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Pathways, barriers and enablers in the establishment of National Public Health Institutes in Africa: a ten-country mixed-methods comparative case study

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Abstract

Background

Recurrent epidemics have pushed African countries to replace emergency-activated, ministry-embedded response arrangements with National Public Health Institutes (NPHIs). Africa CDC commits every African Union Member State to a functional NPHI, yet only 25 of 55 had fully established one by December 2025. How institutes were established, and what helped or hindered them, has not been compared across countries.

Methods

We conducted a multi-country comparative case study in Burkina Faso, the Democratic Republic of the Congo (DRC), Ethiopia, Liberia, Libya, Mozambique, Nigeria, Sierra Leone, South Sudan and Uganda between 27 April and 13 May 2026. Each country used a concurrent mixed-methods convergent design combining key informant interviews, a common 39-item structured questionnaire, and review of enabling legal instruments and Joint External Evaluation (JEE) reports. Country findings were synthesised through framework (matrix) analysis across four domains: establishment pathway, barriers, enablers and achievements.

Results

In six of ten countries, the institute reached its current form in two or more phases, and four were created by merging existing entities. Four (40%) institutes were created by Act of Parliament (Liberia, Nigeria, Sierra Leone, South Sudan), five (50%) by executive decree or regulation, and Uganda had no enabling statute 13 years after initiation. Time from initiation to legal mandate ranged from about four months (Libya) to 11 years (Nigeria). All four (40%) legislated institutes had an external governing board, compared with two of five decree-based institutes. Four barriers recurred across all countries: contested transfers of functions from ministries of health, fragmented surveillance and health information systems, dependence on external partners for operating costs, and loss of scarce technical staff. Enablers were high-level political championship, partner coalitions, legal protection against reabsorption, and policy windows opened by emergencies, reform or external assessment. JEE scores improved in Liberia (46% to 52%), Ethiopia (52% to 62%) and Nigeria (39% to 54%), and outbreak confirmation time in the DRC fell from about two months (2018) to under one week (2022).

Conclusions

Legal establishment is necessary but not sufficient. The binding constraints are financing, function transfer, data architecture and workforce retention. NPHI legislation should specify the institution's

boundaries, domestic financing, data mandates and a transfer timetable.

Background

Africa has faced more frequent, larger and more complex public health emergencies over the past two decades. Ebola virus disease, COVID-19, mpox, cholera, Lassa fever and Marburg virus disease have repeatedly exposed weaknesses in national surveillance, laboratory, preparedness and response systems [1,2]. A recurring lesson from un published sources showed that emergency response structures assembled for one outbreak and dismantled after it cannot sustain preparedness. Countries need permanent institutions that generate public health intelligence, coordinate across sectors and retain trained staff between emergencies.

National Public Health Institutes (NPHIs) are designed to fill this role. An NPHI brings core public health functions, including surveillance, outbreak investigation and response, reference laboratories, research, workforce development and evidence for policy, under one science-based institution [3–6]. By consolidating previously fragmented capacities, NPHIs can strengthen accountability and give national authorities, subnational systems and international partners a single technical counterpart [4,7].

NPHIs are closely tied to the global health security architecture. The International Health Regulations (IHR, 2005) oblige States Parties to develop and maintain core capacities to prevent, detect, assess, report and respond to public health events [1]. The Joint External Evaluation (JEE) measures these capacities through a standardised, multisectoral peer assessment [8]. An NPHI is one institutional mechanism through which countries organise and sustain IHR capacities, so its establishment is part of IHR implementation rather than an administrative reform alone.

In Africa, momentum for NPHIs grew after the 2014–2016 West African Ebola epidemic and accelerated with COVID-19 [9,10]. Africa CDC published a framework for NPHI development and committed the continent to a functional NPHI in every African Union Member State [9–11]. The International Association of National Public Health Institutes (IANPHI), the World Health Organization (WHO) and bilateral partners have supported this work through technical guidance, peer learning and financing [5,6]. Progress remains incomplete: only 25 of 55 Member States had a fully established NPHI as of December 2025 (Africa CDC, unpublished data), and a 2026 systematic review found 23 fully established institutes as of December 2023 [12].

The pathways to establishment have varied widely. Some countries created new institutions by statute or executive order; others converted existing laboratories, disease control programmes or research institutes into broader NPHIs [7,12,13]. Institutes also differ in mandate, autonomy, governance, financing, and relationships with the Ministry of Health. Establishing an NPHI in law does not guarantee functional capacity; institutes may still face contested mandates, weak financing, staff shortages and fragmented data systems [7,14].

The published evidence consists mainly of single-country accounts, normative frameworks and literature reviews [4,7,12–13]. A 2026 scoping review of African NPHIs described varied pathways, donor dependence and fragmented functions, but relied on published sources for seven countries [13]. To our knowledge, no study has systematically compared how African NPHIs were established using primary data collected with common instruments across countries. This study addresses that gap. Its objectives were to describe and compare the establishment pathways of NPHIs in ten African countries; to identify the barriers and enablers they encountered; to document achievements since establishment; and to generate cross-country evidence to inform continental advocacy for NPHI establishment and sustainability.

Methods

Study design

We conducted a multi-site comparative case study using a concurrent mixed-methods design [15,16]. In each country, a qualitative strand (key informant interviews) described establishment processes, barriers and enablers. A quantitative cross-sectional strand (structured questionnaire) characterised institutional features, governance, mandates and resources. A third strand, document review of enabling legal instruments and JEE reports, provided an independent source of evidence. The three strands were collected concurrently, analysed separately and merged at interpretation.

At the synthesis level, the unit of analysis moved from the individual institute to the pattern across institutes. The aim was to identify which features recurred in all or nearly all countries, which varied with identifiable country characteristics, and which were unique to one country [17].

We defined the establishment period as the time between the formal decision by the Ministry of Health leadership to establish an NPHI and the adoption of its enabling legal instrument by the competent national authority.

Setting and country selection

Ten countries were purposively selected to span NPHI maturity, based on African sub-region, official language and establishment pathway: Burkina Faso, the DRC, Ethiopia, Liberia, Libya, Mozambique, Nigeria, Sierra Leone, South Sudan and Uganda. Inclusion criteria were an NPHI at an identifiable stage of establishment or operation; at least one JEE providing an external capacity baseline; experience of at least one major public health emergency; and government willingness to host a study mission and grant access to records and personnel. Data were collected at NPHI headquarters and, where applicable, emergency operations centres, reference laboratories, ministries of health and partner offices between 27 April and 13 May 2026. Table 1 below summarises the ten institutes.

Table 1
Profile of the ten National Public Health Institutes

Country	Institute	Region	Enabling instrument(s)	Governing board	JEE rounds
Burkina Faso	Institut National de Santé Publique (INSP)	Western	Presidential Decree No. 2018 – 0618 (2018)	Yes (multisectoral Strategic Oversight Board)	2017, 2021
DRC	Institut National de Santé Publique (INSP-RDC)	Central	Decree No. 22/16 (2022); Ordinance-Law No. 23/006 (2023)	Yes	2018
Ethiopia	Ethiopian Public Health Institute (EPHI)	Eastern	Council of Ministers Regulations 4/1996, 301/2013, 529/2023	No	2016, 2023
Liberia	National Public Health Institute of Liberia (NPHIL)	Western	NPHIL Act (December 2016)	Yes	2016, 2019 (midterm), 2021, 2023
Libya	Libya Centre for Disease Control (formerly National Centre for Disease Control)	Northern	Ministerial Decrees No. 78 (2002), No. 281 (2010), 2025 decree	No	2018
Mozambique	Instituto Nacional de Saúde (INS)	Southern	Government decrees (2017, 2025)	No	2016
Nigeria	Nigeria Centre for Disease Control and Prevention (NCDC)	Western	NCDC (Establishment) Act, 2018	Yes	2017, 2023
Sierra Leone	National Public Health Agency (NPHA)	Western	Public Health Act, 2022	Yes	2023
South Sudan	National Public Health Institute	Eastern	Ministerial Order No. 004/2019; National Public Health Act, 2023; Ministerial Order (February 2026)	Yes	2017, 2024

Country	Institute	Region	Enabling instrument(s)	Governing board	JEE rounds
Uganda	Uganda National Institute of Public Health (UNIPH)	Eastern	Presidential directive (reported 2019); no enabling Act	Proposed, not constituted	2017, 2023

Participants and sampling

Participants were selected purposively, supplemented in several countries by snowball sampling until thematic saturation. They were grouped into four categories to allow cross-country comparison: NPHI leadership, NPHI technical staff, ministry of health officials and partner representatives. Some countries also included field epidemiology programme alumni. The number and mix of participants varied with country context, from interviews with three senior officials in Ethiopia to 23 participants in Liberia.

Data collection

Three data collection instruments were used in every country. A key informant interview guide covered seven domains: legal establishment and governance history; core functions and structure; achievements; advantages and limitations of the autonomy model; challenges; sustainability; and recommendations. Interviews lasted 60–90 minutes and were audio-recorded with consent and transcribed. A 39-item structured questionnaire captured legal status, triggering factors, task force composition, governance, mandates, financing, staffing and partner assistance; country adaptation was permitted but the core items were fixed. A document review protocol was applied to the enabling legal instruments and JEE mission reports of each country, following three steps: sourcing and authentication, coding against study themes, and content extraction.

Data analysis

Within each country, interview data were analysed using Braun and Clarke's six-phase thematic analysis [18]. Coding combined a priori codes from the study objectives and the Africa CDC NPHI framework (establishment pathway, governance, NPHI–ministry relationship, financing, partner roles, achievements, barriers) with inductive codes such as data system fragmentation, procurement delays and fragmented physical estate. Questionnaire data were summarised as frequencies and proportions.

Cross-country synthesis used the framework method [17]. We built a matrix with countries as rows and four domains (establishment pathway, barriers, enablers, achievements) as column groups. Reading by column identified cross-cutting patterns; reading by row preserved each national case. Each finding was classified as recurrent (present in all or nearly all countries), systematically variant (differing with an identifiable country characteristic) or idiosyncratic (unique to one country).

The three data streams were integrated into a joint display [19]. For each objective, interview themes were compared with statutory provisions and JEE scores and classified as convergent, complementary or discordant. Where the same pattern of convergence or discordance appeared independently in several countries, we regarded it as the strongest evidence the study could produce.

Ethical considerations

The Africa CDC Science Office approved this study. Each NPHI granted permission. All participants were informed of the study's purpose and gave consent before interviews, and data were kept confidential and used only for this study.

Results

NPHIs establishment pathways

Sub-theme 1.1: Establishment was a process. In six of ten countries, the institute reached its current form through two or more distinct phases (Table 2). Nigeria followed three phases: administrative consolidation of existing ministry units in 2011, acceleration during the 2014–2016 Ebola response, and legal establishment by Act in 2018. South Sudan moved from a ministerial order (2019) to an Act (2023), then needed a further presidential order in 2026 to compel the transfers the Act had authorised. Ethiopia issued three regulations over 27 years, Libya three decrees over 23 years, and Mozambique two decrees with a restructuring in between. Only Liberia and Sierra Leone approximated a single legislative event, and Sierra Leone's Act continued an existing directorate rather than creating a new body.

Four institutes were formed by merging existing entities: Ethiopia (1995), Libya (2002), Nigeria (2011) and Burkina Faso (2018). In Libya and Burkina Faso, informants reported that the main source of early resistance was staff of absorbed units fearing for their positions rather than principled objection. Ethiopia (origins 1925) and Mozambique (founded 1955) were not created but progressively released from ministry control.

Sub-theme 1.2. Legal form tracked legal tradition more than trigger. Four institutes were established by Act of Parliament (Liberia 2016, Nigeria 2018, Sierra Leone 2022, South Sudan 2023) and five by executive decree, regulation or ministerial order (Burkina Faso, DRC, Ethiopia, Libya, Mozambique). Decree-based instruments predominated in the francophone, lusophone and North African countries and primary legislation in the anglophone common-law countries. Uganda operated under a 2019 presidential directive with a draft bill approaching Cabinet, 13 years after the process began. All four legislated institutes had an external governing board, compared with two of the five decree-based institutes.

Sub-theme 1.3. Time to legal mandate varied by two orders of magnitude. It ranged from about 18 months in Liberia to about two years in the DRC, seven years in Sierra Leone and 11 years in Nigeria. Speed did not predict quality. Liberia's rapid process left the boundary between the institute's

surveillance role and the Minister's authority to declare outbreaks unclear, producing a decade of jurisdictional friction. Sierra Leone's slower, consultative process produced explicit role separation and little post-establishment friction.

Table 2
Establishment pathways of the ten institutes

Country	Principal trigger	Instrument type	Phases to current form	Merger of existing entities	Time from initiation to legal mandate
Burkina Faso	Regional Ebola threat, dengue, COVID-19	Presidential decree	1	Yes (CORUS and Central Reference Laboratory)	Multi-month planning window
DRC	Ebola, COVID-19, presidential visit to US CDC	Decree and ordinance-law	2	No	2 years
Ethiopia	Administrative reform (2010 business process reengineering)	Council of Ministers regulations	3	Yes (three institutes, 1995)	Progressive over 27 years
Liberia	Ebola 2014–2016	Act of Parliament	1	No	18 months
Libya	Internal recognition of programme fragmentation	Ministerial decrees	3	Yes (three centres, 2002)	4 months
Mozambique	Accumulated technical credibility; 2016 JEE findings	Government decrees	3	No	Progressive; autonomy 2017
Nigeria	Influenza (2006); Ebola 2014–2016	Act of Parliament	3	Yes (three units, 2011)	11 years
Sierra Leone	Ebola and COVID-19 (cumulative)	Act of Parliament	1	Continued existing directorate	7 years
South Sudan	Africa CDC NPHI framework (2018); no outbreak	Ministerial order, then Act	3	No	4.5 years (order to Act)
Uganda	Ebola outbreaks; 2013 proposal from US CDC	Presidential directive only	1 (legislative phase incomplete)	No	Incomplete after 13 years

Sub-theme 1.4. Triggers were not always epidemics. Ebola was the proximate trigger in Liberia and Sierra Leone and the accelerant in Nigeria, the DRC and Uganda. In Sierra Leone, the trigger was cumulative: the country had built and dismantled emergency response centres for both Ebola and COVID-19, losing staff and institutional memory each time. Four countries show that outbreaks were neither necessary nor sufficient. Ethiopia's turning point was a 2010 civil service reform; Mozambique's was cumulative laboratory credibility reinforced by a 2016 JEE finding that its public health legislation scored 2 of 5; Libya's was an internal recognition by programme committees that fragmented tuberculosis, respiratory, immunisation and HIV programmes were inefficient; and South Sudan's was the 2018 Africa CDC NPHI framework, without any triggering outbreak.

Sub-theme 1.5. Benchmarking shaped design in nine of ten countries. Libya was the only country with no external involvement at any stage. Liberia's task force visited Norway and East African countries before finalising the Act, and seven staff trained at the US CDC became its first field epidemiology trainers. South Sudan sent nine steering committee members to Ethiopia in 2019. Uganda's task force developed component designs during a study tour to the US CDC. Burkina Faso's report cautioned that imported frameworks fail unless adapted to national civil service rules. Three institutes have since moved from recipients to providers of support: Ethiopia hosted South Sudan's benchmarking visit, Nigeria's field epidemiology training model has been replicated in more than 80 countries, and Burkina Faso serves as a reference for other francophone West African countries.

Barriers to the establishment and operationalisation of the NPHIs

Four barriers recurred across all countries, regardless of institutional age, legal form, governance model, or financing source (Table 3).

Sub-theme 2.1. Contested transfer of functions from ministries of health. Boundary friction with the ministry of health was reported in all ten countries and was concretely a problem of transferring named functions. In South Sudan, emergency preparedness, the emergency operations centre, surveillance, IHR coordination, One Health and points of entry were transferring in 2026, while laboratory services, research and bioethics, monitoring and evaluation, and data management were resisting transfer. In Burkina Faso, core disease surveillance was never transferred, and the Director General reports to the ministry's Permanent Secretary, which the country report described as making autonomy "an administrative mirage". In Liberia, the ministry created its own intelligence unit despite the Act assigning surveillance to the institute, and partners reported confusion about which body to support. In Nigeria, friction with vertical disease programmes retained by the ministry persisted under the most detailed Act in the sample. Friction was lowest in Sierra Leone, where the ministry initiated the reform, sits on the governing board, defined roles in advance and actively transferred functions. Across countries, friction was attributed mainly to staff uncertainty and fear of change.

Sub-theme 2.2. Fragmented data systems. Data fragmentation was reported in all ten countries. In Liberia and Burkina Faso, ministry DHIS2 or data warehouse platforms did not interoperate with institute

surveillance systems, and weekly data were transferred manually by spreadsheet and email. In Mozambique, daily case-level laboratory data could not be reconciled with weekly or monthly aggregated ministry reporting. Uganda depended on a DHIS2 instance hosted by the ministry. Even Ethiopia, with three interoperable platforms, reported residual fragmentation risk. Libya was the only country reporting fragmentation resolved, after consolidating separate programme data into one database. Country reports described data platforms as proxies for institutional territory rather than as technical problems.

Sub-theme 2.3. Dependence on external partners for operations. In nine countries, financial sustainability was identified as the main existential risk. The common pattern was that salaries were domestically funded and operations were not. Liberia pays all staff through the civil service payroll but emergency operations depend almost entirely on partners. The DRC relies on partners for about 80% of operational costs. In Burkina Faso, no questionnaire respondent considered the institute financially sustainable without partners. Uganda was the most exposed: without legal personality it cannot receive government funds directly, and partner funds are routed through intermediaries. During a 2025 interruption of US funding, several staff continued working without pay. Libya was the exception, funded entirely through a direct Ministry of Finance allocation since 2002 with no partner financing at any stage.

Sub-theme 2.4. Loss of scarce technical staff. Attrition was reported in every country. Liberia lost four of the seven staff originally trained at the US CDC. Burkina Faso and Nigeria reported staff moving to international organisations faster than training could replace them. In Uganda, most staff were on short-term donor-funded contracts, and the 2023 JEE scored surge workforce capacity at 1 of 5. Although all ten enabling instruments require the institute to develop the workforce, none contains provisions for retaining it.

Sub-theme 2.5. Operational barriers varied by country. They included procurement rules and foreign currency shortages that slowed emergency purchasing (Mozambique); offices, emergency operation centre and reference laboratory scattered across sites up to 200 km apart (Burkina Faso); separate financing channels for each component (Uganda); a year’s delay caused by a vacancy at the Law Reform Commission (Sierra Leone); and concern among some development partners that their roles would diminish (South Sudan).

Table 3
Recurrent barriers by country

Country	Function transfer and ministry boundary	Data fragmentation	Operational financing	Workforce attrition
Burkina Faso	Surveillance retained by ministry; DG reports to Permanent Secretary	No link between ministry data warehouse and surveillance tools; manual spreadsheets	Operations partner-funded; 0% saw post-partner sustainability	Loss to international organisations and NGOs
DRC	Ministry structure not yet revised to reflect parastatal status	DHIS2 incomplete below health-zone level; parallel Excel, EpiInfo	≈ 80% of operations partner-funded; treasury provisions not yet disbursed	Seconded rather than dedicated staff
Ethiopia	Managed through standing restructuring and mandate-overlap committees	Residual risk despite three interoperable platforms	Government and partner funded	Absorbed through scale of training
Liberia	Ministry created parallel intelligence unit; dispute over declaration authority	DHIS2 and eIDSR not integrated; weekly data by email	Emergency operations almost entirely partner-funded	4 of 7 US CDC-trained staff left
Libya	Early overlap on NCD programmes resolved through role clarification	Resolved: centralised database	Fully domestic since 2002	Managed through appraisal and recognition system
Mozambique	Contained through joint decision-making; ministry makes public announcements	Daily institute data incompatible with monthly ministry returns	Significant partner share; declining aid	Competition with private sector; long-term degree training used
Nigeria	Friction with ministry vertical programmes	Reported	Statutory fund, but inconsistent flows	Loss of pioneer staff and institutional memory
Sierra Leone	Limited; ministry-led reform with explicit roles	Parallel human, animal, laboratory and community systems	Emergency fund legislated but not operational	Incomplete payroll transition
South Sudan	Several departments resisting transfer; 2026 presidential enforcement	Data management resisting transfer	No direct government funding yet	Staff drawn from ministry; verification planned

Country	Function transfer and ministry boundary	Data fragmentation	Operational financing	Workforce attrition
Uganda	Resistance from ministry commissioners; overlap with research bodies	Silos; dependence on ministry-hosted DHIS2	Overwhelmingly donor-funded; 2025 funding shock	Short-term donor contracts; surge capacity 1/5

Enablers of the establishment and operationalisation of the NPHIs

Four enablers recurred across countries.

Sub-theme 3.1. High-level political championship was reported in all ten countries, but its source differed. It came from the head of state in Liberia, the DRC, Burkina Faso and South Sudan; from the minister of health and chief medical officer in Sierra Leone and Mozambique; and from the prime minister in Libya. In Burkina Faso, all questionnaire respondents (100%) identified top executive endorsement as the main domestic driver, and the institute proposal had been built into presidential campaign and modernisation agendas. Nigeria's championship had to be sustained across several administrations over 11 years. Political will lasted longest where it was converted into something that outlived the individuals: a statute (Liberia, Nigeria), bipartisan parliamentary ownership (Sierra Leone) or long institutional trust (Ethiopia).

Sub-theme 3.2. Partner coalitions supported establishment in nine countries, most often involving WHO, the US CDC and the African Field Epidemiology Network. Partners financed emergency operations centres, trained founding staff, funded benchmarking and supported legal drafting. Coalitions ranged from a dense multi-partner ecosystem in Nigeria to the broadest, and most dependent, coalition in Uganda. In the DRC, no staff positions were funded by partners. Libya established and operated its institute without any partner involvement at any stage; Africa CDC's engagement began only after the institute was fully functional.

Sub-theme 3.3. Legal frameworks that make reabsorption difficult were viewed as the main safeguard in the legislated countries. A Liberian informant stated that an institute created by ministerial letter "would probably not exist today". Corporate status with perpetual succession, conferred in Liberia, Nigeria, Burkina Faso and South Sudan, turned reabsorption into a legal question rather than a ministerial choice. Legal specificity helped in Libya, where clear mandates and reporting lines reduced early overlap. Sierra Leone's Act combined a durable statute with deliberate flexibility on internal structure, allowing adaptation without amendment. South Sudan showed the limit of this protection: its 2023 Act secured the institute's existence but not its functions, which required presidential enforcement in 2026. Uganda showed the cost of its absence.

Sub-theme 3.4. Policy windows were varied across countries. Policy windows were of five types: health emergencies; administrative or civil service reform (Ethiopia 2010, Uganda's 2013 ministry leadership change); external assessment findings (Mozambique and Uganda JEEs); continental policy frameworks (South Sudan, 2018); and regional demonstration effects (Sierra Leone drew on Liberia and Guinea; South Sudan and Uganda on Ethiopia). Within ECOWAS, the number of established NPHIs more than doubled between 2015 and 2024.

Achievements after the establishment of the NPHIs

Sub-theme 4.1. JEE scores improved where repeat assessments were available. Four countries had comparable repeat assessments, and three of them improved after the NPHI establishment (Table 4). Liberia rose from 46% (2016) to 52% (2021), Ethiopia from 52% (2016) to 62% (2023), and Nigeria from 39% (2017) to 54% (2023). Burkina Faso moved from Tier 2 (2017) to Tier 4 (2021). Uganda showed movement in both directions: multisectoral coordination rose from 2 to 4 and preparedness planning from 1 to 3, while infection prevention and control fell from 3 to 1 and surveillance data analysis from 3 to 2. The same technical areas were weak across countries: surge workforce capacity (1 of 5 in Liberia, Uganda and South Sudan), emergency financing, specimen referral and laboratory quality systems, chemical and radiation emergencies, and antimicrobial resistance.

Table 4
Joint External Evaluation results

Country	Assessments	Result or trajectory	Persistently weak areas
Burkina Faso	2017, 2021	Tier 2 → Tier 4	Data linkage, real-time surveillance
DRC	2018	ReadyScore 35% (“not ready”)	Linking health and security authorities; medical countermeasures
Ethiopia	2016, 2023	52% → 62%	Digital integration; cross-border collaboration
Liberia	2016, 2019, 2021, 2023	46% → 49% → 52%	Specimen referral 1/5; surge workforce 1/5; financing Tiers 1–2
Libya	2018	44% overall	AMR 1.0; emergency operations 1.5; points of entry 1.5
Mozambique	2016	Single assessment	Legislation and financing 2/5; multi-hazard planning 1/5
Nigeria	2017, 2023	39% → 54%	Domestic financing; subnational deployment
Sierra Leone	2023	Single assessment	Laboratory quality 1/5; diagnostic network 1/5; AMR surveillance
South Sudan	2017, 2024	36% overall (2024); earlier scores unavailable	Chemical and radiation events 1.0; workforce and logistics 1
Uganda	2017, 2023	Mixed gains and declines	IPC 3 → 1; data analysis 3 → 2; surge workforce 1/5

Sub-theme 4.2. Outbreak response became faster. In the DRC, confirmation of Ebola took nearly two months in 2018 and under one week in 2022, when the response was managed entirely by national, provincial and district staff, many trained through the field epidemiology programme. Libya reported that emergency decision-making time fell from 7–10 days to under 24 hours and that the institute confirmed the country’s first COVID-19 case within 24 hours. In Liberia, case fatality fell from over 30% during Ebola to about 6.1% during COVID-19, and the national emergency operations centre can activate within 120 minutes, with centres in all 15 counties. Ethiopia’s reference laboratory identified the country’s first Marburg outbreak in November 2025, which was contained at 14 confirmed cases and declared over on 26 January 2026. Burkina Faso built in-country genomic sequencing and BSL-3 confirmation of haemorrhagic fevers, ending reliance on shipping samples abroad. Uganda reported outbreak detection and reporting within 24–48 hours and international recognition for its 2022 Mubende Ebola response.

Sub-theme 4.3. Field epidemiology training was the most successful workforce instrument. Nine countries run such programmes. Uganda has produced 612 frontline, 80 intermediate and 119 advanced graduates; Liberia more than 400, with graduates in each of its 93 health districts; the DRC more than

430; and South Sudan 88. Distinctive designs included Ethiopia's eight-university consortium, Liberia's cascade in which a US-trained founding cohort became the national faculty, and Mozambique's 2025 multisectoral One Health frontline cohort. Uganda's institute has also published 220 peer-reviewed articles.

Sub-theme 4.4. One Health coordination was most mature where the institute hosts the secretariat. Ethiopia, Mozambique and Uganda host the national One Health secretariat or coordination office and have the most developed arrangements, including national strategic plans and steering committees. Where One Health was one mandate among many, as in Liberia, Burkina Faso and Sierra Leone, implementation remained at an early stage. Libya reported no dedicated One Health mechanism.

Governance and financing

Sub-theme 5.1. There was no single governance model. Ten countries produced at least six governance arrangements. Six institutes had an external governing board. Reporting lines ranged from a Director General accountable to an independent board (Liberia) to one reporting to the ministry's Permanent Secretary (Burkina Faso). Mozambique used dual supervision by the ministers of health and finance, and Ethiopia reports to the Minister of Health, the Ministry of Planning and Development and Parliament. Libya was the only country where national audit and anti-corruption bodies formed part of the institute's accountability. Appointment processes ranged from competitive, board-managed recruitment in Liberia to appointment by presidential ordinance in the DRC; Nigeria's Act sets minimum professional qualifications for its Director General. Uganda's draft bill proposes a board composed by expertise rather than by office.

Sub-theme 5.2. Financing followed a common split. Nine institutes paid salaries from domestic funds while relying substantially on partners for operations (Table 5). Six enabling instruments allow the institute to generate income, but most such provisions were unused. Nigeria's Act is the only instrument that links an institute to a defined share of national health financing: 2.5% of the Basic Health Care Provision Fund, although informants reported inconsistent disbursement. Mozambique was actively using its broad statutory revenue base through laboratory services, quality assurance panels, training fees and grants, supported by ISO 9001 certification. Burkina Faso's research department earned substantial income through competitive international grants.

Table 5
Financing models and statutory revenue provisions

Country	Salaries	Operations	Statutory revenue provision	Status
Libya	Fully domestic	Direct Ministry of Finance allocation; no donor funding	None reported	Not applicable
Liberia	100% government payroll	Emergency operations almost entirely partner-funded	Fees for food handler certification and water testing	Not activated at scale
Sierra Leone	98% government or agency payroll	Substantial partner reliance	Public Health Emergency Response Fund	Not operational
Nigeria	Government, with partner support	Statutory fund plus partners	Fund including 2.5% of Basic Health Care Provision Fund; tax and customs exemptions	Partly operational; inconsistent flows
Ethiopia	Government	Government and partners	None enumerated	Not institutionalised
Mozambique	Government, with partner support	Significant partner share	Broad base: services, fees, publications, grants	Actively operationalised
Burkina Faso	Civil service payroll	Emergency logistics mainly partner-funded	Fees for water testing and certification	Largely unused; research grants earn income
DRC	Government budget	≈ 80% partner-funded	Treasury funding specified	Approved, not yet disbursed
South Sudan	Drawn from ministry staff	Donor and partner funded	None identified	First national budget approved 2026
Uganda	Mainly partner-funded short-term contracts	Donor-funded via intermediaries	None in force	Cannot receive government funds without legal personality

Discussion

This ten-country study shows that establishing an NPHI in Africa is a multi-stage process in which legal establishment is a midpoint rather than an endpoint. Four constraints recurred in all NPHIs: contested transfer of functions, fragmented data systems, dependence on partners for operations and loss of technical staff. They appeared in century-old and newly created institutes, under Acts and decrees, and

in both fully domestic and largely donor-financed models. These constraints were not resolved by legal status alone.

A staged model of establishment

The findings support a staged, five-step descriptive model of institutional establishment, with each stage marked by a characteristic point of failure. First is the accumulation of a technical base, where institutes build on existing laboratories, programmes, or emergency structures, but risk losing capacity once emergencies end, as seen in Sierra Leone. Second is the opening of a policy window, which requires political attention, institutional readiness, and a legal vehicle to align; the danger lies in a window opening before a draft instrument is prepared [20]. Third is legal instrumentation, where the window is converted into an Act, decree, or regulation, though poorly drafted instruments may name the institution without specifying boundaries, financing, data, or transfer mechanisms. Fourth is the transfer of functions, since legal authority does not automatically confer operational control; South Sudan required presidential enforcement years after its Act, while Burkina Faso never transferred surveillance. Supplementary regulations specifying the transition guidelines can be considered, following the enactment of the principal law. Finally, the operationalisation of autonomy demands turning statutory independence into financing, procurement authority, staffing systems, consolidated premises, and interoperable data—constraints that all ten countries reported as binding at this stage.

Political attention, partner investment and technical assistance have concentrated on stages 1 to 3, whereas stages 4 and 5 determine whether the institute performs. The 2026 scoping review of African NPHIs similarly noted fragmented functions and weak legal authority as persistent barriers [14]. Our primary data add that function transfer is a distinct stage that can stall for years after legislation.

Autonomy in law versus autonomy in practice

The most consistent discordance between data sources was the gap between statutory and operational autonomy. Liberia's Act grants full financial, technical and administrative autonomy, yet informants described partner funds routed through ministry accounts and ministry involvement in procurement. In Burkina Faso, all respondents agreed that mandates were clearly articulated, but none reported complete programmatic integration. The mechanisms that close this gap are predictable financing, delegated authority, adapted procurement, consolidated premises and completed transfer, none of which is primarily a drafting question. This argues for shifting continental technical assistance from legal drafting, which is comparatively well supplied, towards implementation support.

Autonomy is not an end in itself. Mozambique reported that autonomy brought faster procurement and deployment but also greater scrutiny of leadership. Burkina Faso's institute, the furthest from normative governance frameworks [5,10], reported effective day-to-day coordination with its ministry. Rather than prescribing a structural form, our findings suggest that any governance model should deliver three functions: protection of technical independence and scientific autonomy, alignment with national health policy, and accountability with real authority.

Legislation, decree and adaptability

It has been argued that institutes created by decree are more vulnerable to reversal than those created by Act [4,14]. Our findings complicate this view. None of the five decree-based institutes had been reversed, and Ethiopia, Libya and Mozambique used the amendability of executive instruments to expand their mandates repeatedly. Conversely, South Sudan's Act did not secure its functions without executive reinforcement, and Nigeria's detailed Act did not prevent friction with vertical programmes. Liberian informants nonetheless credited their Act with the institute's survival, and Uganda shows the financial exposure that results from having no instrument. Legislative protection appears to secure existence, while adaptability matters for function. Sierra Leone's approach, a durable Act that delegates internal structure to subsidiary instruments, balanced the two.

Data fragmentation as a governance problem

Data fragmentation took a different technical form in each country, from bilateral platform incompatibility to mismatched reporting cycles. Where country reports identified a cause, it was institutional: separate platforms protected separate institutional territories. Fragmentation persisted even in Ethiopia's interoperable architecture and was resolved only in Libya, where one institution absorbed the fragmented programmes and no partner-funded parallel platforms were introduced. Interoperability therefore needs to be treated as a permanently staffed and financed governance function with a legal mandate, rather than as a one-off technology project. Because data management was among the functions resisting transfer in South Sudan, interoperability is inseparable from function transfer.

Financing as the common risk

The salary–operations split leaves institutes stable only while partner funding continues. Uganda's 2025 funding interruption turned this from a projected risk into a documented event, in the country with some of the strongest emergency and training capacity in the sample. Libya and Uganda frame the policy dilemma. Libya has financed its institute entirely domestically since 2002 but recorded one of the lowest JEE scores in the sample (2.2 of 5). Uganda built internationally recognised capacity on donor financing without a statute but was interrupted. Donor financing appears to build capacity but not sustainability; domestic financing ensures sustainability but is limited by fiscal space. Nigeria's earmark within the Basic Health Care Provision Fund is the only mechanism in the sample that ties an institute to a defined share of national health financing, and its inconsistent disbursement shows that an earmark needs a working disbursement mechanism.

JEE scores as indicators

The JEE functioned as an institutional development tool as well as an assessment. Findings from Mozambique's and Uganda's JEEs were used to make the case for legal reform and financing. However, aggregate scores should be read with caution. Liberia's rising aggregate coexisted with scores of 1 of 5 for specimen transport and surge workforce, and Uganda's mixed profile concealed sharp declines in

infection prevention and control. This is consistent with evidence that preparedness scores did not predict COVID-19 outcomes [21]. The areas that remained weak across countries, including surge workforce, emergency financing, specimen referral, chemical and radiation events and antimicrobial resistance, identify capacities that establishing an NPHI does not deliver on its own.

Strengths and limitations

This is, to our knowledge, the first multi-country study of African NPHI establishment to use common primary data collection instruments, with triangulation against legal texts and independent JEE reports. The sample spans five sub-regions, Four official languages (Arabic, English, French and Portuguese) and all main legal pathways.

The study has several limitations. First, the depth of evidence varied, from 23 participants in Liberia to three officials in Ethiopia, and the DRC and South Sudan relied partly on published secondary sources. Second, the sample includes four West African countries, two East African countries, and only one each from Northern, Central and Southern Africa, so sub-regional patterns rest on few cases. Third, JEE assessments differ in tool version and are separated by up to eight years; three countries have only one round, so scores indicate direction rather than rank. Fourth, pre- and post-establishment comparisons were rarely available, so improvements reflect plausible institutional contribution rather than attributable effect; Liberia's lower case fatality during COVID-19 than during Ebola reflects different pathogens as well as capacity. Fifth, many informants led the institutions assessed, which may favour reporting achievements over shortcomings; including ministry officials and independent documents partly mitigated this.

Conclusions

Across ten African countries, establishing an NPHI was usually a multi-phase process, and legal establishment was necessary but not sufficient. The binding constraints were financing, function transfer, data architecture and workforce retention rather than legal status. NPHI legislation should therefore specify not only the institution but its boundaries, money, data and transfer.

Abbreviations

Africa CDC
Africa Centres for Disease Control and Prevention
COVID-19
Coronavirus disease
DRC
Democratic Republic of Congo
IHR
International Health Regulations
JEE

Joint External Evaluation
NPHI
National Public Health Institute
WHO
World Health Organization

Declarations

Ethics approval and consent to participate

The Africa CDC Science Office approved the study. Each NPHI granted permission to conduct this study within its NPHI. All participants were informed of the study's purpose and gave consent before interviews, and data were kept confidential and used only for this study.

Consent for publication

Not applicable

Competing interests

The authors declare no competing interests.

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Author Contribution

ND, HTD, RT and JK conceptualised the study; ND, FHA and HTD developed the study protocol, study design and data collection tools; HTD, ND, DNC, HN, FKN, ADA, FHA, and GIM validated and analysed the data; ND and HTD wrote the first draft of the manuscript. TAB, JBO, SIA, ESG, JI, FS, MH, NK, BS, ARR, KM, HA, SWX, RT, and JK validated the data, interpretation and reviewed the manuscript for critical input. All authors have approved the final version of the manuscript.

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Data Availability

All data generated or analysed during this study are included in this published article.

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