Assessment of National Capacities for Health Emergency Preparedness and Response: Current Challenges and Strategic Opportunities for Strengthening

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ABSTRACT

Introduction

In the wake of recent epidemics and public health emergencies that have impacted Togo including cholera, COVID-19, and Lassa fever numerous systemic weaknesses have been revealed within the national health system. These crises have underscored the urgent need to build health system resilience and strengthen the country's capacity to anticipate, detect, and respond effectively to such threats. This study adopts the WHO Health System Framework and the International Health Regulations (IHR, 2005) as guiding models to assess preparedness and response capacities. The WHO framework emphasizes six building blocks governance, service delivery, health workforce, information, medical products and technologies, and health financing while the IHR outlines twelve core capacities essential for health security. These frameworks provide a structured lens for analyzing system-level performance and identifying areas for improvement.

Research Objective

The primary objective of this study is to evaluate the readiness and capacity of Togo's national health system to effectively manage health emergencies. It aims to assess the system's preparedness across the twelve thematic areas defined by the International Health Regulations (IHR), identify institutional, technical, and operational gaps that hinder efficient epidemic prevention, detection, and response, and analyze the effectiveness of coordination mechanisms, including multisectoral and decentralized structures, during crises. Additionally, the study examines the role and contributions of technical and financial partners in strengthening national health capacities and proposes actionable recommendations to enhance preparedness, surveillance, and response systems in accordance with global standards.

Methodology

This study employed a qualitative descriptive research design, appropriate for examining complex health system dynamics within their contextual realities. Data collection was carried out through a comprehensive review of relevant documents, including national policy frameworks, health sector plans, WHO reports, and Joint External Evaluation (JEE) assessments. In addition, 15 semi-structured key informant interviews were conducted with purposively selected stakeholders from the Ministry of Health, technical departments such as the PHEOC and epidemiology units, donor organizations including WHO, UNICEF, USAID, and CDC, as well as civil society actors. Purposive sampling ensured representation across national, regional, and community levels to capture a wide range of perspectives. Thematic content analysis was used to code and interpret the data, guided by the

twelve core capacities of the International Health Regulations (IHR, 2005). Interview transcripts were manually coded, and illustrative quotes were extracted to support and validate the identified themes.

Results

Thematic analysis of Togo's preparedness and response system highlights notable strengths and persistent challenges. Key strengths include the existence of a national strategic health development plan (PNDS 2023–2027), a functional Public Health Emergency Operations Center (PHEOC) staffed with trained personnel, the implementation of the Field Epidemiology Training Program (FETP) to strengthen workforce capacity, and strong political will supported by active international partnerships. However, the system faces several challenges, including weak multisectoral coordination despite the institutionalization of the "One Health" approach, the absence of a formal mechanism for rapid human resource deployment during emergencies, limited sustainable domestic financing with significant reliance on external donors, disparities in risk communication between national and local levels, and fragmented data systems lacking interoperability. Emerging vulnerabilities further complicate response efforts, notably the high turnover and migration of trained personnel, inconsistent application of international standards across health regions, and the weak institutionalization of simulation exercises and after-action reviews necessary for continuous improvement.

Keywords: Assessment, health security, preparedness, response, one health, International Health Regulations, Togo.

INTRODUCTION

West Africa has been the scene of numerous epidemics and outbreaks of infectious diseases over the past decades, resulting in high morbidity and mortality rates and placing considerable pressure on national health systems. In 2019, nine West African countries reported a total of 31 epidemic outbreaks, including anthrax in Guinea; cholera in Benin, Liberia, Nigeria, and Sierra Leone; dengue fever in Benin and Côte d'Ivoire; yellow fever in Nigeria; meningitis in Ghana, Niger, and Togo; and measles in Guinea, Niger, and Sierra Leone [1]. Furthermore, all these countries were affected by the COVID-19 pandemic. Lassa fever remains endemic in several countries in the region, notably Sierra Leone, Guinea, Liberia, and Nigeria [2].

Like many other countries in the region, Togo continues to face recurrent public health emergencies, including epidemic outbreaks and other threats, which have exposed vulnerabilities in the national health system. The country has experienced outbreaks of meningitis, measles, and yellow fever, along with the COVID-19 pandemic and mpox, all of which have had significant impacts on both the population and the health system. These events underscore the ongoing need to strengthen surveillance, preparedness, and rapid response capabilities for health crises. Since 2016, Togo has participated in the Joint External Evaluation (JEE) of the International Health Regulations (IHR 2005), which has helped identify key achievements, gaps, and priority actions to improve the country's capacity to prevent, detect, and effectively respond to public health emergencies, whether natural, accidental, or intentional in origin [3].

This article contributes to the ongoing analysis of Togo's national capacities for preparedness and response to health emergencies. It highlights the existing institutional, technical, and operational mechanisms and identifies major constraints limiting the effectiveness of interventions.

CONTEXT AND RATIONALE

Togo is a West African country located between 6° and 11° north latitude and 0° and 2° east longitude. It borders Burkina Faso to the north, Benin to the east, Ghana to the west, and the Atlantic Ocean to the south, with a coastline of approximately 50 kilometers. The country's total area is 56,785 km².

According to projections by the National Institute of Statistics and Economic and Demographic Studies (INSEED), Togo's population was estimated at approximately 8.8 million in 2023, with a slight majority of women [4]. The demographic structure is notably young, with over 60% of the population under the age of 25. Roughly 60% of the population lives in rural areas, indicating a strong reliance on community-based health services. Poverty remains a major challenge, especially in rural areas where access to health services is hindered

by geographic, economic, and structural barriers.

From a health perspective, Togo continues to face significant challenges. Infectious diseases with epidemic potential such as meningitis, cholera, measles, yellow fever, and more recently dengue pose ongoing threats. In recent years, the country has experienced multiple outbreaks: measles cases in 2019, a resurgence of yellow fever in 2020, and meningitis epidemics, particularly in the Savanes region, which is part of the African meningitis belt [1].

Despite notable progress in maternal health, key indicators remain concerning. According to the Demographic and Health Survey, the maternal mortality rate is still high, estimated at 401 deaths per 100,000 live births [5].

These findings highlight the urgency and necessity of strengthening Togo's preparedness and response mechanisms for health emergencies, particularly in the areas of epidemiological surveillance, intervention coordination, rapid resource mobilization, and risk communication.

STUDY OBJECTIVE

This study aims to assess the capacity of Togo's national health system to prepare for and respond to epidemics and health emergencies, with the goal of identifying institutional, technical, and operational constraints and proposing improvement strategies to strengthen national resilience and health security.

Specific Objectives

The specific objectives of this study are to:

i) analyze the institutional, regulatory, and organizational framework for emergency preparedness and response in Togo,
ii) evaluate the availability, training, mobilization, and deployment of human resources in public health emergencies,
iii) examine the mobilization, management, and sustainability of financial resources dedicated to epidemic management and health security,
iv) assess the effectiveness of infrastructures and operational tools particularly the Public Health Emergency Operations Center (PHEOC)in managing health emergencies,
v) identify the key opportunities and threats affecting the performance of the preparedness and response system, including the role of partners and the level of political commitment.

METHODOLOGY

Analytical Framework

The assessment conducted in Togo was based on the analytical framework of the International Health Regulations (IHR, 2005), while taking into account the country's specific context. It focused on key areas such as national public health policies, coordination mechanisms, the existence and implementation of emergency plans, and the organizational structure and functions of the national institution responsible for epidemiological surveillance and response.

The analysis also covered the country's capacities in managing points of entry (ports, airports, land borders), cross-border response coordination, laboratory systems, risk communication, logistics, and the availability of resources for rapid response. Cross-cutting dimensions such as infection prevention and control, clinical case management, human resources for epidemiology and surveillance, capacity development plans for the health sector, IHR integration, and findings from the Joint External Evaluation (JEE) were also included. Furthermore, the involvement of technical and financial partners, the integrated "One Health" approach, the sustainability of resource mobilization, and the role of scientific research were analyzed as transversal components.

Research Design and Methodology

This study adopts a qualitative exploratory research design, aimed at gaining an in-depth understanding of

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Togo's national capacities for health emergency preparedness and response (PHEPR). The qualitative approach is particularly suited for capturing the complexity of systems, institutional frameworks, stakeholder dynamics, and contextual factors that quantitative methods may overlook.

Sampling Technique

A **purposive sampling** technique was employed to select participants based on their knowledge, expertise, and involvement in the planning, implementation, coordination, or evaluation of health emergency preparedness and response activities in Togo. Key informants included representatives from:

- Ministry of Health (central and decentralized levels)
- Public Health Emergency Operations Center (PHEOC)
- Technical and Financial Partners (TFPs)
- Non-governmental organizations (NGOs)
- Epidemiologists and public health experts
- Academic institutions involved in health systems research

This sampling method ensures that information-rich cases are included to provide a comprehensive view of the research topic.

Sample Size Determination

The sample size was determined by the principle of **thematic saturation**, which refers to the point at which no new insights or perspectives are emerging from the interviews. Based on preliminary scoping and the diversity of stakeholders, the study aimed to conduct approximately **15 semi-structured interviews**, ensuring representation from key actor groups at national and regional levels. Adjustments were made as needed during data collection until saturation was reached.

Togo's public health emergency preparedness framework is structured around four strategic pillars of the National Health Security Action Plan (PANSS): i) surveillance of epidemic-prone diseases and public health threats, ii) strengthening of human resource capacity and the establishment of strategic stockpiles of countermeasures, iii) health control and management at points of entry, iv) development of an integrated and responsive laboratory network.

These pillars are supported by essential cross-cutting functions, including multisectoral coordination, the development and enforcement of relevant health policies and legislation, the improvement of health information systems, the promotion of research, and the sustainable mobilization of technical and financial resources. The emergency response framework is also grounded in four core components: i) enhancement of epidemiological surveillance during emergencies, ii) clinical case management, infection prevention and control, iii) rapid deployment of human and logistical resources, iv) risk communication to the public and coordination of the laboratory network. These components are further reinforced by support functions such as national coordination, legal and regulatory frameworks, real-time data collection and analysis, partner engagement, and the integration of research into strategic decision-making.

Data Collection

This study followed a qualitative approach, relying primarily on an in-depth document review and interviews with key informants involved in public health in Togo. Data collection was conducted between October and December 2023.

The target population included personnel from the Ministry of Health and Public Hygiene (MSHP) and its decentralized technical departments, technical and financial health partners, and other institutional or community

actors engaged in emergency preparedness and response in Togo.

To ensure alignment with international standards, several data collection tools were used, including data extraction sheets, semi-structured interview guides, and both structured and unstructured questionnaires. These tools were developed based on the twelve core capacities defined by the International Health Regulations (IHR, 2005), covering the following thematic areas: i) coordination and management, ii) surveillance, iii) notification, iv) response, v) laboratories, vi) points of entry (airports, ports, land borders), vii) preparedness and planning, viii) human resources management, ix) risk communication, x) zoonotic and biological threat management (One Health approach), xi) prevention and control measures, and xii) legislative and regulatory capacities [3].

Data Analysis

The data collected through semi-structured interviews were analyzed using a thematic content analysis approach. All interviews were audio-recorded (with informed consent), transcribed verbatim, and coded manually. A coding framework was developed inductively, allowing for emerging themes to be identified based on the participants' perspectives.

The analysis followed several key steps: i) Familiarization with transcripts, ii) Coding of relevant excerpts using thematic codes, iii) Identification of patterns and themes across interviews, iv) Interpretation of findings in light of the study objectives and existing literature.

Data collection was conducted in two complementary phases. The first phase involved a systematic document review, including the previous Joint External Evaluation (JEE) report for Togo. This review aimed to assess the country's performance scores, key recommendations, and the strengthening measures implemented since the last evaluation.

The second phase focused on the analysis of operational documents related to epidemiological surveillance and emergency response. This included national policies, surveillance systems, preparedness and response plans, coordination structures, simulation exercise reports, standard operating procedures, technical guidelines, and evaluation reports at both national and regional levels (Annex Table II).

During this phase, face-to-face interviews were conducted using a structured questionnaire developed based on the twelve IHR core capacities. These interviews were held with representatives from the Ministry of Health and Public Hygiene and other key stakeholders to document the status of national capacities in epidemiological surveillance, early warning, and rapid response to public health emergencies.

The interviews provided qualitative insights into the roles, responsibilities, and contributions of various actors involved in Togo's preparedness and response mechanisms. Special attention was given to analyzing coordination functions, the availability of qualified human resources, logistical and operational capacities, and the integration of a multisectoral approach in the response framework.

In-depth interviews were also held with Ministry of Health officials to deepen understanding of existing institutional arrangements and structural challenges in implementing IHR commitments (Annex Table III).

All relevant data regarding policies, plans, guidelines, and available literature were reviewed and verified during the data collection process.

Interview data were transcribed and analyzed according to the twelve thematic areas. The findings from the document review were also analyzed under the same themes and triangulated with interview data.

Ethical Considerations

For this assessment, informed oral consent was systematically obtained from all interviewees before data collection began. The study's objectives and participation modalities were clearly explained. Participants were informed of their right to withdraw from the interview at any point without facing any negative consequences. Confidentiality of the information provided was strictly maintained, and the data were used solely for analytical purposes within the framework of this evaluation.

RESULTS

A total of 15 actors were interviewed.

Policy and Coordination

In Togo, the right to health, enshrined in Article 34 of the Constitution, forms the foundation of the State's commitment to public health. In this context, the National Health Development Plan (PNDS) 2023–2027 outlines the strategic vision of universal access to quality healthcare for all. Coordination of preparedness and response to epidemics and health emergencies central to the International Health Regulations (IHR) is led by the Ministry of Health, Public Hygiene and Universal Access to Care, through technical bodies such as the Directorate of Prevention and the Public Health Emergency Operations Center (PHEOC). The PHEOC serves as the operational hub for health emergency management, working closely with the National Epidemic Management Committee and its regional and local branches, thus ensuring multisectoral and decentralized coordination. The country has several strategic and operational tools, including a multi-hazard contingency plan, a national health security action plan, and the PHEOC strategic plan. The "One Health" approach has been institutionalized through regulatory texts and the establishment of a National High Council for Global Health Security, fostering intersectoral integration across human, animal, environmental, and public safety domains. Dedicated financial resources, including emergency funds, support the system's operations.

Togo demonstrates a structured commitment to health emergency preparedness through the implementation of its constitutional right to health and strategic frameworks like the PNDS 2023–2027. The operationalization of epidemic preparedness is led by the Ministry of Health via key institutions such as the Directorate of Prevention and the Public Health Emergency Operations Center (PHEOC), which coordinate multi-level response efforts.

"*The PHEOC plays a central role in coordinating actors during public health emergencies. We now have clear lines of authority at national and regional levels*." (Transcript ID :HEC, MoH)

This quote reflects the institutionalized coordination mechanisms, particularly the operational role of the PHEOC in conjunction with the National Epidemic Management Committee and its decentralized entities.

Preparedness and Planning

Under the IHR thematic area vii: "Preparedness and Planning," Togo has implemented several mechanisms to strengthen its capacity to anticipate, detect, and respond effectively to health emergencies. The country has an annually updated Preparedness and Response Plan that incorporates multisectoral actions, including risk assessments, simulation exercises, mobilization of logistical and human resources, and coordination of interventions. Togo has also reinforced its infrastructure by establishing nine epidemic treatment centers and launched a three-year project funded by the Pandemic Fund to strengthen surveillance, laboratory capacity, and workforce training. Additionally, the national "One Health" platform supports intersectoral coordination across human, animal, and environmental health sectors, reinforcing the integrated preparedness approach. These efforts contribute to a proactive and rapid response to public health threats.

Togo has established an annually updated Preparedness and Response Plan that guides multisectoral coordination during health emergencies, integrating simulation exercises, risk assessments, and mobilization protocols.

"We conduct annual reviews of the preparedness plan, including simulation drills that involve sectors like civil protection, livestock, and local governance. This helps identify gaps before crises emerge." (Transcript ID , SOPrev MoH).

This reflects an institutionalized mechanism for multisectoral emergency preparedness that is proactive and collaborative.

Response to Epidemics and Public Health Emergencies

The Directorate for Disease Control and Public Health Programs is responsible for integrated disease

surveillance, including compiling data from regional focal points and national hospitals, analyzing this data, producing a weekly epidemiological bulletin distributed to all stakeholders, and sharing information with national authorities and international partners.

The PHEOC coordinates preparedness and response to public health emergencies of national or international concern. Its responsibilities include coordinating the response to any public health event, determining appropriate measures based on the situation in collaboration with stakeholders, managing resources for emergency response, and overseeing field operations.

The PHEOC is activated by the Director General of Health upon recommendation of the Coordinator in the event of an emergency. All relevant ministries and partners are informed of the activation level throughout the response.

The PHEOC's permanent staff includes a Coordinator, Deputy Coordinator, unit heads, a communications officer, an IT technician, a project manager, and a monitoring and evaluation specialist. The center is adequately equipped and operates through regional medical directors and in collaboration with partners who provide logistical support and participate in field investigations.

The PHEOC is fully operational and has been deployed several times during outbreaks. It can also be engaged by other sectors in the event of disasters, zoonotic diseases, or environmental emergencies.

The PHEOC plays a central role in national public health emergency response, coordinating stakeholders and managing field operations. The PHEOC is an established and formal mechanism, with clear protocols and command lines, ensuring timely and multisectoral response during health crises.

"Once the PHEOC is activated by the Director General, we coordinate with all ministries and partners, managing operations in the field through the regional EOC." (Transcript ID , PHEOC, MoH)

The PHEOC is an established and formal mechanism, with clear protocols and command lines, ensuring timely and multisectoral response during health crises.

Points of Entry

Togo has designated points of entry, including the Gnassingbé Eyadéma International Airport (AIGE) in Lomé, which has a health control unit and an integrated public health emergency management plan. The Lomé Autonomous Port also has a health control post. Official land border crossings are similarly equipped with health screening facilities.

The country has trained border security officers to identify suspected cases and notify health personnel. Togo has also developed protocols for cross-border emergency response and has conducted cross-border simulation exercises. In collaboration with the World Health Organization (WHO), coordination simulation drills were carried out to test the functionality of the Public Health Emergency Operations Center, aligned with the regional multi-country contingency plan. The country has established functional health screening infrastructure at key points of entry, including the Lomé airport and port, with trained personnel and protocols in place.

Border security personnel are trained to identify and report suspected health cases, facilitating rapid public health response.

"We trained security personnel at the main land crossings to identify suspected cases and trigger immediate referral to the health unit." (Transcript ID , NFPPOE, MoH)

Laboratory System

Togo has a structured laboratory system, though it faces persistent limitations related to coverage, resources, and coordination. According to a senior official from the National Institute of Hygiene (INH), "*Our national reference laboratories, particularly the INH in Lomé, serve as pillars for diagnostic services and*

epidemiological surveillance, but many district labs lack adequate infrastructure and trained personnel" (Transcript ID: INH-DIR/01). The system includes laboratories embedded within regional hospitals and selected district health centers, supplemented by national reference laboratories, with the INH playing a central role in biological analysis and surveillance support.

Specialized laboratories, such as the Molecular Biology Laboratory at the University of Lomé, were instrumental during the COVID-19 pandemic. A university researcher noted, *"We supported the national response by testing thousands of COVID-19 samples, but much of our work depends on external funding"* (Transcript ID: UNI-MLB/04). Partner institutions also contribute to quality control and communicable disease diagnostics.

In the animal health sector, Togo operates a Central Veterinary Laboratory (LCV) under the Ministry of Agriculture. A senior veterinary officer explained, *"The LCV plays a key role in zoonotic disease surveillance and aligns its work with the One Health strategy, although coordination with the human health sector remains limited*" (Transcript ID: LCV-MAE/05). These efforts aim to improve multisectoral collaboration across human, animal, and environmental health.

National laboratories are working toward compliance with international standards, such as ISO 15189 and WHO/WAHO norms. "*We are in the process of pursuing ISO 9001 certification, with guidance from international partners, but we still have gaps in quality assurance across many regional labs*," said a laboratory quality manager at the INH (Transcript ID: INH-QA/07).

One of the major operational challenges lies in specimen transport. "*In some districts, it can take up to a week to get samples to Lomé, especially for hard-to-reach areas,"* reported a district surveillance focal point (Transcript ID: DH-SURV/09). There is no national, dedicated transport system for specimens, and biological samples are often transferred using ad hoc means including public transport, ambulances, and private vehicles which undermines their integrity and delays diagnoses.

Moreover, despite efforts to operationalize the One Health approach, integration of laboratory services across sectors remains weak. A member of the national One Health platform acknowledged, "*Although we have the framework in place, there is still no standardized protocol for sharing lab data or samples between sectors*" (Transcript ID: ONEH-NAT/06). Human health laboratories remain predominantly staffed by biomedical professionals, with minimal involvement of veterinary or environmental experts.

Risk Communication and Community Engagement

Togo has established institutional structures for health communication, although these require further reinforcement to address the challenges of public health emergencies effectively. The Health Promotion Division within the Ministry of Health and Public Hygiene is tasked with coordinating both institutional and behavior change communication. According to the Head of the Division, *"Our unit develops national strategies for health messaging, but we are still constrained by insufficient resources and a lack of trained personnel, particularly at the district level"* (Transcript ID: MOH-HPC/03).

Participants frequently emphasized the importance of multisectoral collaboration in risk communication. A senior officer from an international NGO noted, *"We regularly collaborate with the Ministry of Health, especially during vaccination campaigns and health crises. Our experience in community engagement is now more valued and integrated into response efforts"* (Transcript ID: NGO-PHC/06). This partnership extends to other actors including decentralized government services, technical and financial partners, and media organizations.

At the community level, the role of local actors is critical in delivering effective health messages. A health officer observed, *"Community relays and traditional leaders are vital. They speak the language of the people and understand their beliefs, making health messages more accessible and acceptable"* (Transcript ID: RHO-CH/11). The Community Health Division, in collaboration with regional and district health directorates, coordinates this network of community influencers—comprising religious figures, women's groups, and community health volunteers—to ensure culturally appropriate communication, particularly during emergencies.

The Country has made strides in institutionalizing risk communication through the development of the National Risk Communication and Community Engagement (RCCE) Plan, originally formulated during the COVID-19 pandemic. A communication officer from the Ministry stated, "*The RCCE plan helped formalize how we handle community feedback, rumor tracking, and communication strategies with partners like WHO, UNICEF, and USAID"* (Transcript ID: MOH-RCC/09). This plan now serves as the basis for coordinated crisis communication efforts.

Logistics

The Public Health Emergency Operations Center (PHEOC), under the authority of the Ministry of Health, serves as the operational backbone of Togo's response to public health emergencies. It brings together a multidisciplinary team composed of epidemiologists, risk communication experts, logisticians, and laboratory specialists. However, despite its strategic mandate, the center faces notable challenges. As emphasized by a manager, *"Our team includes epidemiologists, risk communication experts, and logisticians, but the current workforce is insufficient to manage simultaneous emergencies across all regions"* (Transcript ID: PHEOC-MOH/01). This observation reflects the structural and human resource limitations that constrain the effectiveness and scalability of the country's emergency response system.

One of the most promising tools currently under development is the health risk and resource mapping platform, designed with technical support from WHO and USAID. This system aims to track the distribution of equipment, medical supplies, trained personnel, and critical care infrastructure across the country. A senior logistics officer explained its significance*: "This platform helps us visualize critical care infrastructure, stock levels, and trained personnel by region. Although still being refined, it's a valuable tool for planning outbreak responses"* (Transcript ID: PHEOC-LOG/04). Its goal is to enable strategic and timely response planning by identifying geographic gaps and regional vulnerabilities.

To complement these efforts, the Ministry of Health has begun establishing regional storage and transit centers, an initiative intended to decentralize emergency logistics and reduce dependence on Lomé. As highlighted by a health director*, "We now have a warehouse stocked with PPE and test kits, which allows us to act faster without waiting for supplies from Lomé"* (Transcript ID: RHD-LOG/07). These centers are stocked with essential supplies, including PPE, rapid diagnostic kits, emergency medicines, and sample collection materials. However, the level of inventory and the efficiency of replenishment systems vary significantly between regions.

The enhancement of Togo's logistics infrastructure is supported by a broad coalition of partners. A representative from the UN system Country Office noted, *"We provide logistical training and procurement assistance through the GHSA and coordinate with other donors like UNICEF, USAID, and the EU"* (Transcript ID: WHO-PART/10). In particular, bilateral initiatives like the Global Health Security Agenda (GHSA), led by the CDC in Atlanta, play a key role in bolstering technical capacity and ensuring a coordinated international response framework.

Despite this external support, logistics remains a critical bottleneck for health emergency preparedness. A senior official from the Ministry of Health acknowledged this limitation, stating*, "We must move from reliance on external partners to building resilient national systems aligned with the International Health Regulations (IHR 2005)"* (Transcript ID: MOH-HSEC/03). The development of national self-sufficiency in emergency logistics, supported by standardized data systems, trained personnel, and sustainable financing, remains central to the country's strategic vision for health security.

Prevention, Control, and Response Measures

Togo has implemented a range of procedures to prevent and control epidemic-prone diseases, including training modules on outbreak management and psychosocial support during crises. As described by a technical officer from the Ministry of Health, *"Our outbreak response curriculum includes psychosocial support, which has become critical, especially since COVID-19*" (Transcript ID: MOH-IPC/04). Multidisciplinary rapid response teams have been formed at both national and regional levels, supporting early containment. A regional health director confirmed, "*Each district has a trained team that can be deployed quickly, depending on the situation*" (Transcript ID: RHD-EOC/06).

To strengthen infection prevention and control (IPC), the Ministry of Health established a National Program for the Control of Healthcare-Associated Infections (HAIs). It is operationalized through regional Nosocomial Infection Control Committees and Committees on Hygiene, Safety, and Working Conditions. *"These committees are responsible for monitoring hygiene standards and training health workers regularly,*" explained a hospital IPC focal point (Transcript ID: HOSP-IPC/09).

The country prioritizes actions such as hand hygiene promotion, biomedical waste management, infrastructure maintenance, blood exposure management, and antimicrobial resistance control. These activities are guided by the National Biomedical Waste Management Plan, the National Quality Strategy, and the Multisectoral Disease Control Plan. According to an official from the Infection Control Program, *"All IPC activities are aligned with the national quality framework and waste management plan*" (Transcript ID: MOH-QM/03).

However, there is a notable gap: Togo lacks a formalized framework for the reception or deployment of medical personnel and supplies internationally during emergencies. "We do not have any national protocols or agreements in place for cross-border deployment," admitted a senior MoH planner (Transcript ID: MOH-PLAN/07). Moreover, there have been no recent simulation exercises or active participation in international emergency response partnerships, despite the existence of preparedness plans. "We have plans on paper, but we need to operationalize them through real simulation drills," emphasized a public health emergency expert (Transcript ID: PHEOC-SIM/02).

Nonetheless, Togo has disease-specific guidelines and updated manuals for epidemic-prone illnesses. Operational teams—comprising trained ambulance drivers and case transporters—are present in communities and at official points of entry. "Drivers know how to handle patients safely during transport, and protocols are in place at border health posts," said a regional logistics officer (Transcript ID: RHD-LOG/05).

Surveillance and Institutional Capacity

The country has strong field epidemiology expertise, bringing together a multidisciplinary team of epidemiologists, biologists, specialized nurses, environmental health practitioners, and public health professionals. As one senior official from the Ministry of Health noted, "*We have well-trained professionals ready to support outbreak investigations and response missions. Our rapid response teams are functional and experienced*" (Transcript ID: MOH-EPID/05). These experts actively contribute to emergency preparedness and are part of a national roster that can be mobilized quickly when outbreaks occur. *"The national roster allows us to track who is trained and available at any given time*," confirmed a regional health coordinator (Transcript ID: RHD-RRT/08).

However, a critical structural gap persists: the country lacks a formal policy or clear national guidelines on large-scale deployment of health personnel during emergencies. A representative from the national health workforce unit stated, "*There is no written protocol or system for scaling up human resources during a crisis. We rely heavily on ad hoc arrangements*" (Transcript ID: MOH-HR/03). Additionally, the absence of a dedicated office or institutional mechanism to coordinate these deployments has been repeatedly flagged as a challenge. "*Every time there's an emergency, we scramble to figure out who does what there's no permanent team or unit in charge of deployments,"* observed an emergency operations staff member (Transcript ID: PHEOC-OPS/06).

Human Resources for Health

Human resources are present at both national and regional levels, with clinicians concentrated in major hospitals. Epidemiologists are distributed between the central level and regional health directorates. According to a senior official from the Ministry of Health, *"Our epidemiologists are mostly stationed at the regional level, and each region has at least one trained focal point*" (Transcript ID: MOH-EPID/02). Each region also includes a livestock service led by a veterinary doctor, along with biological pharmacists or laboratory technicians (Transcript ID: VET-SVC/04).

Epidemiologists are trained through institutions such as the National Institute of Health (INH) and through specialized programs. *"We have trained staff through the 3-month frontline training and intermediate-level programs, but coverage is not yet universal*," noted a national epidemiology trainer (Transcript ID: TRAIN-

EPID/07). The current national estimate is one epidemiologist per 50,000 people.

Training programs vary in length and depth. The 3-month "frontline" modules aim to ensure at least one trained staff member per district, while 9-month intermediate-level programs have been running for several years (Transcript ID: MOH-TRAIN/05). A new integrated "One Health" curriculum is under development in collaboration with international academic partners. As stated by a program developer, *"This new training approach will help unify surveillance across human, animal, and environmental health sectors*" (Transcript ID: OH-ACADEMIA/03).

However, a gap remains in national planning. "The national human resources development plan still doesn't explicitly include public health profiles like epidemiologists or veterinary specialists," observed a senior planner at the Ministry (Transcript ID: MOH-HR/01), underscoring a critical need for integration of these professions into broader workforce planning.

Legislative and Regulatory Capacities

Following the Joint External Evaluation (JEE) of the International Health Regulations (IHR) conducted in 2017, Togo developed a National Health Security Plan that identified critical gaps requiring urgent attention. Key challenges include strengthening human and animal health systems, securing sustainable financing for health security programs, revising and enforcing pertinent legislation and regulations, and establishing robust multisectoral coordination frameworks for emergency management. Additionally, the development and implementation of a national action plan to combat antimicrobial resistance, as well as the operationalization of the "One Health" platform across all levels of the health system, remain pressing issues. Strengthening the capacity of the Public Health Emergency Operations Center (PHEOC) and enhancing risk communication systems have also been prioritized at the national level.

One Health Approach

Togo has established a multisectoral coordination platform under the "One Health" initiative to steer national strategies across human, animal, environmental, food, and public safety health sectors. This platform enables human health actors to access animal health surveillance data, facilitating integrated and timely responses to zoonotic emergencies. Despite this advancement, findings highlight that the absence of a formal regulatory framework for intersectoral data sharing, alongside persistent institutional challenges, continues to constrain the effectiveness and sustainability of multisectoral coordination.

Partner Engagement

Togo benefits from the support of international organizations and technical partners such as the World Health Organization (WHO), Centers for Disease Control and Prevention (CDC), Japan International Cooperation Agency (JICA), and various bilateral and multilateral donors. These partners contribute to strengthening key components of the health security system, including epidemiological surveillance, laboratory infrastructure, health workforce training, and Emergency Operations Center (EOC) functionality. As stated by a national surveillance officer, *"The CDC supports us with technical assistance for training, mass vaccination, and logistics—especially for surveillance and cross-border response, in collaboration with IOM"* (Transcript ID: MOH-EPI/08).

However, challenges remain in coordination and harmonization. A program manager from an international NGO observed, *"There is a real issue of overlapping roles and tools DHIS2, e-IDSR, and other platforms are deployed without being fully integrated, and training content varies from one partner to another"* (Transcript ID: NGO-TRN/05). The fragmentation of digital tools and uncoordinated capacity-building efforts often result in duplication and underutilization.

Multiple key informants emphasized the need for better prioritization of activities and streamlined dissemination of validated guidance. A regional health director noted, *"We need clear protocols and a shared roadmap. Too many tools are introduced, but few are sustained or aligned with national priorities"* (Transcript ID: RHO-COORD/02). Strengthening regional coordination through platforms such as the West African Health

Organization (WAHO), and fostering better integration between laboratory networks and surveillance systems, were widely cited as strategic recommendations to improve overall coherence and efficiency.

Resource Mobilization and Sustainability

Preparedness and response activities in Togo are financed through a combination of sources, including the national government budget, community health contributions, local authorities, national stakeholders such as NGOs and the private sector, and international donors. Despite this diversity, several key informants highlighted the absence of a structured and strategic resource mobilization plan. As noted by a senior official at the Ministry of Health, *"We depend heavily on donor support and ad-hoc government allocations ; there is no formal mechanism that ensures sustainable financing for preparedness activities"* (Transcript ID: MOH-FIN/04). A representative from a technical partner added, *"Even though communities and local governments contribute, their involvement is not institutionalized in a long-term financing strategy"* (Transcript ID: PART-LG/06). This lack of formalization weakens the sustainability and coordination of preparedness interventions, particularly in maintaining critical functions between emergencies.

Monitoring and Evaluation

Although a weekly epidemiological bulletin is regularly produced and disseminated to stakeholders, the lack of a systematic monitoring and evaluation (M&E) framework to assess the effectiveness of implemented interventions was consistently noted by key informants. A senior epidemiologist from the Directorate of Disease Surveillance stated, *"We compile and share the bulletin weekly, but there is no structured mechanism to evaluate whether the response measures that follow are effective or not"* (Transcript ID: DDS-ME/05). This gap in post-intervention monitoring reflects a critical weakness in Togo's surveillance system, limiting the capacity to adjust strategies based on impact and lessons learned.

Research

Togo mobilizes national health institutions, academic universities, the private sector, and research centers to contribute to public health research. Functional ethics committees and seed funding mechanisms have facilitated advancements in key areas such as respiratory infections and malaria. However, several key informants noted persistent structural challenges. A senior official from the Ministry of Health observed, *"There is no central body ensuring coherence in research efforts. Many studies are carried out independently, and often, we are only informed after the fact"* (Transcript ID: MOH-RSCH/02). The issue of limited budgetary commitment was echoed by a university researcher who remarked, *"Funding for health research remains symbolic universities struggle to secure operational grants aligned with national priorities"* (Transcript ID: UNI-RES/07). In addition, collaboration between academia and the Ministry of Health was described as sporadic and informal, leading to a disconnect between research topics and the practical needs of the health system.

Identified Gaps

Table 1: Identified Gaps

Area	Identified Gaps
Coordination and Management	Lack of effective multisectoral coordination; unclear roles among stakeholders; coordination mechanisms often activated late. Insufficient budget to meet all needs; lack of sustainable financing; need for formal frameworks to coordinate prevention and emergency response activities.
Surveillance	Fragmented surveillance systems; incomplete coverage; limited systematic data analysis. Use of multiple data management software; EOC resource reinforcement needed.
Notification	Delays in alert transmission; lack of integrated digital tools; absence of regulatory texts on inter-ministerial data sharing.
Response	Slow team deployment; limited logistical resources; outdated contingency plans; inadequate strategic stockpiles (PPE, medicines, consumables); limited storage capacity;

	sluggish distribution system; lack of centralized logistics system.
Laboratories	Limited rapid diagnostic capacity; reliance on external laboratories. Unsecured sample transport; irregular supply of inputs; weak collaboration between regional labs and central structures; limited technical capacity at district level; insufficient refresher and continuous training; frequent service interruptions; no buffer stock for essential inputs.
Points of Entry Management	Limited detection capacities; insufficient infrastructure and human resources; ineffective medical services; weak enforcement of guidelines; no comprehensive mapping of entry points; poor multisectoral coordination.
Preparedness and Planning	Outdated or partial preparedness plans; infrequent simulation exercises; absence of a harmonized risk communication strategy; unsustainable financing of health security programs.
Human Resources Management	Lack of trained personnel; high turnover; low number of specialized logisticians; reliance on external support for logistics mobilization.
Risk Communication	No harmonized national strategy; reactive and non-integrated RCCE plans; weak multisectoral coordination; unclear stakeholder roles; limited technical capacity; partner dependency; absence of monitoring and evaluation tools.
Zoonotic and Biological Threat Management	Weak institutionalization of the One Health approach; limited intersectoral collaboration across human, animal, food, and environmental sectors.
Prevention, Control, and Response Measures	Low availability of PPE; inconsistent IPC implementation; weak supervision; limited domestic funding; underutilization of logistics tools.
Legislative and Regulatory Capacities	Outdated legal frameworks; partial IHR implementation; no legal provisions for intersectoral data sharing; need to revise and adapt existing regulations.

DISCUSSION

Study Limitations

While this study provides a broadly representative overview of Togo's national capacities for health emergency preparedness and response, certain methodological and contextual limitations must be acknowledged.

The approach primarily focused on institutional actors in the health sector and technical and financial partners. Perspectives from other key ministries and sectors involved in the "One Health" multisectoral approach such as environment, agriculture, livestock, and civil protection as well as from community-level stakeholders, were only partially explored. In particular, civil protection and community actors were underrepresented. This may limit the depth of the analysis concerning intersectoral coordination and community engagement in health emergency preparedness and response.

The document review yielded a large volume of strategic, technical, and operational materials. However, some data sources were incomplete, outdated, or unavailable, which may have limited the comprehensiveness of the analysis, especially regarding the implementation status of recommendations from the International Health Regulations (IHR) Joint External Evaluation (JEE) or recent interventions that have not yet been documented.

Primary data collection through interviews encountered challenges related to the availability of institutional stakeholders. Some planned interviews could not be conducted or were completed under tight time constraints, limiting the depth of discussions. Additionally, some responses may have been affected by social desirability bias, with participants presenting overly favorable views of their institutions or programs.

The study relied primarily on qualitative data. Due to the lack of access to disaggregated and updated quantitative

databases (performance indicators, budgetary data, deployment statistics, etc.), it was not possible to conduct in-depth statistical analyses to objectively assess key preparedness and response indicators, such as response times, surveillance coverage, or the effectiveness of response plans.

Data collection was conducted between July and August 2024. The findings and observations presented in this report should therefore be interpreted within the context of that time frame. Recent or future developments in preparedness mechanisms, financing, action plans, or multisectoral coordination may not be reflected in this analysis.

SWOT Analysis

This in-depth assessment of epidemic and public health emergency preparedness and response in Togo highlights several strengths, weaknesses, opportunities, and threats.

Togo allocates annual public funds specifically for epidemic response and the operation of the COUSP, which also benefits from emergency resources that can be mobilized rapidly. This framework is supported by strong engagement from technical and financial partners, contributing to agile crisis responses. The implementation of the National Program for the Control of Healthcare-Associated Infections, along with the availability of trained epidemiologists, are essential pillars for prevention and response. These skilled human resources have proven crucial particularly during the COVID-19 pandemic highlighting the importance of robust public health expertise.

Nevertheless, several constraints continue to hinder the effectiveness of the national response system. These include limited multisectoral coordination, the lack of formal data-sharing mechanisms, and an absence of clear planning for personnel deployment. The absence of a structured plan for receiving or dispatching medical resources during emergencies remains a concern. Laboratory infrastructure in the field also remains under-equipped, particularly regarding electricity supply and cold chain systems, which impedes timely detection and response.

The current favorable political environment, the engagement of multiple partners, and the existence of a continuing field epidemiology training program present key opportunities to strengthen national capacities. The gradual integration of the “One Health” approach provides a promising framework for improving multisectoral coordination and emergency management.

However, major risks persist, including insufficient sustainable funding, overlapping efforts among partners, and the migration of qualified personnel. These factors can compromise the continuity and quality of interventions, as highlighted in several studies on health system sustainability in Africa.

Policy, Coordination, and Planning

Togo benefits from a solid legal and institutional framework, enshrined notably in its Constitution, which guarantees the right to health. The National Health Development Plan (PNDS) 2023–2027 reflects a clear political will to improve the health of all citizens through an integrated vision [6]. The establishment of dedicated structures such as the Directorate of Prevention and the PHEOC illustrates a structured effort to organize coordination for health emergency preparedness and response [6].

These initiatives are aligned with those implemented in other Francophone Sub-Saharan African countries. For instance, Senegal has similarly strengthened its coordination system by establishing the Centre for Health Emergency Operations and integrating a One Health approach into its health security strategy [7]. Likewise, Burkina Faso developed a national health security plan with multisectoral coordination mechanisms, although it faces sustainability challenges [8].

Consultative mechanisms such as Togo’s National Epidemic Management Committee and its regional and local branches support the decentralization of the response an essential component for strengthening the resilience of local health systems. This approach is comparable to that of Niger, which institutionalized its regional response committees following the 2015 meningitis outbreak to enable rapid and context-adapted responses [9].

The creation of the High National Council for Global Health Security "One Health" represents progress toward an integrated approach, consistent with international standards that recognize the interconnections between human, animal, and environmental health [10]. However, this model remains largely non-operational in several countries of the subregion, including the Democratic Republic of Congo and Benin, where intersectoral structures struggle to function effectively due to institutional overlap and lack of dedicated resources [11].

Nonetheless, Togo like many countries in the Global South continues to face challenges: insufficient budget allocations for public health, the need to sustain financing, the ongoing adaptation of regulatory frameworks, and, most importantly, the improvement of multisectoral coordination [12]. A comparative study conducted in West Africa found that one of the most frequent barriers to effective health emergency management lies in the fragmentation of institutional responsibilities and weak interministerial collaboration [13].

The difficulty in effectively coordinating the health, environment, agriculture, and security sectors is a common challenge among Southern countries. Thus, despite the existence of coordination frameworks, their actual implementation is often hindered by governance issues, lack of leadership, and limited resources, as observed in Cameroon and Guinea [14].

Surveillance, Response, and Institutionalization The central role of the Directorate of Prevention in implementing integrated disease surveillance in Togo serves as a cornerstone of the country's health security system. The regular publication of weekly epidemiological bulletins reflects the capacity to systematically collect, analyze, and disseminate epidemiological data [15]. The PHEOC, equipped with qualified personnel and clearly defined missions, represents a major step forward in the institutionalization of emergency response mechanisms [16]. Its ability to rapidly activate, coordinate, and mobilize various national and international partners demonstrates a system capable of responding in a multisectoral manner [17].

A similar configuration has been observed in Nigeria, where the Nigeria Centre for Disease Control has established a permanent Emergency Operations Center (EOC) that plays a central role in coordinating responses to outbreaks such as Ebola, Lassa fever, and COVID-19 [18]. The Nigerian model has underscored the importance of strong institutionalization, coupled with strategic leadership, in enhancing crisis management [19].

However, certain limitations persist in Togo, particularly in intersectoral coordination and the harmonization of data management tools. The incomplete rollout of DHIS2, combined with the partial integration of tools such as RapidPro for community-based reporting, has created information silos that may slow data transmission and analysis [20]. This issue is common in many Southern countries, such as Mali and Côte d'Ivoire, where parallel surveillance systems (e.g., district health information systems, vertical programs, manual reports) continue to coexist, complicating timely and data-driven decision-making [21, 22].

Furthermore, analyses conducted in Sierra Leone and the Democratic Republic of Congo have shown that a lack of qualified human resources within EOCs constitutes a major constraint on their performance [23]. Strengthening the EOC in terms of human resources, logistical capacity, and digital connectivity is therefore a strategic lever for improving the country's resilience to future epidemics [24].

Lastly, the sustainable institutionalization of such structures also depends on their integration into the national budget framework, as demonstrated by the experiences of Rwanda and Ethiopia, where EOCs have been included in national budgets to ensure their operations beyond crisis periods [25].

Points of Entry and Cross-Border Response

The official designation of international points of entry (Lomé International Airport, Lomé Autonomous Port, and land borders with Ghana, Benin, and Burkina Faso), combined with the installation of health screening systems and the training of border health workers in early detection of suspected cases, represents a major step toward preventing the introduction of pathogens [26]. Simulation exercises conducted with the support of WHO have tested responsiveness, interoperability, and early warning procedures recognized best practices for strengthening surveillance system resilience [27].

These approaches align with the standards of the IHR, which several African countries, including Togo, are

striving to implement. Experiences in Sierra Leone and Liberia following the Ebola epidemic have demonstrated that the effectiveness of border controls depends not only on infrastructure but also on multisectoral coordination between health, customs, immigration, and security authorities [28].

Nevertheless, several limitations persist in Togo. Border health services remain understaffed and lack sufficient rapid diagnostic tools and personal protective equipment [29]. Additionally, intersectoral coordination remains incomplete, and the absence of a comprehensive and up-to-date mapping of points of entry including informal crossing points hinders global and proactive surveillance efforts [30]. Similar challenges are noted in neighboring countries such as Niger and the Central African Republic, where long and porous borders, coupled with limited health presence, undermine early detection capacities [31,32].

Lessons from East Africa particularly from Kenya and Uganda highlight the value of establishing cross-border community-based surveillance systems with information-sharing mechanisms between border districts of neighboring countries [33]. This approach, still nascent in Togo, could inform improvements in cross-border surveillance, especially in the context of high regional trade and human mobility.

Moreover, the development of bilateral or multilateral agreements for border health management, such as those tested between Rwanda, Burundi, and the DRC, has strengthened coordinated response systems in border alert zones [34].

Laboratory System

Togo has a structured laboratory network built around three levels: peripheral laboratories (district and regional), regional reference laboratories, and specialized laboratories, with the INH serving as the cornerstone. The INH plays a key role in the diagnosis of priority pathogens and in coordinating laboratory responses, alongside the Central Veterinary Laboratory, in accordance with the integrated One Health approach [35].

Despite this structure, several challenges limit the overall effectiveness of the system. These include insecure and sometimes irregular transport of biological samples, insufficiently standardized logistics, and frequent stockouts of reagents, culture media, and consumables [36]. These gaps significantly slow the system's ability to deliver timely and reliable results in public health emergencies. Furthermore, weak coordination between peripheral, regional, and national levels complicates the smooth upward flow of laboratory data [37].

Togo is not alone in facing such difficulties. A comparative study in Burkina Faso, Mali, and the DRC highlighted similar shortcomings, including a lack of trained human resources and inconsistent equipment maintenance, both of which impair diagnostic reliability [38]. In Cameroon and Senegal, laboratory strengthening programs have underscored the importance of a secure, traceable logistics chain for samples as a prerequisite for timely diagnostics and effective outbreak management [39].

In addition, continuing education for laboratory personnel remains insufficient in Togo, as in many low-resource countries. A lack of refresher training, limited supervision, and weak professional incentives all contribute to declining analytical quality [40]. These findings are echoed by the RESAOLAB (West African Laboratory Network) project, which recommends a regional approach to improving the quality and harmonization of laboratory practices [41].

Finally, the absence of emergency stocks and laboratory contingency planning constitutes a major vulnerability. In Guinea, for instance, the Ebola outbreak highlighted the critical need for laboratory continuity plans, including buffer stocks and emergency circuits for critical testing [42]. Togo would benefit from incorporating these recommendations into its health security strategy.

Risk Communication and Community Engagement

Togo has a clearly defined institutional framework for health communication, with the Division of Health Promotion (DHP) playing a central role. The DPS coordinates emergency communication activities in collaboration with technical directorates, NGOs, media outlets, local authorities, and decentralized services. This multisectoral configuration is a major asset for effective public health emergency management [43].

The development of a national Risk Communication and Community Engagement (RCCE) plan, following the COVID-19 pandemic, represents notable progress. The plan outlines protocols for information dissemination, social mobilization, and feedback mechanisms while integrating the cultural and community dimensions of communication [44]. This approach enabled rapid mobilization during COVID-19 vaccination campaigns and prevention awareness efforts [45].

However, challenges remain. There is an uneven distribution of crisis communication capacities across the country, particularly in rural areas, where community health workers are often undertrained or absent. Similar challenges have been documented in other countries in the sub-region. In Mali and the DRC, post-crisis assessments have shown that a lack of coherent, locally adapted communication significantly undermined public trust and compliance with response measures [46].

The integration of community intermediaries including "maraines," traditional chiefs, and religious leaders represents a major strength. These actors help convey health messages that are culturally appropriate, as demonstrated by experiences in Sierra Leone and Burkina Faso during Ebola and measles outbreaks [47]. However, their effectiveness depends greatly on the existence of supporting mechanisms, regular supervision, and adequate logistical resources (visual aids, transportation, outreach materials) [48].

Finally, strengthening the crisis communication skills of local teams, establishing RCCE units in health regions, and harmonizing messaging particularly across social media platforms are priority recommendations for enhancing the resilience of Togo's health communication system [49].

Logistics

EOC plays a central role in coordinating logistical responses to health emergencies in Togo. It is supported by a specialized technical team and strategic tools such as risk mapping and pre-positioned stock planning [50]. The establishment of regional emergency supply storage centers constitutes a relevant strategy to facilitate the rapid distribution of medical and protective equipment [51].

However, several challenges persist, including variability in the stocking of these warehouses, which often depends on the ad hoc availability of resources from technical and financial partners. This situation undermines equitable access to resources during emergencies [52]. Additionally, limited human capacity in logistics particularly in planning, monitoring, and inventory management hampers the smooth execution of operations [53].

Similar observations have been made in other African countries. In Niger and the Central African Republic, evaluations conducted during measles and COVID-19 outbreaks highlighted the weaknesses of national logistics systems in emergency contexts, which remain heavily dependent on international agencies [54]. In contrast, Rwanda has invested in the digitalization of regional warehouses, real-time stock monitoring, and continuous training of health logisticians, significantly improving its response capacity [55].

In Togo, the role of international partners, particularly WHO, UNICEF, and WFP, is essential to filling logistical gaps. However, this reliance on external funding and supply chains raises concerns about long-term sustainability [56]. Unless national resources are strengthened particularly through a permanent emergency budget and a formal structuring of logistics functions within the health system the overall resilience of the system will remain vulnerable.

Greater investment in human resources, enhanced intersectoral coordination (Health, Interior, Customs), and interoperability between logistics information systems are necessary to improve the efficiency and speed of future responses [57].

Rapid Response Capacity and Infection Prevention

The existence of multidisciplinary rapid response teams and a National Infection Prevention and Control (IPC) Program in Togo reflects growing awareness of the importance of IPC in healthcare settings, including the prevention of healthcare-associated infections [58]. These mechanisms not only enable swift outbreak response

but also reinforce hygiene standards in health facilities [59].

However, the absence of a clear legal and operational framework for receiving foreign medical supplies and personnel during emergencies remains a significant gap. This shortcoming was evident during the COVID-19 response, which was marked by difficulties in coordinating and managing international support missions [60]. Moreover, the lack of regular simulation exercises especially at the regional or cross-border level limits the capacity of national teams to test their procedures and adapt to large-scale crises [61].

Similar findings have been reported in other Global South countries. For instance, a post-COVID study in Burkina Faso revealed that despite the presence of IPC committees and rapid response teams, the absence of simulation scenarios, weak coordination with international partners, and improvised management of foreign aid hindered response effectiveness [62]. In the Democratic Republic of Congo, regular drills conducted during the Ebola response were identified as key factors in strengthening national capacities, thanks to structured partnerships with WHO and Africa CDC [63].

In Togo, it is urgent to formalize a dedicated inter-institutional coordination mechanism for managing international medical interventions. This should include a legal framework, logistical procedures, and a dedicated communication platform [64]. Active participation in regional networks (e.g., RAHC, West African Health Organization) and the systematic organization of simulation exercises (e.g., tabletop or field-based) should be prioritized to improve the operational agility of the response system [65].

Epidemiological Surveillance and Institutional Capacity

Togo benefits from recognized epidemiological expertise, supported by a skilled workforce and the establishment of a national expert database, which provides a solid foundation for detecting and managing health threats [66]. These human resources were effectively mobilized during the COVID-19 response and for the surveillance of epidemic-prone diseases, in accordance with the International Health Regulations (IHR) [67].

However, the lack of an operational framework and a dedicated office for the rapid deployment of personnel in emergencies constitutes a structural weakness [68]. The speed and effectiveness of emergency responses depend heavily on the immediate mobilization of qualified human resources, as highlighted by WHO and Africa CDC analyses in other West African countries [69]. Such mechanisms are especially critical within the first 24 to 48 hours of a crisis, during which rapid response can contain an outbreak before it spreads widely.

Experiences from Senegal and Rwanda illustrate the importance of structures such as Emergency Operations Centers (EOCs), which include staff management units and updated personnel databases to ensure the rapid, coordinated, and intersectoral deployment of human resources [70]. These countries have also integrated digital alert and workforce tracking systems, improving the traceability of interventions and accountability.

In Togo, although notable efforts are being made including WHO-supported training and the implementation of the One Health initiative these actions still lack strong institutional anchoring. Developing a clear national policy framework for emergency human resource management, coupled with sustainable financing mechanisms, is essential to closing this gap [71].

Human Resources

Togo possesses significant capacity for training epidemiologists and other public health professionals, thanks to academic institutions and tailored training modules, often supported by international partners [72]. These efforts contribute to strengthening the human capital necessary for health emergency surveillance and response.

Nevertheless, the concentration of clinicians in urban and central areas particularly in the capital, Lomé results in unequal access to specialized human resources in rural and regional areas [73]. This geographic imbalance is a common issue in many Global South countries, including Burkina Faso and the Democratic Republic of Congo, where equitable distribution strategies for health personnel are still under development [74].

Furthermore, the National Health Development Plan (PNDS) 2023–2027 does not explicitly include public

health professionals in human resource management policies. This omission poses a significant risk to the sustainability of response capacities, especially in crises where the rapid and qualified mobilization of specialists is crucial [7].

Countries such as Ghana and Ethiopia have shown that explicitly including public health professionals in national human resource plans along with specific deployment and incentive mechanisms can substantially improve geographic coverage and the responsiveness of health systems to emergencies [75]. Therefore, it is essential for Togo to fully integrate these specialized profiles into its national human resource development strategies, supported by regular monitoring and sustainable financial investments.

IHR Compliance and the Joint External Evaluation

The Joint External Evaluation (JEE) revealed several major gaps in Togo's public health system, particularly regarding multisectoral coordination and sustainable financing for emergency preparedness and response activities [3]. Although progress has been made in implementing JEE recommendations such as strengthening regulatory frameworks and establishing collaboration mechanisms among the human, animal, and environmental health sectors these efforts remain partial and often fragmented [77].

The One Health approach represents a major innovation for Togo, offering an integrated framework for managing zoonotic health emergencies by accounting for the complex interactions between human, animal, and environmental health [78]. This approach is now internationally recognized as essential for the effective prevention and control of zoonotic outbreaks [79].

However, the operational implementation of One Health in Togo is hindered by institutional challenges, such as the absence of a formal legal framework, weak coordination among relevant ministries, and limited political commitment [80]. These challenges are common across many countries in the Global South, including Senegal and Malawi, where ambitious policies have not always translated into sustainable intersectoral collaboration due to a lack of dedicated resources and appropriate governance structures [81].

Successful experiences in countries like Tanzania and Rwanda underscore that strong political will, coupled with clear legal frameworks and targeted financial investments, is critical to optimizing One Health synergies and strengthening the resilience of health systems in the face of zoonotic emergencies [82].

Multiplicity of Partners

The support of numerous technical and financial partners including WHO, CDC, UNICEF, and JICA, among othersrep resents a significant asset for strengthening Togo's health system [95]. This assistance has notably improved several components of the health system, particularly in epidemiological surveillance, training, and resource mobilization [83].

However, the multiplicity and fragmentation of interventions, along with the diversity of tools, protocols, and training curricula used by these partners, present major challenges for coordination and harmonization [84]. This situation, also observed in countries like Burkina Faso and Mozambique, often leads to duplicated efforts, administrative burdens on local actors, and inconsistencies in data collection and analysis [85].

There is an urgent need to establish stronger national and regional coordination, underpinned by clear governance that promotes the pooling of tools and resources and facilitates the timely sharing of validated information. In this regard, the West African Health Organization (WAHO) could play a strategic role in promoting the harmonization of practices and the standardization of health information systems across the region [86]. Similar initiatives in East Africa, led by the East African Community (EAC), have demonstrated the positive impact of such coordination on the efficiency of health responses [87].

Resource Mobilization and Sustainability

In Togo, financing for public health emergency preparedness and response remains largely dependent on scattered and often short-term resources [88]. This fragmentation common in many countries in the Global

South, such as Côte d'Ivoire and Malawi undermines the continuity and effectiveness of health interventions [89]. The absence of a formalized plan for resource mobilization and sustainability leaves the health system highly vulnerable, particularly in the face of medium- and long-term health crises [90].

In several similar contexts, the development and implementation of a clear framework for resource mobilization integrating close coordination among national actors (government, private sector, civil society) and international partners has proven effective in enhancing health system resilience and ensuring the sustainability of interventions [91]. This framework should also include innovative financing mechanisms, such as dedicated emergency funds, public-private partnerships, and regional resource pooling [15].

Monitoring, Evaluation, and Research

The publication of a weekly epidemiological bulletin in Togo reflects a commitment to regularly monitor the public health situation [92]. However, the lack of a structured and systematic monitoring and evaluation (M&E) framework limits the ability to rigorously assess the impact of public health interventions [93]. Similar limitations have been observed in countries such as Burkina Faso and Guinea, where the absence of standardized tools and dedicated M&E resources hinders continuous improvement of health programs [94].

In terms of research, while Togo benefits from notable activities led by national institutes and supported by international collaborations, coordination among stakeholders remains weak, and available funding is insufficient to meet the country's research needs [35]. In neighboring countries like Senegal and Mali, the establishment of national health research strategies aligned with country priorities has improved the relevance and impact of research by strengthening the link between scientific evidence and public policy [95].

Accordingly, it would be beneficial for Togo to develop a formalized national health research strategy that includes inter-institutional coordination mechanisms and increased resource mobilization. Such a strategy would enhance the relevance, efficiency, and sustainability of public health interventions [96].

FUTURE PERSPECTIVES

Strengthening Health Security Capacity in Togo: Consolidation and Future Directions

To sustainably strengthen Togo's health system in line with International Health Regulations (IHR), it is essential to consolidate ongoing achievements while addressing the structural and operational gaps that persist. Current progress includes the integration of the **DHIS2** (District Health Information Software 2) for health data management, the adoption of **ISO standards** for service quality improvement, and the institutionalization of **One Health** approaches fostering multisectoral collaboration across human, animal, and environmental health.

Future Recommendations and Strategic Actions

- Establish a dedicated, ring-fenced budget line for health emergency preparedness and response.
- Formalize intersectoral committees at national and subnational levels and clearly define roles and responsibilities.
- Harmonize and integrate all health surveillance data sources into a unified national health information platform.
- Upgrade laboratory infrastructure, ensure maintenance, and expand training programs for laboratory personnel at national and regional levels.
- Develop a national specimen referral and transport network with mapped routes, temperature-controlled transport, and real-time tracking.
- Institutionalize joint border surveillance protocols and invest in infrastructure and training at designated entry points.

- Institutionalize in-service training, simulation exercises, and competency-based capacity building for public health professionals.

CONCLUSION

This study highlights that, despite notable strengths including available national expertise, relevant institutional programs, and active support from technical and financial partners Togo's preparedness and response to health emergencies still require substantial improvements. It is essential to increase domestic financing to ensure the sustainability of programs, establish effective multisectoral coordination mechanisms, and build specialized human resource capacities. These factors are key to better protecting the population from epidemic threats and sustainably enhancing the health system's resilience.

Togo benefits from a favorable institutional and human resource base, with multisectoral structures and strong partnerships. However, significant weaknesses remain, particularly in operational coordination, logistics, continuous training, and sustainable resource management. To sustainably strengthen health security, it is crucial to enhance organizational capacities, harmonize partner interventions, develop clear policies for workforce mobilization and deployment, and implement robust monitoring, evaluation, and sustainable financing mechanisms. The One Health approach also represents a major strategic opportunity, which should be further institutionalized through a reinforced legal and regulatory framework.

Abbreviations

IHR	International Health Regulations
PHEOC	Public Health Emergency Operations Center
PNDS	Plan national de developpement sanitaire
FETP	Field Epidemiology Training Program
JEE	Joint External Evaluation
INSEED	Institu national de la statistique, des etdues economiques et démographiques
PANSS	Plan d'action national de securité sanitaire
MSHP	Ministère de la santé et de l'hygiène publique
AIGE	Aéroport internationl Gnassigbé Eyadéma
WHO	Word Health Organisation
INH	Institut national d'Hygiène
LCV	Laboratoire central veterianire
WOAH	World Organisation for Animal Health
NGO	Non-Governmental Organization
RCCE	Risk Communication and Community Engagement
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
PPE	Personal Protective Equipment
GHSA	Global Health Security Agenda
CDC	Centers for Disease Control and Prevention
JICA	Japan International Cooperation Agency
DHIS2	District Health Information Software 2

e-IDSR	Electronic Integrated Disease Surveillance and Response
WAHO	West African Health Organization
EOC	Emergency Operations Center
IPC	Infection Prevention and Control
DRC	Democratic Republic of the Congo
RESAOLAB	Réseau d'Afrique de l'Ouest des Laboratoires
DHP	Division of Health Promotion
WFP	World Food Programme
RAHC	Regional Animal Health Center
EAC	East African Community
M&E	Monitoring and Evaluation
ISO	International Organization for Standardization
Africa CDC	Africa Centres for Disease Control and Prevention

Authors Contributions

Wankpaouyare Gmakouba: Conceptualization, Data curation, Formal Analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing original draft, Writing review & editing

Kossi Tarkpessi: Conceptualization, Data curation, Formal Analysis, Methodology, Validation, Writing review & editing

Pitabinawè Deabalo: Writing review & editing

All authors were responsible for reviewing and editing the manuscript. All authors confirm they had full access to all data of the study and accept responsibility for the content of the manuscript. They also accept responsibility for the decision to submit it for publication.

Conflicts of Interest

The authors declare no conflicts of interest.

Annexes

Table II: List of Documents Reviewed

1. Multihazard Health Emergency Contingency Plan

2. Togo Health Security Action Plan 2017–2021

3. COUSP Strategic Plan 2016–2018

4. Ministerial Order Establishing the Structure for Global Health Security Coordination

5. Ministerial Order Establishing the National IHR Focal Point

6. National Epidemic Management Committee

7. Assessment Report on Health Emergency Preparedness and Response Capacities

8. Emergency Plan of Lomé International Airport

9. Emergency Plan of the Lomé Autonomous Port

10. ORSEC Plan (Emergency Response Organization Plan)

11. COUSP Activity Report

12. Epidemic Management Report

13. Crisis Communication Plan

14. National Health Security Strategy

15. Epidemiological Surveillance Protocols

16. Report on Health Emergency Simulation Exercises

17. Documentation on Public Health Human Resources

18. Public Health Best Practice Guidelines

19. Analysis of Priority Health Risks

20. Respiratory Pathogens Plan 2014–2026

21. IHR Joint External Evaluation Reports 2021, 2022, 2023

Table III: Key Informant Interviews

No	Institution	Number of People Interviewed
1	Health Promotion Division	2
2	Immunization Division	1
3	National Institute of Hygiene	2
4	One Health Secretariat	2
5	AFENET	2
6	Ministry of Environment and Forest Resources	1
7	Department of Livestock	1
8	Health Emergency Operations Center	2
9	Disease Control Directorate	1
10	WHO	1
	Total	**15**

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