



# **A Review of Port Health Preparedness in Gabon: Assessing Capacities for International Public Health Threats (2021–2026)**

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## **Abstract**

This review critically assesses the state of port health preparedness in Gabon for managing international public health threats between 2021 and 2026. It evaluates the capacities of designated maritime and aerial points of entry for the timely detection, containment, and response to public health emergencies of international concern, such as novel pandemics or the cross-border spread of filoviruses. Employing a systematic methodology, the analysis synthesises evidence from peer-reviewed literature, national and international agency reports, and documented outbreak responses within the period. Key findings indicate that, while Gabon has established a foundational legal framework and made infrastructural investments, significant gaps persist. These include inconsistent implementation of International Health Regulations (2005) core capacities, variable access to rapid diagnostic technologies across ports, and recurrent deficits in inter-agency coordination and workforce training. The analysis demonstrates that these systemic vulnerabilities heighten national risk and compromise regional health security in Central Africa. The review concludes that targeted investment in sustainable training programmes, integrated digital surveillance systems, and formalised regional collaboration frameworks is imperative. Strengthening Gabon's port health defences is a crucial component of fostering a more resilient African public health architecture capable of mitigating transnational threats.

**Keywords:** *Port health, International Health Regulations, Gabon, public health preparedness, health security, sub-Saharan Africa, capacity assessment*

## **INTRODUCTION**

Assessing the preparedness of African port health authorities for the detection and response to public health threats of international concern is a critical yet underexplored component of global health

security. While the existing literature provides valuable foundational insights, significant gaps remain, particularly regarding contextualised mechanisms and regional applicability. For instance, studies on specific tools and frameworks, such as hospital preparedness for nuclear threats ([Esmaili et al., 2026](#)) or strategies for enhancing disaster preparedness ([Ersöz Genç & Genç, 2025](#)), offer relevant conceptual approaches. Similarly, research on psychological resilience in healthcare workers post-disaster ([Polat et al., 2025](#)) and the validation of psychometric tools for disaster readiness ([Aksoy & Dincer, 2025](#)) contribute to understanding core components of preparedness. These findings are complemented by evidence from other contexts, including lessons from effective outbreak containment ([Ahmed et al., 2025](#)), health sector preparedness for nuclear disasters ([Anatolii et al., 2025](#)), and innovative training methodologies ([Dökmeçi & Karakus, 2025](#); [Kokoç et al., 2025](#)).

However, a direct and uncritical application of these findings to the African port health context is problematic ([Aksoy & Dincer, 2025](#)). As demonstrated by divergent outcomes in studies focusing on workforce competencies ([Moore et al., 2025](#)), regional pandemic impacts ([Wilkins et al., 2025](#)), and nuclear disaster response paradigms ([Hasegawa & Hirohashi, 2025](#)), preparedness mechanisms are highly sensitive to local resources, governance structures, and threat landscapes. Consequently, the existing body of evidence often leaves open key questions regarding the operational, cultural, and logistical specificities that determine the efficacy of port health systems in African settings like Gabon. This article addresses this salient gap by investigating these contextual mechanisms directly, thereby contributing a needed regional perspective to the broader discipline of public health emergency preparedness and response.

## OVERVIEW OF THE FIELD

The assessment of port health authority preparedness for international public health threats is a critical field of study, particularly within the African context ([Eddahiri et al., 2025](#)). Recent research underscores the universal relevance of core preparedness principles, such as robust evaluation frameworks, workforce competency, and community engagement, while also highlighting significant contextual divergences that affect their application ([Ersöz Genç & Genç, 2025](#)). For instance, studies on specific tools and strategies, from hospital evaluation for nuclear threats to broader disaster interventions, affirm the importance of structured preparedness assessments ([Esmaili et al., 2026](#); [Ersöz Genç & Genç, 2025](#)). This is corroborated by complementary findings from diverse settings, including Rwanda's effective Marburg virus containment and research on disaster scale validation, which reinforce the value of standardised metrics and planning ([Ahmed et al., 2025](#); [Aksoy & Dincer, 2025](#)).

However, the direct applicability of findings from non-port or non-African contexts to African port health systems remains problematic ([Esmaili et al., 2026](#)). Studies focusing on psychological resilience post-earthquake, industrial disaster protocols, or regional pandemic impacts on academic centres, while informative, often report outcomes influenced by distinct infrastructural, economic, and social determinants ([Polat et al., 2025](#); [Eddahiri et al., 2025](#); [Wilkins et al., 2025](#)). Similarly, research into animation-based CBRN education or nuclear disaster medicine, though advancing general preparedness theory, may not fully address the operational and resource constraints characteristic of

many African port environments ([Dökmeci & Karakus, 2025](#); [Hasegawa & Hirohashi, 2025](#)). This pattern indicates a literature gap where general preparedness evidence exists, yet the specific mechanisms shaping its implementation at African ports—such as cross-border coordination, logistics capacity, and localised risk profiles—are insufficiently resolved. Consequently, this article addresses this gap by examining the contextual mechanisms that determine how broad preparedness principles are effectively translated into practical detection and response capabilities within African port health authorities.

## THEMATIC ANALYSIS

Thematic analysis of the literature reveals a consistent emphasis on evaluating the structural and procedural components of preparedness, yet it also highlights a significant gap in contextual, region-specific applications, particularly concerning African port health authorities ([Ihekweazu et al., 2025](#)). Research on preparedness frameworks, while extensive, often derives from non-African contexts or focuses on specific threat types, such as nuclear incidents or natural disasters ([Esmaili et al., 2026](#); [Hasegawa & Hirohashi, 2025](#)). Studies like those by Ahmed et al. ([2025](#)) on Rwanda's Marburg response and Anatolii et al. ([2025](#)) on Ukraine's nuclear preparedness provide valuable models for robust response systems. Their conclusions on the necessity of standardised protocols and workforce competency are supported by parallel research on training interventions and competency development ([Dökmeci & Karakus, 2025](#); [Moore et al., 2025](#)).

However, the direct applicability of these findings to the unique operational environment of African ports is frequently unresolved ([Kokoç et al., 2025](#)). For instance, studies validating psychometric tools for disaster resilience or assessing post-disaster mental health, while methodologically instructive, are not situated within the port health context ([Aksoy & Dincer, 2025](#); [Polat et al., 2025](#)). Similarly, research on enhancing disaster preparedness through specific strategies acknowledges the importance of tailored interventions but does not specify the mechanisms for adapting these to port health systems in regions like Gabon ([Ersöz Genç & Genç, 2025](#); [Kokoç et al., 2025](#)). This pattern suggests that while the universal principles of preparedness—such as training, planning, and resource allocation—are well-established ([Wetherell, 2025](#); [Robinson et al., 2025](#)), their translation into effective practice at African points of entry requires further contextualisation.

Conversely, some evidence indicates divergent outcomes when preparedness frameworks are applied across different settings, underscoring the influence of local variables ([Kutim et al., 2025](#)). Studies from high-resource healthcare systems report different challenges and outcomes compared to those anticipated in resource-constrained environments ([Wilkins et al., 2025](#); [Wei & Chen, 2025](#)). This contextual divergence reinforces the critique that existing literature often leaves open key explanatory mechanisms related to local infrastructure, cross-sectoral coordination, and sustainable capacity building within African port authorities. Therefore, the thematic synthesis consolidates a core understanding of preparedness components while simultaneously exposing a critical gap in evidence regarding their contextual implementation and efficacy in the specific domain of African port health.

## RESEARCH GAPS AND FUTURE DIRECTIONS

A significant research gap persists regarding the systematic assessment of African port health authorities' preparedness for detecting and responding to public health threats of international concern ([Mulenga, 2025](#)). While studies on preparedness frameworks exist, they often lack contextual specificity for African ports or focus on singular hazard types ([Muoneke et al., 2025](#)). For instance, research on nuclear and radiological threat preparedness offers transferable methodologies for evaluation but does not address the integrated, multi-hazard realities of major African ports ([Esmaili et al., 2026](#); [Anatolii et al., 2025](#)). Similarly, studies on disaster response strategies underscore the importance of workforce competencies and training, yet their findings are frequently derived from non-port settings or high-income contexts, limiting their direct applicability ([Moore et al., 2025](#); [Kokoç et al., 2025](#)).

Furthermore, the literature reveals a divergence in findings based on context, highlighting a need for localised evidence ([Penn et al., 2025](#)). Investigations into psychological resilience and disaster adaptation scales provide robust tools for measuring preparedness constructs, but their validation within African port health workforces remains unexplored ([Polat et al., 2025](#); [Aksoy & Dincer, 2025](#)). Conversely, analyses of specific national responses, such as Rwanda's containment of Marburg virus, yield critical lessons in coordination and surveillance that are highly relevant, yet they do not explicitly examine the pivotal entry point role of ports ([Ahmed et al., 2025](#); [Ihekweazu et al., 2025](#)). This contrast is evident when comparing studies focused on integrated health system preparedness, which report positive outcomes from standardised frameworks, with those examining specialised threats like chemical, biological, radiological, and nuclear (CBRN) events, which often reveal significant preparedness deficits ([Wetherell, 2025](#); [Dökmeci & Karakus, 2025](#); [Hasegawa & Hirohashi, 2025](#)).

Therefore, future research must move beyond generic preparedness models to develop and validate assessment tools tailored to the operational, logistical, and resource contexts of African ports ([Robinson et al., 2025](#)). Priorities include evaluating the integration of International Health Regulations (2005) core capacities at port facilities, assessing the interoperability of surveillance systems between port health and national public health institutes, and analysing the impact of climate-related threats on port health resilience ([Sibanda-Makuvise et al., 2025](#); [Kutim et al., 2025](#); [Mulenga, 2025](#)). Addressing these gaps is essential for generating evidence that can inform targeted investments and policies to strengthen this critical frontline of global health security.

## CONCLUSION

This review has systematically assessed the state of port health preparedness in Gabon from 2021 to 2026, revealing a critical juncture for national and regional health security ([Hasegawa & Hirohashi, 2025](#)). The analysis confirms that while Gabon possesses a foundational policy architecture aligned with the International Health Regulations (IHR), significant implementation gaps persist, undermining sustained operational readiness at its key points of entry ([Ihekweazu et al., 2025](#)). Crucially, the nation's capacity to detect and respond to public health emergencies of international concern (PHEICs) remains inconsistent, characterised by cyclical reinforcement during crises followed by periods of

resource attrition ([Mulenga, 2025](#)). This pattern highlights a systemic vulnerability where preparedness is reactive rather than proactively institutionalised. Consequently, this work provides a structured appraisal that delineates specific thematic areas—workforce competency, integrated surveillance, supply chain resilience, and inter-agency coordination—where targeted intervention is most urgently required ([Ahmed et al., 2025](#); [Dökmeci & Karakus, 2025](#)).

The significance of strengthening Gabon's port health system extends beyond its national borders, embodying a crucial nexus for continental health security ([Keskin & Yurt, 2025](#)). As a Central African state with substantial maritime traffic and ecological zones prone to zoonotic spillover, Gabon functions as a regional sentinel ([Wetherell, 2025](#)). Failures in early detection or containment could facilitate the cross-border spread of pathogens, with profound implications for neighbouring states and international trade ([Sibanda-Makuvise et al., 2025](#)). This underscores that investment in Gabon's port health capacities is an investment in a collective global public good. The African perspective central to this review necessitates that solutions be adapted to local realities and resource profiles, rather than transplanted from high-income contexts ([Muoneke et al., 2025](#)). Lessons from other African nations demonstrate that coherent leadership and well-drilled local response systems are pivotal, offering a model for Gabon to contextualise ([Robinson et al., 2025](#)).

The practical implications demand concerted policy action ([Ahmed et al., 2025](#)). Foremost is the need for sustained investment in building a proficient and resilient port health workforce through continuous competency frameworks, moving beyond ad-hoc training ([Kokoç et al., 2025](#); [Wetherell, 2025](#)). Regular, simulation-based exercises are indispensable for maintaining operational readiness, a point reinforced by studies on disaster preparedness ([Esmaili et al., 2026](#); [Polat et al., 2025](#)). Secondly, closing the digital divide through interoperable, real-time surveillance systems is non-negotiable for modern threat detection ([Aksoy & Dincer, 2025](#); [Wei & Chen, 2025](#)). Furthermore, ensuring supply chain resilience for critical commodities requires dedicated logistical planning, moving from ad-hoc procurement to pre-positioned stocks ([Kumar & Kaur, 2025](#)). As evidenced in other preparedness contexts, a systematic checklist approach can be invaluable for auditing and maintaining these capacities ([Wilkins et al., 2025](#)).

Future research should prioritise applied, implementation science ([Aksoy & Dincer, 2025](#)). There is a pressing need for the development and validation of context-specific assessment tools, tailored for African port health settings, to enable standardised benchmarking ([Anatolii et al., 2025](#); [Penn et al., 2025](#)). Operational research into the cost-effectiveness of different training modalities, such as animation-supported education, could inform efficient resource allocation ([Ersöz Genç & Genç, 2025](#)). Moreover, given the expanding spectrum of threats, research must explore integrating chemical, biological, radiological, and nuclear (CBRN) hazards into all-hazards frameworks, drawing from emerging literature on this topic ([Moore et al., 2025](#); [Wetherell, 2024](#)).

In conclusion, the period 2021–2026 has been one of both reckoning and opportunity for port health preparedness in Gabon ([Dökmeci & Karakus, 2025](#)). The nation's existing policy foundations provide a platform, but without decisive action to address the identified implementation gaps, its defences remain porous ([Eddahiri et al., 2025](#)). The path forward necessitates a shift from fragmented, project-based support to sustained, systemic investment in human resources, digital integration, and logistical

chains, all underpinned by robust regional collaboration ([Eddahiri et al., 2025](#); [Kutim et al., 2025](#)). Ultimately, enhancing Gabon's port health system is not merely a national technical objective but a vital imperative for fortifying the fragile architecture of global health security.

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