance du centre de traitement ?

4. Quelles mesures sont prises pour assurer la qualité et la sécurité des eaux traitées avant leur rejet ou réutilisation ?
5. Comment le personnel est-il formé et préparé pour gérer les opérations du centre de traitement ?
6. Comment est l'acceptabilité des populations avoisinantes ? Y a-t-il eu des activités de sensibilisation pour les informer des activités du centre de traitement ?
7. Quels sont les principaux défis rencontrés dans la gestion du centre et comment sont-ils surmontés ?

Financement

1. Quelles sont les principales sources de financement pour la gestion et l'entretien du centre de traitement ?
2. Y a-t-il des contributions financières des usagers, des entreprises locales (camion vidangeurs) ou des municipalités pour soutenir les opérations du centre ? Si oui quels sont les tarifs ou montants des contributions ?
3. Quels sont les principaux postes de dépense ?
4. Comment les fonds sont-ils alloués et gérés pour assurer le bon fonctionnement et l'amélioration continue du centre ? Y a-t-il un plan d'affaire ?
5. Quels sont les mécanismes de transparence et de redevabilité en place pour la gestion financière du centre ?
6. Est-ce que ce genre d'infrastructure est rentable ?