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Strengthening National Health Security: Multi-country Implementation Experiences from Tackling Deadly Diseases in Africa Programme

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Strengthening National Health Security: Multi-country Implementation Experiences from Tackling Deadly Diseases in Africa Programme

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Abstract

Introduction

Sub-Saharan Africa faces the highest burden of recurrent epidemic-prone diseases, yet health systems of most countries lack the health system capacity to effectively prevent, detect, and respond to public health emergencies. In 2024, the Tackling Deadly Diseases in Africa Programme (TDDAP2) was launched to strengthen health security capacities in the Democratic Republic of Congo (DRC), Ghana, Kenya, Malawi, and Uganda. We describe experiences in strengthening national health security through co-designed implementation models and collaborative government-embedded technical assistance.

Methods

We employed a mixed-methods design for programme review, based on technical reports generated between October 2024 and March 2026. Data sources included technical reports, field debriefs, case studies, Joint External Evaluations (JEEs), and stakeholder coordination meetings. Project activity completion and milestone data were abstracted from the project results framework. Qualitative data were analysed thematically, whereas quantitative data were summarised descriptively.

Results

TDDAP2 interventions were aligned with nationally determined health security priorities, grounded in JEEs, and coherent with the broader technical assistance landscape. Key features of the embedded technical assistance model were: in-country consultant deployment, collaboration with Ministries, Departments, Agencies (MDAs) throughout planning, implementation, and evaluation of activities, and oversight coordination by Palladium Country Leads. Cross-country outputs included: validated and costed

NAPHS adopted in Kenya, Malawi, Ghana, and DRC; 991 health workers trained in IDSR in Uganda (mean knowledge scores: 66.7% - 87%); 22 MDAs adopting a digital NAPHS M&E tracker in Uganda; and Mpox coordination tools adopted by DRC PHEOC and subsequently adapted for EVD outbreak declared in September 2025.

Conclusion
Government-anchored and co-designed technical assistance can strengthen IHR core capacities across diverse contexts. Embedding in-country consultants within national systems and deploying digital monitoring tools produced measurable institutional gains, offering practical pathways for operationalising health security frameworks and advancing emergency preparedness and response.

Keywords: Health security; International Health Regulations, Health systems, Sub Saharan Africa

Summary box

What is already known on this topic

- Most African countries have completed JEEs and SPARs since 2016, but few have translated findings into funded, time-bound NAPHS, reflecting governance and financing failures that technical assistance alone has not resolved.
- Donor-funded health security programmes have historically delivered vertical, activity-based support misaligned with national planning cycles, limiting institutional ownership and sustainability beyond donor timelines.
- Closing the gap between health security assessment and implementation requires collaborative, government-embedded models that co-design and co-implement priorities with national institutions.

What this study adds

- A co-designed, government-embedded technical assistance model strengthened IHR core capacities across five diverse African countries, producing measurable gains in planning, workforce capacity, and digital health security systems.

How this study might affect research, practice, or policy

- Governments and development partners should prioritise co-designed, country-embedded technical assistance over externally conceived activity-based programmes.
- Digital monitoring tools, including real-time NAPHS M&E trackers and integrated PHEOC systems, strengthen accountability and data-driven governance.
- Future evaluations should incorporate longitudinal outcome indicators to assess the durability of capacity gains and translation into measurable population-level health security improvements.

1.0 Introduction

Sub-Saharan Africa has a disproportionate burden of epidemic-prone diseases, experiencing recurrent outbreaks of cholera, Ebola, mpox, and other pathogens that overwhelm fragile health systems and result in preventable mortality. This vulnerability is compounded by structural weaknesses in health system financing and governance that limit ability of countries to mount effective epidemic preparedness and response. However, most countries remain heavily reliant on external donor financing, which has historically supported vertical, disease-specific programmes rather than integrated health security capacity building[1,2]. While this external investment has delivered measurable gains in control of HIV, tuberculosis, and malaria, it has simultaneously contributed to fragmented health system governance, proliferation of parallel reporting structures, and health workforce distortion[3,4]. These structural inefficiencies undermine integrated national capacities required for effective epidemic preparedness and response.

International Health Regulations (IHR, 2005), a foundational legal framework governing global health security, provide the benchmark for core national capacities across surveillance, laboratory systems, emergency response, and governance[5]. The COVID-19 pandemic confirmed that most countries lacked the integrated capacities required to prevent, detect, and respond to a public health emergency[6]. Despite the completion of Joint External Evaluations (JEEs) and State Party Annual Reports (SPARs) since 2016, few African countries have operationalised assessment findings into funded time-bound National Action Plans for Health Security (NAPHS)[2,4]. This persistent gap between assessment and implementation reflects not only technical capacity constraints, but governance and financing failures that external activity-based technical assistance has historically been unable to resolve[7]. Closing this implementation gap requires a fundamentally different model of development partnership. Donor-funded programmes should work collaboratively with national Ministries, Departments, and Agencies (MDAs) to co-design and co-implement health security priorities, rather than delivering externally conceived activities separate from government systems[7,8]. Collaborative approaches embedded within national planning and financing cycles build institutional ownership and accountability mechanisms critical for health security system sustainability beyond donor timelines[1,3,9].

The Tackling Deadly Diseases in Africa Programme Phase 2 (TDDAP2) is a global health security (GHS) initiative funded by the United Kingdom's Foreign, Commonwealth and Development Office (FCDO) in 2024 to strengthen health security and operationalise IHR core capacities in the Democratic Republic of Congo (DRC), Ghana, Kenya, Malawi, and Uganda[10]. Selected countries represent diverse health security profiles shaped by respective IHR implementation gaps, outbreak burden, and governance contexts. Uganda faces recurring outbreaks of Sudan Virus Disease, mpox, and anthrax, with limited surveillance coverage in private and private-not-for-profit health facilities[11,12]. Kenya has a stronger institutional base through the Kenya National Public Health Institute (KNPHI) but significant gaps in case management guidelines and surveillance monitoring systems[13,14]. Malawi's 2022 and 2023 cholera outbreaks, the worst in the country's history with 59,376 cases and 1,772 deaths, exposed critical weaknesses in case management[15,16]. Each country represents a distinct epidemiological and health system context; ranging from fragile post-epidemic recovery settings to relatively stronger systems with established national public

health institutes. We describe TDDAP2 experiences in strengthening national health security through co-designed implementation models and government-embedded technical assistance.

2.0 Methods

2.1 Program design

Under the leadership of Palladium, implementation was conducted through a consortium of technical partners including Infectious Diseases Institute (IDI), Makerere University, African Field Epidemiology Network (AFENET), Integrated Quality Laboratory Services (IQLS), and Halcyon. The national component of the programme focused on four key outputs: planning, coordination, and financing (1), workforce development (2), surveillance and laboratory systems (3), and community engagement (4), with cross-cutting integration of One Health, gender equality, social inclusion, and climate resilience initiatives. Palladium served as the programme management lead, responsible for coordination between FCDO, consortium technical partners, and country governments. Palladium country leads reviewed and validated country-specific priority activities against the TDDAP2 results framework and annual costed workplans before authorising implementation. Palladium's role was to verify scope alignment and funder compliance whereas technical content was agreed collaboratively between MDAs and consortium partners. We focused exclusively on activities implemented by the Infectious Diseases Institute (IDI), Makerere University across DRC, Ghana, Kenya, Malawi, and Uganda (Figure 1).

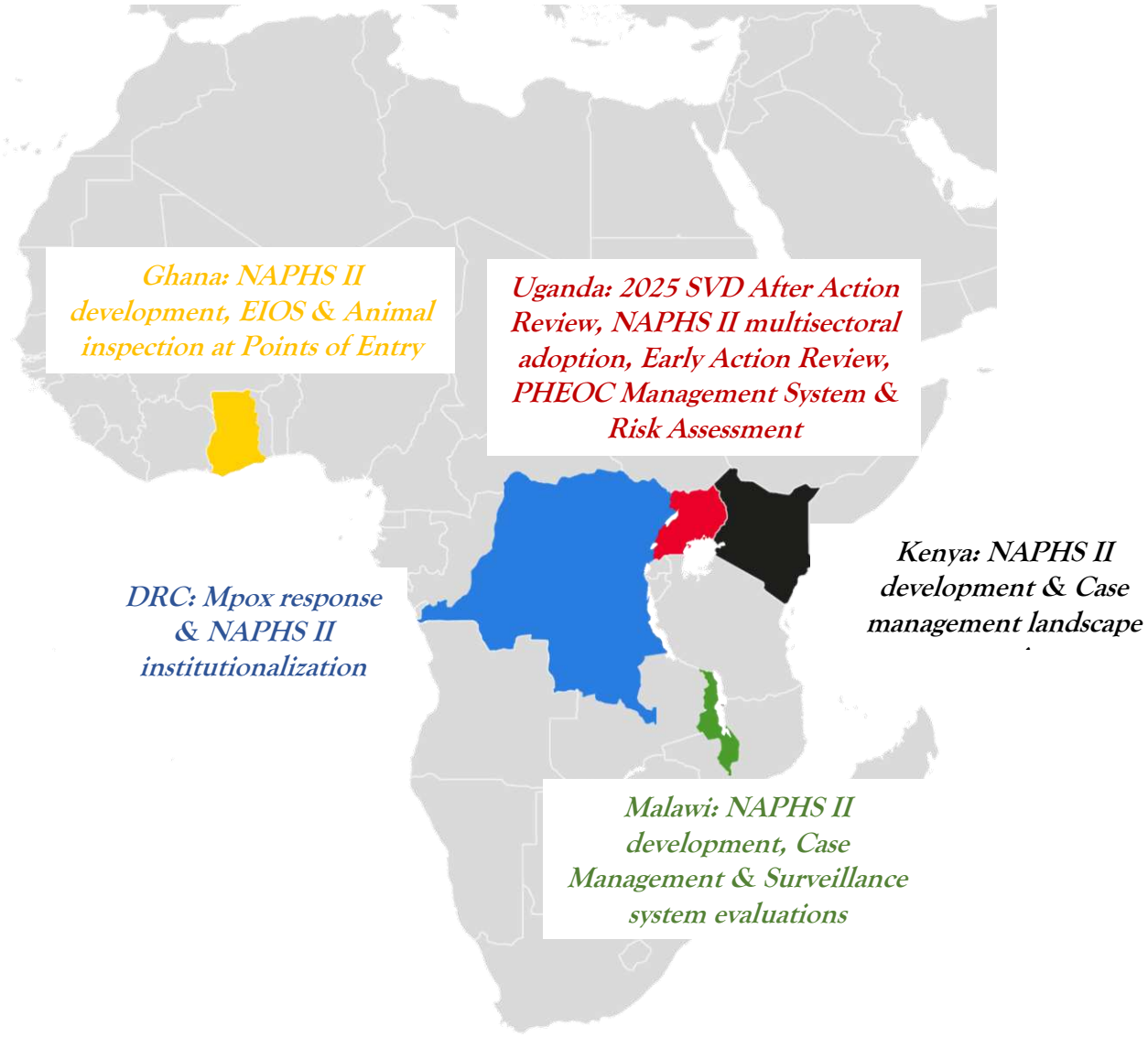


Figure 1: Geographic coverage and key intervention domains by Infectious Diseases Institute (IDI), Makerere University, October, 2024 – March 2026.

2.2 Implementation approach

TDDAP2 implementation model employed a co-design framework in which national governments identified priority activities aligned with IHR core capacities. At programme inception, a baseline gap assessment was conducted for each country. This involved a systematic desk review of the most recent Joint External Evaluation (JEE) reports, State Party Annual Reports (SPAR), national health security policies, and National Action Plans for Health Security (NAPHS I). In Kenya, additional national assessments, including Health Laboratory Management Assessment (HLMA), Harmonised Health Facility Assessment (HHFA), and 2023 Performance of Veterinary Services (PVS) evaluation, also informed baseline priority-setting. Building on baseline findings, country-specific priorities were established through consultative meetings with Ministries, Departments, and Agencies (MDAs), Civil Society Organizations, development partners responsible for IHR implementation. Selected activities were jointly agreed between

MDA technical staff and TDDAP2 country teams, rather than prescribed externally. TDDAP2 consortium made a concerted effort to map existing partner activities before interventions, to avoid duplication or contradiction of work by other implementing partners. Validated activities were implemented by competitively selected in-country consultants with relevant contextual and technical expertise, working directly with MDA technical staff and national public health institute to co-deliver activities. Project technical teams from IDI provided technical guidance, mentorship, and quality assurance throughout implementation. Implementation was anchored within government-led coordination structures, particularly Ministries of Health, Directorate of Veterinary Services and National Public Health Institutes (NPHIs), to promote ownership, institutional accountability, and sustainability of program outputs with reference to TDDAP2 Technical Assistance and Coordination Framework (Figure 2).

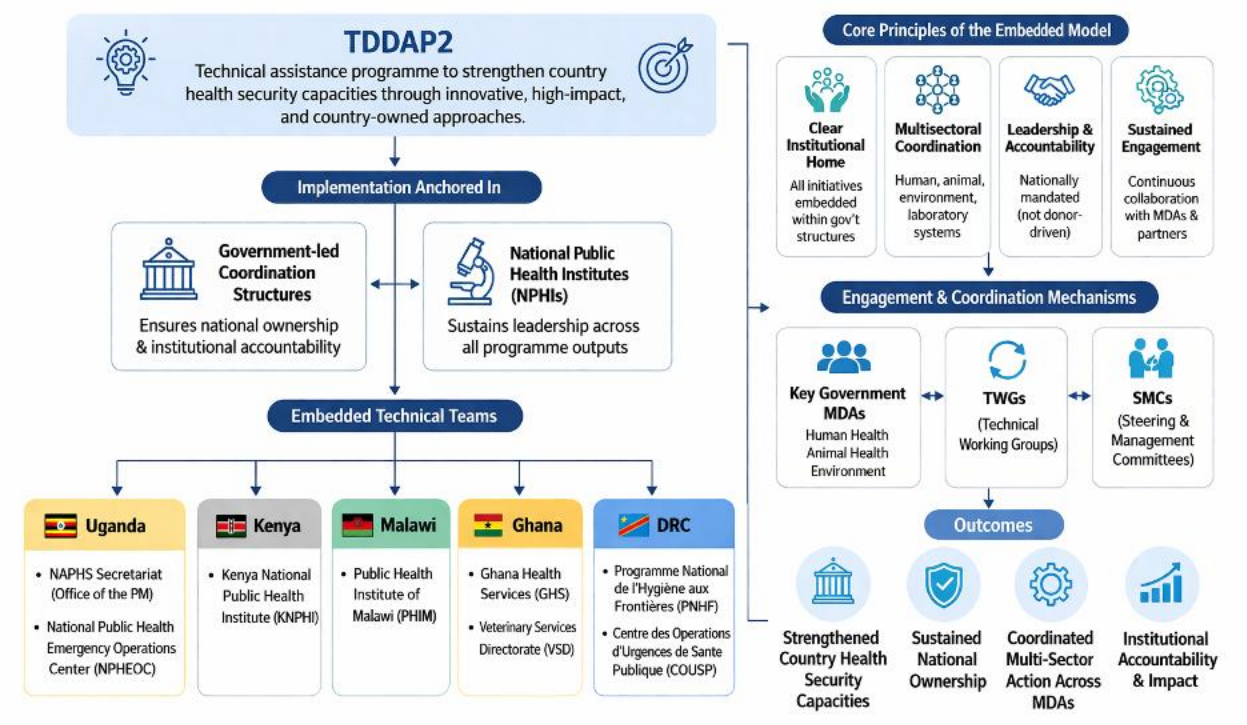


Figure 2: TDDAP2 Technical Assistance and Coordination Framework

2.3 Data sources and collection

This assessment employed a mixed-methods design, drawing on multiple programme information streams to capture implementation processes and outcomes across countries. All data reviewed were derived from programme documentation generated during TDDAP2 implementation activities. We reviewed technical reports, field debriefs, and case studies generated between October 2024 and March 2026 to document implementation processes and outcomes. Baseline documents reviewed included most recent JEE reports and SPAR findings for each country, national health security policies, and National Action Plan for Health Security (NAPHS) documents. These grounded the assessment of programme relevance in IHR gaps that existed prior to implementation. Supplementary information was obtained through stakeholder coordination meetings with Ministries of Health, National Public Health Institutes (NPHIs), and

implementing partners. Data on activity completion, milestones, and deliverables were extracted using a structured abstraction form aligned with TDDAP2 results framework, providing an overview of programme inputs, processes, outputs, and early outcomes across countries.

2.4 Data analysis

Qualitative information from reports, debriefs, and stakeholder coordination meetings was analysed thematically. Quantitative data were summarised descriptively. Implementation experiences were explored across three sequential questions: whether TDDAP2 activities were appropriately aligned with national health security priorities; how implementation was delivered and coordinated across different country contexts; and what early evidence exists of outcome-level change.

2.5 Ethical considerations

This assessment was classified as a public health programme evaluation and therefore determined non-research. No patient-level, individual-level, or personally identifiable data were collected or analysed. All data reviewed were derived from publicly available programme reports and national health security documents generated during TDDAP2 implementation activities, in collaboration with Ministries of Health across DRC, Ghana, Kenya, Malawi, and Uganda. Administrative clearance was obtained through Palladium and Ministries of Health in TDDAP2 countries. Stakeholders' reviews were guided by national data-sharing protocols and existing agreements under the TDDAP2 consortium.

3.0 Results

3.1 Program relevance: alignment of activities with national IHR priorities

TDDAP2 interventions were aligned with nationally determined health security priorities, grounded in Joint External Evaluations (JEEs), and coherent with the broader landscape of technical assistance. At programme inception, Palladium country leads convened consultative meetings with government stakeholders to identify priority activities aligned with IHR core capacities. These priorities were validated against the most recent JEE and SPAR findings, ensuring that programme interventions were grounded in independently assessed national capacity gaps rather than externally imposed priorities. Table 1 provides illustrative examples of TDDAP2 activity alignment with country-specific 2023/2024 JEE priorities.

Table 1: Illustrative examples of TDDAP2 alignment with JEE and NAPHS priorities

Country	2023/2024 JEE challenges	Illustrative examples of TDDAP2 support
DRC	▪ Coordination of emergency response ▪ NAPHS operationalization	▪ Technical assistance to strengthen the Mpox response coordination between national and subnational levels ▪ Facilitated NAPHS II validation, ensuring alignment with current JEE findings and WHO benchmarks.

Kenya*	▪ Standardization of clinical case management guidelines	▪ Landscape mapping of guidelines for IDSR priority diseases using AGREE II and RIGHT appraisal tools.
Ghana*	▪ Weak standard operating procedures at points of entry for zoonotic diseases ▪ Operationalization of EIOS	▪ Development of SOPs for animal inspection and testing across seven points of entry and quarantine stations in alignment with IHR (2005) and WOAH standards. ▪ Development of SOPs for Epidemic Intelligence from Open Sources (EIOS) implementation.
Malawi*	▪ Surveillance system interoperability ▪ Civil society engagement in health security	▪ Situational analysis of surveillance architecture across human, animal, and environmental health sectors. ▪ Profiled 115 civil society organisations operating in health security for coordinated resource mobilization. Developed publicly accessible online interactive maps showing geographic visualization of CSO coverage, operational scope, and thematic focus areas.
Uganda	▪ NAPHS institutionalization ▪ Multi-hazard risk assessment	▪ Advocacy meetings with Senior Management Teams of implementing MDAs to incorporate NAPHS II priorities into sectoral workplans and annual budgets. ▪ National multi-hazard risk assessment using the WHO STAR methodology.

** Technical guidance was provided during prioritisation, costing, and validation phases of the National Action Plan for Health Security (NAPHS) to facilitate implementation of JEE-recommended priorities in Kenya, Ghana and Malawi.*

3.2 Implementation model

Table 2 outlines key features of TDDAP2 embedded technical assistance model, functionality of adaptive governance mechanisms across diverse country contexts, and factors that enabled effective delivery.

Table 2: Key features of TDDAP2 embedded technical assistance model

- Primarily embedded within national institutions, with in-country consultants working alongside partner institutions under supervision by project technical teams.
- Competitively selected in-country consultants with demonstrated contextual expertise, rather than short-term fly-in missions from external specialists.
- Technical activities co-developed with government counterparts through participatory workshops, iterative design, and structured validation processes.
- Government stakeholders engaged throughout planning, implementation, and evaluation phases to ensure ownership, contextual alignment, and institutional learning.

- Collaboration with existing development agencies during activity implementation, particularly WHO, RTSL FAO and other implementing partners.
- Palladium country leads responsible for coordination and quality assurance; project technical teams from IDI responsible for technical content, mentoring, and cross-country learning.

3.3 Early effectiveness: emergent outcomes and evidence of practice change

Table 3 summarises cross-country progress outcomes organised by key implementation domains: planning and coordination, health workforce capacity, and digitalisation of health security systems.

Table 3: TDDAP2 progress outcomes across project countries

Domain	Outcomes
Planning and coordination	▪ Validated and costed NAPHS developed through multisectoral engagements were adopted by Ministries of Health as national implementation roadmaps in Kenya, Malawi, Ghana, and DRC. ▪ 22 MDAs incorporated respective NAPHS activities into Uganda 2026-2027 national budget frameworks. ▪ Improved One Health coordination was observed across all five countries, including technical support during the development of the first National One Health Policy in Uganda. ▪ In DRC, Mpox coordination tools, including the 4W matrix, partner tracker, and response indicators, were adopted by Public Health Emergency Operations Centre (PHEOC) for operational use and subsequently adapted for EVD response declared in September 2025.
Health workforce capacity	▪ 991 health workers from 206 private facilities across Kampala Metropolitan Area were trained in IDSR in Uganda, with mean knowledge scores improving from 66.7% to 87%, pre to post training, respectively. ▪ Sixty-five participants received integrated IDSR and Ebola Rapid Response Team training in DRC, with the curriculum expanded immediately following EVD outbreak declaration. ▪ Forty Monitoring and Evaluation (M&E) Specialists from Uganda NAPHS implementing MDAs and Kenya National Institute of Public Health (KNPHI) were trained on utilization of NAPHS M&E tracker. ▪ Forty-five One Health stakeholders from Ministries of Health, Water and Environment, and Agriculture, Animal Industry and Fisheries were trained on Early Action Review using 7-1-7 approach in Uganda.

	▪ Simulation exercise (SIMEX) Training of Trainers was conducted among 61 multidisciplinary PHEOC staff in Malawi and 40 participants in Accra Metropolitan and Ada East districts, Ghana. ▪ Facility leadership and district health offices in Uganda designated surveillance focal persons and integrated 169 previously under-reporting private and private-not-for-profit facilities into routine DHIS2 and HMIS reporting.
Digitalisation of Health Security Systems	▪ 22 MDAs adopted the digital NAPHS II Monitoring & Evaluation tracker for real-time monitoring of NAPHS implementation and resource mobilization in Uganda. Furthermore, the centralised PHEOC management system coordinated operational and technical activities across national and 17 regional PHEOCs. ▪ Parallel monitoring systems across all divisions were eliminated through a unified Kenya National Public Health Institute (KNPHI) Monitoring & Evaluation framework in Kenya. ▪ In Ghana, Epidemic Intelligence from Open Sources (EIOS) SOPs and EBS job aids were integrated with SORMAS, national disease surveillance and outbreak management system. Additionally, real-time animal health dashboard incorporated standardised digital reporting forms for 17 priority animal diseases, interactive disease trend visualisations, geographic distribution mapping, and automated outbreak alert thresholds.

4.0 Discussion

This multi-country assessment confirms that a government-anchored and co-designed technical assistance model operationalises IHR core capacities when grounded in nationally validated priorities and delivered through embedded in-country expertise. Across five countries with different epidemiological profiles, governance structures, and health system capacities; activities implemented with MDAs generated institutional gains beyond programme outputs into government planning and financing systems.

The persistent gap between IHR assessment and implementation has been extensively documented, with costed NAPHS frequently underfunded, incompletely tracked, and misaligned with government budget cycles[4,21]. TDDAP2's grounding in JEE recommended priorities at programme inception, rather than externally conceived activity packages, demonstrates change from dominant models of donor-funded health security support. Countries frequently report that externally driven priorities displace rather than reinforce national health architectures, eroding institutional ownership and sustainability[7,8]. The alignment observed across five countries suggests that using national assessment instruments as the primary programme design input is feasible and replicable across diverse contexts[22]. Deliberate choice of competitively selected in-country consultants over short-term external technical specialists emphasizes that contextual knowledge, continuity of relationships, and sustained engagement are prerequisites for

institutional trust in complex government systems[9]. This model stands in contrast to conventional external technical assistance, which generates short-term outputs without sustained government engagement beyond project timelines[3]. WHO's recent multi-country experience similarly identified that sustained in-country presence, rather than periodic missions, is associated with higher quality and more timely technical support across African health systems[23].

NAPHS adoption, particularly incorporation of NAPHS activities into Uganda's 2026–2027 government budget frameworks, represents a critical institutionalisation threshold that most donor-funded health security programmes don't achieve[1]. Budget line incorporation signals a transition from externally dependent activity delivery to domestically owned health security investment and sustainable emergency preparedness. Evidence indicates that domestic financing for pandemic preparedness remains chronically underfunded relative to need across sub-Saharan Africa, making any shift toward government budget lines a meaningful accountability milestone[24]. Workforce findings reveal two distinct but related capacity challenges across the five countries. Most health workers, especially in private health facilities, lack foundational competencies in integrated disease surveillance and response (IDSR). Furthermore, absence of national guidelines, designated surveillance focal persons, and functional reporting integration limits practice translation. Landscape mapping in Kenya, which found that the majority of IDSR priority diseases lacked current national guidelines, identifies a critical gap that investment in workforce development alone cannot resolve[25]. The observed pattern where training triggered facility level decisions to designate surveillance focal persons and integrate previously under-reporting facilities into DHIS and HMIS suggests that competency-based interventions can catalyse change when embedded within functional institutional structures[26].

Deployment of digital monitoring tools reflects a broader global shift toward data-driven health security governance. Notably, TDDAP2 experience proves that digital tools are most relevant when they serve accountability functions rather than information collection only[27]. The NAPHS II Monitoring and Evaluation tracker provided NAPHS implementation status, equipping MDAs with transparent, evidence-based baseline against which domestic and partner advocacy can be measured going forward. This accountability function is qualitatively distinct from typical programme monitoring dashboards and aligns with evidence that digital systems accelerate preparedness when embedded in government decision-making processes rather than operated in parallel[28]. Achieving this integration requires alignment with national digital health architecture, including interoperability standards and data governance frameworks, to avoid parallel digital systems. These findings collectively indicate that co-design, national grounding, and embedded technical assistance are structural prerequisites for IHR implementation rather than programme design preferences. Governments should anchor health security investment in domestically owned NAPHS frameworks with predictable budget lines, and prioritise digital monitoring tools that serve accountability and advocacy functions within government planning systems[25,26]. Development partners should transition from activity-based disbursement toward financing models that incentivise institutionalisation, co-financing, and sustainability beyond programme timelines[1,7].

However, TDDAP2 implementation faced several operational challenges. Multiple concurrent outbreaks, particularly Mpox, Sudan Virus Disease, and Ebola, diverted resources from planned activities toward emergency response. Rapid mobilisation of additional funds was required to maintain programme continuity during acute response periods. Competing government priorities including ministerial commitments and concurrent national health security activities significantly disrupted planned activity timelines. In instances where full multisectoral convening was not immediately feasible, phased or thematic engagement strategies were considered to sustain momentum without compromising the quality of outputs. In DRC, active conflict constrained the pace and depth of programme engagement. Global funding volatility created additional stress on cost-sharing arrangements. Budget reductions among other implementing partners increased expectations on TDDAP2 to fill emerging financing gaps.

Strengths of this assessment include multi-country scope with distinct health security profiles, triangulation of evidence from technical reports, field debriefs, stakeholder coordination meetings, and programme documentation, and a structured analytical approach. However, as a programme implementation review rather than an independent third-party evaluation, self-reported data carry inherent risks of reporting bias. The scope is limited to activities implemented by the Infectious Diseases Institute (IDI), Makerere University within the first year of implementation and does not capture contributions of other consortium partners, potentially underreporting the comprehensive TDDAP2 impact in project countries. Future assessments should incorporate longitudinal outcome indicators to evaluate whether institutional gains are durable, and prospective evaluation designs to assess causal inference between programme activities and health security outcomes.

5.0 Conclusion

TDDAP2's government-anchored and co-designed implementation model demonstrated that embedding technical assistance within national systems can accelerate operationalisation of IHR (2005) core capacities. Embedding in-country consultants within national systems and deploying digital monitoring tools produced measurable institutional gains, offering practical pathways for operationalising health security frameworks and advancing emergency preparedness and response. Priority actions for governments include institutionalising digital monitoring platforms within national NAPHS implementation frameworks, allocating predictable domestic financing for health security preparedness, and leveraging regional peer-learning and accountability mechanisms. Development partners should transition toward financing models that reward institutionalisation, subnational delivery, and data-driven governance over activity-based outputs. Academic institutions and national public health institutes should invest in routine monitoring systems capable of capturing practice-level change. Regional cooperation through shared implementation platforms, cross-country peer learning, and collective advocacy offers an accelerated pathway toward equitable and sustained IHR compliance. By embedding evidence-based technical assistance within national structures, African countries can transform global health security commitments into resilient, coordinated emergency preparedness and response systems.

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Abbreviations

AFENET African Field Epidemiology Network; CSO Civil Society Organisation; DHIS2 District Health Information Software 2; EBS Event-Based Surveillance; EIOS Epidemic Intelligence from Open Sources; EVD Ebola Virus Disease; FAO Food and Agriculture Organization of the United Nations; FCDO Foreign, Commonwealth and Development Office; GHS Global Health Security; HMIS Health Management Information System; IDI Infectious Diseases Institute; IDSR Integrated Disease Surveillance and Response; IHR International Health Regulations; IQLS Integrated Quality Laboratory Services; JEE Joint External Evaluation; KNPHI Kenya National Public Health Institute; MDA Ministry, Department, and Agency; NAPHS National Action Plan for Health Security; NPHI National Public Health Institute; PHEOC Public Health Emergency Operations Centre; RTSL Resolve to Save Lives; SIMEX Simulation Exercise; SORMAS Surveillance, Outbreak Response Management and Analysis System; SPAR State Party Annual Report; STAR Strategic Toolkit for Assessing Risks; TDDAP2 Tackling Deadly Diseases in Africa Programme Phase 2; WOAH World Organisation for Animal Health

Author contributions

MN described multi-country implementation experiences from TDDAP2 across DRC, Ghana, Kenya, Malawi, and Uganda. AW, HB, VN, HK, SN, RK, JN, GK, TK, MK, EOA, BA, IS, DB, and FK critically reviewed the manuscript for intellectual content. All co-authors read and approved the final manuscript.

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Data availability

Datasets will be shared by the corresponding author on request.

Declarations

Consent for Publication

Not applicable.

Competing interests

The authors declare no competing interests.

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