



REPUBLIC OF LIBERIA

NATIONAL ACTION PLAN FOR HEALTH SECURITY (NAPHS)

2018 - 2021

MID-TERM EVALUATION REPORT

JUNE 2021



Forward



The devastating effect of Ebola Virus Disease (EVD) in 2014 and the prevalence of COVID-19 and its accompanied impact on every fabric of the Liberian society, makes it compelling to establish adequate capacities for preparedness, detection and response to public health threats and events in line with the International Health Regulations (IHR 2005) requirements. Enhancing the IHR core capacities and strengthening the health system will build resiliency against disease outbreaks and disasters.

The intent of the National Action Plan Health Security (NAPHS) (2018-2022) is to prevent, detect and respond to public health threats, prevent international spread of epidemic prone diseases and promote multi-sectoral coordination and collaboration in the context of one health. The NAPHS complements the National Health Sector Investment Plan for building a resilient health system, the National Public Health Institute of Liberia Strategic Plan and other health sector policies and plans that provide strategic direction for the prevention, detection and control of health emergencies including disease outbreaks. The NAPHS also promotes partnership and multi-sectoral collaboration and contains activities on human, animal and environmental health. The Ministry of Health (MOH), the National Public Health Institute of Liberia (NPHIL), the Ministry of Agriculture (MOA), the Forestry Development Authority (FDA) and the Environmental Protection Agency (EPA) are critical sectors with the mandate to detection, prevention and control of epidemics because most epidemics arise from the interface between human, animal and the environment.

The NAPHS was implemented under the auspices of the one health framework, with technical oversight from the Ministries of Health and Agriculture, the NPHIL and the EPA. The implementation of the NAPHS is to improve national health security and the attainment of the health-related Sustainable Development Goals (SDGs). The government of Liberia calls upon all relevant sectors of the Government, development partners and the community to support the implementation of the NAPHS.

The Government of Liberia (GOL) affirms her commitment to protect the population from epidemics through enhanced public health security. We encourage that all key stakeholders to align their resources and interventions to the NAPHS.

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List of Acronyms and Abbreviations

AEFI	African Field Epidemiology Network
AMR	Antimicrobial Resistance
CLOs	
DHS	Demographic and Health Survey
EOC	Emergency Operations Center
EPA	Environmental Protection Agency
EPI	Expanded Program for Immunization
FAO	Food and Agriculture Organization
FDA	Forestry Development Agency
FETP	Field Epidemiology Training Program
GOL	Government of Liberia
HCAI	Health Care Associated Infections
IDSR	Integrated Disease Surveillance and Response
IHR	International Health Regulation (2005)
IMS	Incident Management Center
IPC	Infection Prevention and Control
JEE	Joint External Evaluation
IOM	International Organization for Migration
LDHS	Liberia Demographic and Health Survey
LISAVET	
MOA	Ministry of Agriculture
MOH	Ministry of Health
NAPHS	National Action Plan for Health Security
NFP	National Focal Person
NPHIL	National Public Health Institute of Liberia
NRL	National Reference Lab
OH	One Health
OHP	One Health Platform
OIE	
PH	Public Health
POE	Port of Entry
RC	Risk Communication
REDISSE	Regional Disease Surveillance System Enhancement
REMAP	Resource Mobilization and Partners Mapping
IRIS	
SDGs	Sustainable Development Goals
SimEx	Simulation Exercise
SQS	Safe and Quality Services
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
USD	United States Dollars
US CDC	United States Center for Disease Control and Prevention
VPDS	Vaccine Preventable Diseases
WAHIs	
WHO	World Health Organization

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Executive Summary

Liberia is among low and middle income countries in Africa with frail health system. The fragility of the system is due to unpredictable funding to the health sector, insufficient qualified and skilled human resources, catastrophic health spending by households that further worsening their poverty condition, poor health infrastructure, and low International Health Regulation (IHR) core capacities to deal with public health threats and emergencies.

Liberia developed and launched the National Action Plan for Health Security (NAPHS) in 2017 following the conduct of the Joint External Evaluation (JEE) in 2016 that estimated Liberia's preparedness capacity and capabilities at 46%. The NAPHS is a Strategic Plan (2018-2022) for improving International Health Regulations (IHR 2005) capacities.

The goal of the the NAPHS evaluation is to contribute to the improvement of health security in Liberia and the overall objective is to generate evidence for informed decision making and programming in the health sector including health security and universal health coverage.

The NAPHS consists of 123 strategic actions that are linked to 610 activities across 19 technical areas that are expected to be implemented over a five-years period beginning 2018. As of 2021, 19% of planned activities were successfully completed, 30% in are progress and 51% have not started. Over 90% of planned activities have not started in three technical areas (**food safety, medical countermeasures and chemical events**) and no activity have started in radiation emergencies technical area.

The plan contained 49 objectives across the 19 technical areas that are aligned to the 610 activities. The evaluation found only 2.8% of the 49 objectives were accomplished. This was accomplished under the immunization technical area. Over 8 in 10 (85.7%) objectives have started and ongoing while below 10.2% are yet to be started specifically, in **radiation emergencies, chemical events, medical countermeasures and biosafety and biosecurity and food safety**.

Liberia has **demonstrated capacity** in 12 (25%) indicators, **developed capacity** in 12 indicators (25%), **limited capacity** in 20 (40%) indicators and **no capacity** in in 5 (10%) indicators that are associated with two technical areas-chemical events and radiation emergencies. The IHR capacities is estimated to be 51% in 2021.

The implementation of the NAPHS was faced with numerous challenges that are technical and operational. These systematic bottlenecks that impeded the smooth implementation of the plan include the COVID-19 severe disruption of planned activities in many technical areas following the mid-term review/self assessment in 2019. Also, the NAPHS was developed based on the first version of the JEE tool at the time the WHO IHR Benchmark document was unavailable. Using the benchmarks to assess the JEE put Liberia in a precarious position that requires a revision of plan activities to ensure that indicators are achieved.

The lack of national multi-sectoral preparedness and response regulatory framework including the revised Public Health Law that encompasses most of the one health sector mandate which has not been enacted in law has created additional challenges in the implementation of the plan.

The One Health platform is skewed towards human and animal health while environmental health is neglected. Also, few of the technical areas do not have a designated focal person (e.g. Human resources, Medical countermeasures, etc) to monitor and track progress. The MOH, NPHIL and other stakeholders need to advocate and exert frantic efforts for national government to allocate and increase funds for the IHR implementation which is a major impediment.

Recommended Actions:

Advocate for the creation of a budget line in the national budget for IHR implementation and health emergency after the conduct of the IHR resource remapping (REMAP) will facilitate smooth implementation of the NAPHS.

The Government of Liberia and development partners should commit to the successful implementation of the NAPHS to improve the IHR core capacities especially in technical areas with no or limited capacities.

1.1 Country's Profile

Liberia is situated on the West coast of Africa, bounded by Guinea on the North, Cote D'Ivoire on the East, Sierra Leone on the West, and the Atlantic Ocean on the South. It is a small nation, covering approximately 111,369 square kilometers, has an estimated population of 4.5 million people and an annual growth rate of approximately 2.1%¹. The country has approximately 40% of West Africa's rain forest with a tropical climate (a wet season and a dry season). Liberia is divided into 15 political sub-divisions, called counties with Monrovia being Liberia's largest city and serves as its administrative, commercial, and financial capital. Almost half (47%) of the population lives in urban areas and 50.1% are males. Liberia's population is young, with approximately 52.7 % of the population under the age of 20. The relatively young population, combined with factors such as high rates of teenage pregnancy (30%) and low levels of contraceptive prevalence (24%) contribute to Liberia's high total fertility rate of 4.2 children per woman (Liberia Demographic and Health Survey, 2019-20).

Childhood and maternity mortality rates in Liberia are among the highest in the world. The 2019-20 Demographic and Health Survey (DHS) estimated under-5 mortality rate at 93 deaths per 1,000 live births, the infant mortality rate, or deaths before the first birthday, as 63 deaths per 1,000 live births, and newborn mortality rate is 37 per 1,000 live births, while maternal mortality ratio is 742 per 100,000 live births (DHS 2019-20).

1.2 Health Situation

Liberia is among low and middle income countries in Africa with frail health system. The fragility of the system is due to dwindling funding to the health sector, the unpredictable healthcare financing and catastrophic health spending by households that further worsening their poverty condition, poor health infrastructure, and low International Health Regulation (IHR) core capacities to deal with public health threats and emergencies.

Public health facilities that provide services to over two-third of the Liberian population continue to experience stock out of essential drugs and medical supplies due to limited and poor management of medical commodities. In 2018, almost half (43%) of the public health facilities assessed were stock-out of essential medicines resulting to patients given prescriptions to purchase drugs outside of health facilities.

In 2018, only one in two (56%) healthcare facilities were ready to provide basic services. Basic amenities such as availability of clean and safe water, power, communication etc. which are essential to provide health services was readily available in 79% of health facilities. To ensure patients and service providers safety, standard precautions for infection prevention is available in 73% of health facilities².

The majority (71%) of Liberians have access to basic healthcare. However, this is skewed towards population in urban areas. Currently, there are 830 health facilities with approximately 17,000 workforce of which over two-thirds are in the public sector.

¹ National Population and Housing Census, 2008

² Service Availability and Readiness Assessment (SARA), 2018

2.1 Introduction

Liberia developed and launched the National Action Plan for Health Security (NAPHS) in 2017 following the conduct of the Joint External Evaluation (JEE) in 2016. The NAPHS is a Strategic Plan (2018-2022) for improving International Health Regulations (IHR 2005) capacities. Liberia's preparedness capacity and capabilities was put at 46% during the conduct of JEE in 2016.

2.2 Goal and Objectives

The goal of the the NAPHS evaluation is to contribute to the improvement of health security in Liberia. The overall objective is to generate evidence for inform decision making regarding health security in Liberia.

The specific objectives are as follows:

- To review the NAPHS implementation progress and challenges;
- To conduct an assessment “score card” using the JEE version 2.0 indicators;
- Identify key benchmark actions to implement in 2021, based on existing capacity levels;
- To re-prioritize NAPHS activities and produce annual operational plan;
- To map partners resource to key actions or activities; and
- To develop NAPHS implementation trackers

2.3 NAPHS Evaluation Progress

The NAPHS evaluation process involved numerous engagement meetings with the national technical areas leads and the organization of two workshops at the national level to conduct a self assessment and external evaluation of implementation.

Self Assessment of the NAPHS

Prior to the national validation workshop, individual technical area working groups completed a self-assessment of the implementation of the NAPHS using a harmonized standard template developed by the external consultant and assigned a score using the current JEE (2.0) tool. The template contains the list of planned activities, objectives and the Joint External Evaluation (JEE) indicators. A pre-validation meeting was held in June 2021 for a period of three-days and brought together technical pillar leads to review and complete the work of the technical working groups. The participants at the workshop assessed each activity status and scored the JEE indicators based on available information and the level of activities implemented. This process did not include any external assessor.

External Evaluation of the NAPHS

During the National Validation Workshop, the technical area leads presented results from this self-assessment, highlighting major progress areas since the JEE (2016) and identified gaps and challenges. Summary of the performance are highlighted under each technical area

is provided in the next session-chapter 3 NAPHS implementation status and JEE scores. Technical area leads were provided guidance that the JEE 2.0 tool is more stringent than the original JEE tool, and scores might stay the same or decrease despite having made progress in some technical areas.

The external evaluation brought together 85 participants including two external consultants to evaluate and jointly assess the NAPHS implementation. The process was very participatory, honest and vigorous. At the end of the three-days intense exercise, Liberia IHR preparedness level and core capacities was determined. The preceding sections provide the implementation level and JEE scores for each of the IHR technical areas.

3.0 Introduction

This section of the report provides an in-depth analysis of the NAPHS implementation based on the IHR technical areas and the JEE indicators.

3.1 National legislation, policy and financing

The relevance of legislation, policies and financing is fundamental to implementing and sustaining capacity in IHR (2005). The NAPHS focuses on reviewing and amending key existing legislations and policies that hinder fulfillment of the IHR implementation and guarantee funding to support activities in the plan.

Planned Strategic Actions at national level

This technical area has five strategic interventions that are aligned to 15 activities designed to acquired demonstrated and sustained IHR capacity in this area. Over the past four years (2018-2021), only one-third (5 out of 15) of planned activities were completed, 20% in progress and 47% have not started (7 out of 15). These strategic actions are:

1. Conduct assessment of all policies, legislations, regulations, laws, etc.) appropriate for implementation of IHR (2005) across thematic areas for all relevant ministries and government agencies
2. Finalize the revised Public Health Law (1976)
3. Sensitize stakeholders on the updated Public Health Law
4. Build capacity of the ministries and government agencies on laws and policies application
5. Advocate for the Ministry of Finance and legislators for inclusion of budget line for IHR implementation by concerned line ministries and agencies (MOH, MOA, FDA, MOCI, MOJ, EPA, MOD, etc.)

Progress to-date

- Hired a local consultant for 4 weeks to support the review/assessment of existing laws, policies, regulations
- Revised the tramadol Regulation, the COVID-19 Declaration and guidelines, Immunization Policy and Employees Handbook, among others
- Revised and validated the new public health law, however, it is yet to be passed/printed into a handbill
- Orientated key staff of relevant ministries and government agencies on updated laws, regulations, and policies (refreshment) and on IHR (2005) Legislation; however, was discontinued due to lack of funding
- Established a legislative committee from relevant ministries and government agencies to review existing laws and policy and make recommendations
- Held quarterly interagency committee meetings and reports submitted to the IHR inter-sectoral coordination committee

- Organized advocacy meetings with the Ministry of Finance, Health Standing Committees of both Houses, and Budget Committee on the inclusion of a budget line for IHR implementation
- Developed an online, hard-copy log and archive of existing documents (Laws)

JEE indicators status

The National legislation, policy and financing technical area has three JEE indicators. The external evaluation found limited capacities (score 2) across the three indicators with no change since 2019 when a self assessment was conducted. The below table present the national legislation JEE indicators and scores for 2021.

Technical Area	Indicator	JEE Score (2016)	Self-Assessed Score (2019)	NAPHS M&E score (2021)	Change
National Legislation, Policy and Financing	P1.1 The State has assessed, adjusted and aligned its domestic legislation, policies and administrative arrangements in all relevant sectors, to enable compliance with the IHR (Combines P1.1 and P1.2 from JEE v1)	2	2	2	↔
	P1.2 Financing is available for the implementation of IHR capacities (New indicator in JEE v2)		2	2	↔
	P1.3 A financing mechanism and funds are available for timely response to public health emergencies (New indicator in JEE v2)		2	2	↔

Challenges

- The revised public health law is still a draft bill, yet to be passed into law
- The lack of knowledge of existence of IHR (2005) inter-sectoral coordination committee
- Lack of coordination among key players-the Ministry of Finance, the NPHIL, the MOH, the Legislative Health Standing Committees, and Budget Committee on the inclusion of a budget line for IHR implementation thus resulting into no budget line for NAPHS
- Inadequate funding for some activities

3.2 IHR Coordination

IHR Coordination facilitates collaboration and coordination amongst major stakeholders and offers rational use of resources while leveraging on the available technical expertise to improve public health prevention, detection, and response.

The objective of this technical area is to ensure that a functional multi-sectoral coordination mechanism is established under the One Health platform.

Planned National level strategic actions

This technical area has three strategic actions that are aligned to 27 activities devised to achieved demonstrated and sustained IHR capacity. Over the past four years (2018-2021), 52% of planned activities (14) were completed, 15% in progress (4) and one-third have not started (9). These strategic actions are:

- 1) Strengthen the multi-sectoral coordination mechanism under One health approach by 2018
- 2) Strengthen human resource capacity, information sharing and mandate of the IHR in animal, human and environmental sectors by 2022
- 3) Conduct 5 annual IHR simulations to test coordination and information sharing mechanisms by 2022

Progress to-date

- Established and consolidated one health platform at the national and sub-national levels and launched the annual One health day to mark this achievement
- Developed individual institutions (Human, Animal and Environment) SOPs for emergency response
- Contingency plans for Lassa fever, EVD and cholera developed, validated, printed, and disseminated
- Established a functional one health platforms with defined TOR for information sharing and coordination among implementers at both national and county levels. This platform is currently headed by the office of the vice president
- Provided 5 vehicles and fuel support for IHR/One health coordination activities in 5 regions
- Conducted annual simulation exercises at national and county levels for EVD and Lassa fever targeting hotspot counties
- Recruited 8 staff (MOH, EPA, FDA, MOCI) for full functioning project management structure at national level with logistical and operational support for 5 years

JEE indicators status

The IHR coordination technical area has a single JEE indicator. The eternal evaluation found developed capacity (score 3) in this technical area, however, there was no change since 2019 when a self assessment was conducted. The below table present the JEE indicator and scores.

Technical Area	Indicator	JEE Score (2016)	Self-Assessed Score (2019)	NAPHS M&E score (2021)	Change
IHR Coordination, Communication, and Advocacy	P2.1 A functional mechanism established for the coordination and integration of relevant sectors in the implementation of IHR	3	3	3	↔

Challenges

- The One Health platform is skewed towards human and animal health while environmental health is neglected
- Environmental health technical working group is yet to be included on the one health platform
- No formal SOPs for communication between the National Focus Person (NFP) and non-governmental agencies, including media and civil society
- Annual reviews were interrupted in 2020 due to the COVID-19 pandemic
- Erratic conduct of the AAR and SimEx
- Internet connectivity and networking is only available at the national level; yet to be sustained across the 15 counties

Comments from the External Evaluators

- There is a need for an SOPs to enhance coordination at all levels and all offices in other technical areas should have processes on how to process information and share with the coordination office.
- The coordination office should have a list of contacts and experts in each technical area.
- The two listed actions will improve the country from score 3 to 4.

3.3 Antimicrobial Resistance (AMR)

An effective and functional national response to prevent and address AMR within the context of one health critical. In an effort to combat the growing concerns of AMR in Liberia, a comprehensive plan is needed to prevent emergence, reduce the spread of AMR, increase awareness of the risks associated with AMR, enhance infection prevention and control, improve laboratory capacity and increase access to quality health services..

Objectives

1. To strengthen AMR surveillance at national and sub-national levels
2. To strengthen National Surveillance System for AMR detection in Human and Animal.
3. To improve HCAI prevention and control program in health care settings

4. To increase political engagement and advocacy for improved AMR program implementation.

Planned National level strategic actions

This technical area has six strategic actions that are aligned to 32 activities designed to accomplished demonstrated and sustained AMR capacity. Over the past four years (2018-2021), only 3% of planned activities (1) were completed, 81% in progress (26) and 16% have not started (5). The AMR strategic actions are described below:

1. Develop national plan and system for detection and reporting of priority AMR pathogens by 2018
2. Develop a National AMR Plan for Laboratory detection and reporting by 2022
3. Develop national AMR surveillance system
4. Strengthen HCAI prevention and control programs in Human and Animal Health facilities
5. Institutionalize IPC in Animal care and Healthcare facilities for HCAI prevention and control
6. Strengthen advocacy and stewardship for AMR

Progress to-date

- Validated the AMR National Action Plan
- Routine collection and transport of food samples to the laboratory for analysis for antibiotic residue in meat products at the slaughterhouses in country
- Designated 20 sentinel sites for AMR surveillance in hospitals, slaughterhouses, and animal farms in the country
- Ongoing training of personnel on HCAI prevention and control practices

JEE indicators status

AMR technical area has four JEE indicators. The external evaluation found developed capacity (score 3) in effective multi sectorial coordination on AMR and limited capacities (score 2) for the remaining three indicators. However, there has been no change in any of the four JEE indicators since 2019 when a self assessment was conducted. The below table present the JEE indicators and scores.

Technical Area	Indicator	JEE Score (2016)	Self-Assessed Score (2019)	NAPHS M&E score (2021)	Change
Antimicrobial Resistance	P3.1 Effective multi sectoral coordination on AMR (New indicator in JEE v2)		3	3	↔
	P3.2 Surveillance of AMR (Indicator combines P3.1 and P3.2 from JEE v2)	1	2	2	↔
	P3.3 Infection prevention and control	2	2	2	↔
	P3.4 Optimize use of antimicrobial medicines in human and animal health and agriculture	1	2	2	↔

The major challenges of this technical area are the lack of resources to implement earmarked activities and poor coordination among key stakeholders.

3.4 Zoonotic Diseases

An effective mechanism involving relevant one health sector actors, a legal framework, a comprehensive list of zoonotic diseases of national public health concerns and the existence of functional capacities in the animal and public health sectors are key to preventing and control zoonotic diseases.

Planned National level strategic actions

This technical area has five strategic actions that are aligned to 38 activities designed to accomplished demonstrated and sustained zoonotic diseases prevention, detection and control capacity. Over the past four years (2018-2021), 10% of planned activities (4) were completed, 29% in progress (11) and 61% have not started (23). The zoonotic disease strategic actions are described below:

1. Develop a functional Epi-surveillance system for priority zoonotic disease (domestic/wildlife) adopting One Health approach (border areas, inland) (domestic/wildlife) adopting One Health approach (border areas, inland) by 2022
2. Develop capacity for animal health workforce to ably detect, manage and respond to zoonotic diseases/ outbreaks, and for research
3. Establish veterinary higher education in Liberia by 2022
4. Develop legislation that allows for mandatory reporting of priority zoonotic diseases by 2022
5. Develop capacity for rapid response to zoonotic infections/outbreaks to ensure 100% timely reporting and response within 48 hours by end of 2022

Progress to-date

- The epi-surveillance unit was established with a designated IHR focal person at MOA, however with minimum equipment. At the subnational level, staff work from existing MOA offices. There is no establishment yet for wildlife health
- Established a multi-sectoral RRT for epi-surveillance at both national and subnational levels
- Ongoing active surveillance for livestock and reporting of priority animal health diseases by quarantine officers at all 49 PoEs
- Logistical supplies in the form of motorbikes were provided to the quarantine officers at all 49 PoEs
- Held 1 Annual cross border meeting with Sierra Leone to harmonize and improve surveillance data sharing
- Mechanisms for data sharing between MOA, MoH, and other sectors are still under development
- Routine active surveillance for livestock and reporting of priority animal health diseases by quarantine officers at all 49 POEs
- The animal sector has 12 priority diseases; risk assessment was conducted, and contingency plans developed for 3 diseases; EVD, Lassa fever and Rabies

- World Bank has incentivized 17 County Animal Health Surveillance Officers (CAHSOs)
- Over 2,000 CAHWs trained but were not empowered to performed their job
- Developed the frontline FETPV training curriculum and training started. program has graduated up to 35 graduates
- Para-veterinary training program

JEE indicators status

This technical area has two JEE indicators. The external evaluation found developed capacity (score 3) in Liberia. However, there has been no change in any of the two JEE indicators since 2019 when a self assessment was conducted. The below table present the JEE indicators and scores.

Technical Area	Indicator	JEE Score (2016)	Self-Assessed Score (2019)	NAPHS M&E score (2021)	Change
Zoonotic Disease	P4.1 Coordinated surveillance systems in place in the animal health and public health sectors for zoonotic diseases/pathogens identified as joint priorities	2	3	3	↔
	P4.2 Mechanisms for responding to infectious and potential zoonotic diseases established and functional	2	3	3	↔

Challenges

- County Animal Health Workers (CAHWs) and District Animal Health Surveillance Officers (DAHSOs) were not incentivized and therefore were not recruited
- No capacity for veterinary officers and wildlife rangers
- Legislation still pending as the public health law has not been passed

Best practices:

- Utilization of the One Health Platform increased capacity and performance

Challenges:

- Partners are not adhering to the commitments they make
- There is uneven human resources distributed across sectors
- Mismatch between projects focus and country needs
- Untimely provision of Operation Supports to the sub-national levels

Recommendations

- Government ownership is required for successful implementation

- New institution heads must be briefed about the NAPHS work plan
- Human Resource required for the effective and efficient implementation of NAPHS development must be prioritized
- Operational support must be timely liquidated and replenished
- Borrow from lessons learned from the human health sector in building physicians' program at the UL and apply these to the animal sector
- e-IDSR needs to move from being a pilot tool to a functional platform for reporting, analyzing and disseminating routine health data.
- Partners must develop their work plan from national gaps identified
- Partner support for the para-veterinary training program is needed
- AFENET, CDC, and IOM were called upon to join and be a part of the partners supporting the animal health sector and specifically to be involved in the risk assessments
- More partners are encouraged to support wildlife assessment

3.5 Food Safety

The overall objective of the food safety technical area is to establish a mechanism for multi-sectoral collaboration to ensure rapid response to food safety emergencies and outbreaks of foodborne diseases. It has six strategic actions that are aligned to 22 activities envisaged to accomplish demonstrated and sustained food safety capacity. Over the past four years (2018-2021), 4.5% of planned activities (1) were completed, 4.5% in progress (1) and 91% have not started (20). The food safety strategic actions are described below:

Planned National level strategic actions

1. Establish a system for surveillance of food borne pathogens
2. Strengthen and establish new food testing laboratories
3. Strengthen Inter-sectoral coordination on food safety in Liberia
4. Adopt Codex Standards
5. Finalize national Food Law
6. Identify food safety focal person and establish relationship with the IHR NFP

Progress to-date

- Formulated the CODEX Technical Working Group comprised of 20 people with an existing SOP
- Conducted food safety assessment in 2019
- Developed and validated the food borne disease outbreak guidelines which are currently awaiting printing
- An electronic copy of the food law is available

JEE indicators status

This technical area has two JEE indicators. The external evaluation found **no capacity** (score 1) for food safety in Liberia. Additionally, there has been no change in any of the two JEE

indicators since 2019 when a self assessment was conducted. The below table present the JEE indicators and scores.

Technical Area	Indicator	JEE Score (2016)	Self-Assessed Score (2019)	NAPHS M&E score (2021)	Change
Food Safety	P5.1 Surveillance systems in place for the detection and monitoring of foodborne diseases and food contamination	1	2	1	↓
	P5.2 Mechanisms are established and functioning for the response and management of food safety emergencies		2	1	↓

The challenge is no funding for most of the earmarked activities. Therefore, the evaluation highly recommends the allocation of funding for food safety and the integration of food borne diseases in the FETP curriculum.

3.6 Biosafety and Biosecurity

A national program for biosafety and biosecurity, including the safe and secure use, storage, disposal and containment of pathogens is vital for IHR regulation.

Objectives

- Develop and implement a comprehensive national policy on biosafety and biosecurity that includes all relevant sectors
- Establish linkages to address biosafety/biosecurity among human, animal, and environmental health sectors in line with One Health approach and build capacity, as well as implement strategic actions

Planned National level strategic actions

This technical area has six strategic actions that are aligned to 18 activities designed to accomplished demonstrated and sustained biosafety and biosecurity capacity in Liberia. Over the past four years (2018-2021), only 5.5% of planned activities (1) were completed, 5.5% in progress (1) and 89% have not started (16). The strategic actions are described below:

1. Strengthen the multi-sectoral coordination mechanism under One health approach
2. Develop a bio-banking system for dangerous pathogens' storage
3. Implement laboratory licensure procedure
4. Implement safer laboratory diagnostic techniques
5. Develop in-country training capacity for biosafety and biosecurity
6. Monitor implement biosafety and biosecurity practices

Progress to-date

- Drafted biosafety and biosecurity plan by one health lab team, however, the whole of Government biosafety/biosecurity system is not yet operationalized

- Conducted bi-annual multi-sectoral IQLS trainings on biosafety and biosecurity
- Quarterly grant writing workshops for funding for biosafety and biosecurity activities were started

JEE indicators status

This technical area has two JEE indicators. The external evaluation found **limited capacity** (score 1) for biosafety and bio-security in Liberia. Additionally, there has been no change in any of the two JEE indicators since 2019 when a self assessment was conducted. The below table present the JEE indicators and scores.

Technical Area	Indicator	JEE Score (2016)	Self-Assessed Score (2019)	NAPHS M&E score (2021)	Change
Biosafety and Biosecurity	P6.1 Whole-of-government biosafety and biosecurity system is in place for all sectors (including human, animal and agriculture facilities)	1	1	2	↑
	P6.2 Biosafety and biosecurity training and practices in all relevant sectors (including human, animal and agriculture)	2	1	2	↑

3.7 Immunization

Protecting the population against vaccines preventable diseases is an important public health intervention that is cost effective to reduce morbidity and mortality among children under five who are vulnerable to childhood illnesses such as Measles, yellow fever, polio, diarrhea among others.

Objectives

1. To ensure that immunization coverage is increased to at least 90% animal and human health surveillance systems
2. To ensure at least 80% of population has access to immunization services and at least 95% of health facilities offer immunization services

Planned National level strategic actions

This technical area has seven strategic actions that are aligned to 13 activities designed to accomplished demonstrated and sustained immunization capacity. Over the past four years (2018-2021), 54% of planned activities (7) were completed and 46% in progress (6). The immunization strategic actions are described below:

1. Strengthen the implementation of national immunization plans to improve coverage.
2. Strengthen the capacity of human resources for immunization service delivery
3. Strengthen equity focus analysis and programing for immunization service delivery
4. Scale-up urban immunization strategy
5. Build capacity in data management, analysis and use to address data quality issues such as

(over-reporting, incomplete reporting and use of correct denominators) to determine vaccination coverage.

6. Strengthen VPD surveillance and AEFI monitoring

7. Strengthen vaccine stock management and accountability systems.

Progress to-date

- Partnership with mobile telecommunication companies was established to promote community education and sensitization on the importance of vaccines through regular messaging
- Conducted regular monthly outreach and quarterly Periodic Intensification of Routine Immunization (PIRI) by health facilities to increase access to immunization
- Conducted quarterly county level EPI review meetings to evaluate progress
- Organized quarterly supportive supervision employing electronic supportive supervision tools to enhance real time supervision, feedback, and accountability for staff in the 15 counties
- Engaged the CHA program to support vaccination activities during outreach, community engagement and defaulter tracking in 565 health facilities catchment communities
- Conducted monthly data quality audit in all 15 counties as well as quarterly county level EPI in-depth review
- Held quarterly data harmonization at both national and sub-national levels as well as data verification exercises at health facility level
- Conducted at least 2 circumscribed immunization campaigns in high-risk communities or areas with Vaccine Preventable Disease (VPD) outbreaks in all 15 counties
- Trained 15 Community Surveillance Focal Persons on basic VPD surveillance, revamped the national AEFI committee and build capacity for field personnel for 4 days every year
- Ensured the maintenance of 200 solar direct drives and replaced 150 aging cold chain equipment and solar panels in 150 health facilities located in the fifteen counties.
- Maintained and replaced aging cold chain equipment at health facilities

JEE Indicators Status

Liberia has **demonstrated capacity** in national vaccine access and delivery AND improved Measles vaccine coverage as part of the national program. The below table present the JEE indicators and scores.

Technical Area	Indicator	JEE Score (2016)	Self-Assessed Score (2019)	NAPHS M&E score (2021)	Change
Immunizations	P7.1 Vaccine coverage (measles) as part of national programme	3	4	4	↔
	P7.2 National vaccine access and delivery	4	4	4	↔

Challenges

- Disruption of activities such as the EPI Quarterly reviews and defaulter tracking due to the ongoing COVID-19 pandemic
- Increased vaccine hesitancy due COVID-19 pandemic thus creating a dip in immunization coverage; and

3.8 National Laboratory System

A functional Laboratory system that is capable of safely and accurately detecting and characterizing pathogens causing epidemic disease is fundamental to an enhance surveillance system.

Objectives

1. Expand and maintain testing capacities at minimum 8 core tests
2. Expand to and maintain specimen referral network to cover at least 80% of the country at district level
3. To implement robust point of care diagnostics for applicable Country priority diseases
4. To implement a national laboratory quality system that includes licensing of laboratories and laboratory professionals, based on national and international guidelines/standards

Planned National level strategic actions

This technical area has 11 strategic actions that are aligned to 61 activities designed to accomplished demonstrated and sustained Laboratory capacity. Over the past four years (2018-2021), 13% of planned activities (8) were completed, 25% in progress (15) and 62% have not started (38). The Lab strategic actions are described below:

1. Expand and decentralize IDSR diagnostic capacity for IDSR priority diseases to 3 regional labs by 2021
2. Strengthen laboratory information system for improved lab data management and reporting
3. Strengthen technical capacity for laboratory confirmation of disease outbreaks
4. Establish comprehensive specimen referral network in the country
5. Implement adherence to cold chain management of specimens through procurement, establishment, and maintenance of cold chain equipment at relay points as well as during transportation
6. Procure and supply equipment, reagents, consumables
7. Enhance equipment maintenance, management & certification & facility management
8. Finalize key lab documents (lab policy, strategic plans, guidelines)
9. Expand and/or implement laboratory quality system in 19 human health laboratories, 5 veterinary laboratories, the national standards laboratory and one laboratory from each of the environmental and justice sectors by 2022
10. Enroll 5 laboratories into lab accreditation system - 3 human health sector, 1 animal health sector and 1 food/commerce sector
11. Develop and implement licensing procedures for laboratories as well as personnel

Progress to-date

- Developed, validated, and disseminated the National Laboratory Policy and Strategic plan for human health. No policy or plan for animal health and environmental health
- Identified accreditation body and enrolled in external quality assurance program
- Established diagnostic capacity for Dengue and SARS-COV-2 at the NRL and Influenza at two sentinel sites
- Established bacteriology testing capacity in 4 of the 15 counties
- Established Gene-Xpert testing at 20 laboratories in the 15 counties for TB, MDR-TB, and SARS-COV-2.
- Decentralized IDSR priority disease testing to 3 regionally located laboratories (Jackson F. Doe, Tellewoyan, and Tappita) but not for all priority diseases
- Piloted the Bica system at 2 laboratories: NRL and Jackson F. Doe
- Identified and designated specimen pick-up points nation-wide and motorbikes available at sub-national levels with support from partners like Riders for Health to ensure specimen transport to delivery points (80 transport system human health and 50 couriers animal health)
- Designated cold chain points at the sub-national (district) levels and solar fridges available at relay points to support the cold chain
- Procured lab reagents for the veterinary lab for zoonotic diseases
- Developed an annual equipment maintenance plan
- Procured one vehicle for biomedical engineering team
- Veterinary Laboratory capacity capable of testing for Salmonella, Influenza, TB, Rabies, PPR and New Castle diseases and human Laboratory capacity for TB, Malaria RDT, Salmonella, *HIV*, Polio, COVID-19, EVD, etc

JEE indicators status

Liberia has **developed capacity** (score 3) Laboratory testing for detection of priority diseases, specimen transport and diagnostic network. However, it is skewed towards human health. There is limited capacity for laboratory quality system (score 2) with no change in four of the JEE indicators. The below table present the JEE indicators and scores.

Technical Area	Indicator	JEE Score (2016)	Self-Assessed Score (2019)	NAPHS M&E score (2021)	Change
National Laboratory System	D1.1 Laboratory testing for detection of priority diseases	2	3	3	↔
	D1.2 Specimen referral and transport system	3	3	3	↔
	D1.3 Effective national diagnostic network	2	3	3	↔
	D1.4 Laboratory quality system	1	2	2	↔

Lessons learned

- Lab policies varies based on priority disease testing
- Coordinated approach on exchanges of Lab findings and methods

Best practices

- Every Lab has a defined documented management structure and quality policies in place.
- Established Lab network and referral system pathway
- Enrollment in external quality assurance program helps to build confidence in the Lab system

Challenges

- There is no service contract or agreement for equipment maintenance
- The available National Reference Lab infrastructure is not ideal for Lab services
- There is no capacity building and retention policy for Lab staff
- Inadequate funds to implement the Lab quality essential elements
- There is no independent body at the national level with dedicated budget line and roadmap to ensure quality standards

Recommendations

- Liberia needs to take ownership and have a transitional plan for areas that are purely supported by partners
- There should be an internal budget allocation for resource mobilization
- Establish a comprehensive National Laboratory System
- Implement all the key elements of a one health Laboratory system
 - Organization and management structure
 - Regulatory framework
 - Lab human resource plan
 - Lab infrastructure design
 - Equipment care and maintenance
 - Lab supplies and commodities
 - Inter-operable and functional Lab information system
- Conduct a stepwise implementation of quality management system
- Develop a National Laboratory bio risk management system
- Resource and financial management system
- Lab Information System rollout

3.9 Real Time Surveillance

Improved surveillance system that is able to detect events of significance for public health and health security is key to disease outbreak.

Objectives

1. Develop, enhance, and expand surveillance systems with One Health focus to predict, prevent and detect public health events.
2. Establish an integrated electronic real-time reporting system for surveillance
3. Strengthen capacity for surveillance data analysis and use

4. Strengthen the contribution of syndromic surveillance to public health EWARN

Planned National level strategic actions

This technical area has 13 strategic actions that are aligned to 67 activities proposed to accomplished demonstrated and sustained surveillance capacity. Over the past four years (2018-2021), 21% of planned activities (14) were completed, 45% in progress (30) and 34% have not started (23). The real time surveillance strategic actions are described below:

1. Strengthen capacity for IDSR and e-IDSR implementation at all levels under one health platform
2. Strengthen implementation of Event Based Surveillance (EBS)
3. Strengthen capacity for animal priority diseases surveillance at all levels
4. Revise National IDSR strategy based on the AFRO-IDSR guideline 3rd Edition
5. Strengthen IDSR through supportive supervision and quarterly meetings
6. Introduce IDSR and IHR pre-service (para-medical) training
7. Build the capacity for real time electronic reporting.
8. Roll out an electronic web-based reporting and data management system in 15 counties
9. Build technical capacity for data analysis, management and use at national and sub-national level
10. Supervise, monitor, and evaluate IDSR processes and procedures, including systematic data quality audits (DQA)
11. Build the capacity for syndromic surveillance under one health approach in all levels
12. Establish sentinel site for Influenza surveillance
13. Strengthen the testing capacity for IDSR Priority diseases to support syndromic surveillance

Progress to-date

- IDSR training conducted for DSOs and frontline health workers using version 2 Technical guidelines. Training on the updated V3 TGs still pending
- Health facilities surveillance focal persons were nominated in all health facilities
- Ongoing support to 91 health districts to respond and investigate rumors once every quarter
- Developed and validated the animal disease surveillance system, technical guidelines, training materials and reporting tools
- Conducted training of trainers of 120 personnel on animal priority disease surveillance at both national and regional levels; 120 personnel trained at community level
- Ongoing training of personnel from other sectors on animal priority disease surveillance
- Ongoing risk assessment and identification of diseases and events of potential threats including reporting sites in the 15 counties
- Version 3 WHO-AFRO IDSR technical guidelines were adapted, and revised guidelines validated. Its however yet to be printed and disseminated
- Ongoing supportive supervision from national to county level and held quarterly IDSR review meetings

- Organized stakeholders' advocacy and orientation workshop for introduction of IDSR and IHR pre-service training into para-medical curriculum
- Procured 130 computers for surveillance officers
- Adopted Influenza surveillance training materials, protocols, and reporting tools; trained 25 staff and procured test kits and supplies
- Trained staff at two sentinel sites identified for influenza surveillance, awaiting deployment of equipment and supplies
- Ongoing procurement and supply of test kits and reagents for IDSR priority diseases
- Ongoing support for priority disease sample transportation for testing

JEE indicators status

Liberia has **demonstrated capacity** (score 4) surveillance systems, and analysis of surveillance data and developed capacity (score 3) for the use of electronic tools for surveillance. The below table present the JEE indicators and scores.

Technical Area	Indicator	JEE Score (2016)	Self-Assessed Score (2019)	NAPHS M&E score (2021)	Change
Surveillance	D2.1 Surveillance systems (<i>Combines D2.1 and D2.4 of JEE v1</i>)	4	4	4	↔
	D2.2 Use of electronic tools	2	3	3	↔
	D2.3 Analysis of surveillance data	4	4	4	↔

3.10 Reporting

The primary objective of this technical area is to strengthen the capacity of the one health platform (all sectors) for detecting, investigating, analyzing, and reporting human and animal health diseases and events to all levels.

Planned National level strategic actions

This technical area has seven strategic actions that are aligned to 21 activities proposed to accomplished demonstrated and sustained surveillance capacity. Over the past four years (2018-2021), 24% of planned activities (5) were completed, 62% in progress (13) and 14% have not started (3). The reporting strategic actions are described below:

1. Establish and strengthen capacity for MOA reporting from all levels
2. Establish a central database at MOA/ establish a functional Epi unit for disease reporting
3. Build capacity for IHR reporting within MOH and MOA including training personnel, IHR NFP and OIE
4. Establish one health committee at all levels.
5. Strengthen collaboration between IHR NFP and OIE delegate
6. Strengthen the routine IDSR reporting and feedback system at national and subnational levels
7. Identify food safety focal person and establish relationship with the IHR NFP

Progress to-date

- Established IHR focal point at MOA with ongoing capacity building including training of staff, and operational support to the IHR NFP at MoH and MOA
- Established one health committees at the national and county levels with regular monthly meetings between IHR focal points from line meetings from the national and county levels
- LISAVET conducted for all field officers (CLOs, CAHWs, and VAs) on disease recognition, sample collection, new case definitions for animal diseases and events
- Recruited 5 staff for the Epi-unit at MOA (4 by REDISSE, 1 by MOA) for disease reporting
- Recruited 17 county surveillance officers (2 in Montserrado 2 in Nimba and 1 in each of the remaining county,) and 11 livestock officers
- Ongoing training for Epi personnel and field staff in disease reporting and the use of reporting tools for the database supported by FAO and REDISSE project
- Provided mentorship from national to county level on reporting of IDSR/IHR notifiable conditions, events, and diseases
- Designated 8 focal points according to the OIE requirements responsible each with TORs and information sharing via WAHIs and IRIS
- Conducted food safety training for health workers and appoint a food safety focal person and national and regional levels

JEE indicators status

Liberia has **developed capacity** (score 3) for reporting to WHO, FAO, and OIE, however, reporting network and protocols remain limited (score 2) in the country. The below table present the JEE indicators and scores.

Technical Area	Indicator	JEE Score (2016)	Self-Assessed Score (2019)	NAPHS M&E score (2021)	Change
Reporting	D3.1 System for efficient reporting to FAO, OIE and WHO	2	3	3	↔
	D3.2 Reporting network and protocols in country	2	3	2	↓

Challenges

- No support has been provided for CLOs and national staff to conduct quarterly visits and supportive supervision respectively
- There are no surveillance officers for animal health at the district level
- County Animal Health Workers (CAHWs) have been trained but not incentivized

The evaluation team recommends that there should be clear documentation to demonstrate the mechanisms in place to support the reporting function.

3.11 Human Resources

A professional, skillful, competent and well-motivated health personnel for sustainable and functional public health surveillance at all levels of the health system for effective implementation of IHR is vital. A workforce for a successful IHR capacity should include nurses, midwives, physicians, epidemiologists and other public health and environmental specialists, social scientists, communications personnel, occupational health personnel, laboratory scientists/technicians, biostatisticians, information technology (IT) specialists and biomedical technicians.

Objectives

1. Develop a competent health workforce to implement IHR core capacity requirements in Liberia by end of the 2021
2. Develop and sustain two levels of FETP and two levels of FETPV at a local university to produce the right cadre of epidemiologists by the end of 2021
3. Revise the health workforce strategy to address the identified gaps in all sectors by the end of 2018

Planned National level strategic actions

This technical area has six strategic actions that are aligned to 25 activities devised to accomplished demonstrated and sustained human resources capacity. Over the past four years (2018-2021), only 4% of planned activities (1) were completed, 44% in progress (11) and 52% have not started (13). The human resources strategic actions are described below:

1. Develop skilled and competent health workforce for effective implementation of IHR (2005) under One Health Approach
2. Establish two levels (Frontline and Intermediate) of FETP in Country with OH approach
3. Establish the MPH program at the University of Liberia with a One Health approach
4. Address the gaps in epidemiology training through external training opportunities and exchange visits
5. Develop and update Health Workforce Strategies for animal, human, and environmental health sectors
6. Implement strategies and policies to attract and retain the trained workforce in human, animal, and environmental sectors

Progress to-date

- Trained five (5) persons in FELTP master program in Ghana
- Developed mechanism for identifying and tracking candidates for training to address gaps
- Ongoing intermediate level FETP training with field mentorship by AENET at NPHIL
- Ongoing strategies and policies to attract and retain trained workforce in human, animal, and environmental health sectors

JEE indicators Status

Liberia has **demonstrated** capacity for the FETP program (score 4), **developed** capacity in in-service training (score 3) but still has limited capacity in human resources for IHR and is yet to update or develop a multi-sectoral health workforce strategy. The below table present the JEE indicators and scores.

Technical Area	Indicator	JEE Score (2016)	Self-Assessed Score (2019)	NAPHS M&E score (2021)	Change
Human Resource Capacity	D4.1 An up-to-date multi-sectoral workforce strategy in place	2	2	2	↔
	D4.2 Human resources are available to effectively implement IHR	1	2	2	↔
	D4.3 In-service trainings are available (<i>New indicator in JEE v2</i>)		3	3	↔
	D4.4 FETP or other applied epidemiology training programme is in place	3	4	4	↔

The main challenge of this technical area is the lack of dedicated/committed pillar lead or focal persons to ensure planned activities are implemented and tracked.

3.12 Emergency Preparedness

Building a resilient health system that provides adequate health services during public health emergencies is crucial for IHR implementation.

Objectives

1. Develop MH national public health emergency preparedness and response plan by December 2018
2. Mobilize adequate resources for preparedness and response and provide adequate stockpile and storage capacity (including personal protective equipment, etc.).

Planned National level strategic actions

This technical area has eight strategic actions that are aligned to 50 activities developed to accomplished demonstrated and sustained capacity in emergency response. Over the past four years (2018-2021), 40% of planned activities (20) were completed, 22% in progress (11) and 38% have not started (19). The emergency preparedness strategic actions are described below:

1. Develop the National Multi-hazard plan
2. Test the Multi-hazard plan
3. Strengthen permanent isolation capacity in selected hospitals
4. Develop occupational health and safety guideline for healthcare industries (To be placed under workforce development)
5. Strengthen capacity for multi-disciplinary RRTs at national & sub-national levels

6. Strengthened institutional and legal system for disaster risk reduction in Liberia
7. Conduct all hazards risk mapping across the country
8. Strengthen regional storage facilities and preposition MH response supplies including logistics

Progress to-date

- Developed, validated, printed, and disseminated the National Multi-hazard plan but it's yet to be tested, and no after-action review has been done
- Conducted assessment of hospitals to evaluate current isolation status in all 15 counties
- Developed a national Isolation management protocol for county hospitals, spear headed by MOH, dissemination ongoing to county hospitals
- Conducted a stakeholder meeting to develop workforce safety guidelines for both health facilities and industries. The document is incorporated in the OH&S guidelines as a single document for Liberia, pending validation
- Conducted regular preparedness meetings with One Health stakeholders
- Vaccinated 20% of health workers against Hepatitis B in Monrovia
- Updated roster of experts at both national and sub-national levels for potential response
- Developed the RRT training package but validation is pending due to lack of resources.
- Developed and disseminated Communication Strategy

JEE indicators status

Liberia has **limited** capacity (score 2) for emergency preparedness and has not made significant progress since the formulation of the NAPHS in 2018. The below table present the JEE indicators and scores.

Technical Area	Indicator	JEE Score (2016)	Self-Assessed Score (2019)	NAPHS M&E score (2021)	Change
Preparedness	R1.1 Strategy emergency risk assessments conducted and emergency resources identified and mapped	2	2	2	↔
	R1.2 National multi sectoral multi hazard emergency preparedness measures, including emergency response plans are developed, implemented, and tested	1	1	2	↑

The main constraint of emergency preparedness is insufficient funding to implement planned activities including developed Guidelines, training package validation.

3.13 Emergency Response Operations

Emergency response operations during outbreak works very well through a well-coordinated incident management system (IMS). An IMS that consist of diverse

stakeholders with the right capacity and political is fundamental to controlling an emergency.

Objectives

- To enhance capacity of surge staff in emergency response operations
- To sustain EOCs infrastructures and staff at county and national levels
- To improve national and county emergency response skills and resources
- To develop/revise case management guidelines for five (5) IDSR priority diseases

Planned National level strategic actions

This technical area has five strategic actions that are aligned to 25 activities to accomplished demonstrated and sustained capacity in emergency response. Over the past four years (2018-2021), 44% of planned activities (11) were completed, 24% in progress (6) and 32% have not started (8). The emergency response operations strategic actions are described below:

Progress to-date

- Liberia has demonstrated capacity to activate emergency operations and emergency operation programs; however, there is limited capacity to implement IHR-relevant hazards
- Trained over 100 staff in public health emergency (PHEM)
- Developed and validated case management guidelines for Cholera, EVD, Meningitis, Lassa Fever, and Monkey Pox; guideline is pending printing and dissemination
- Developed and conducted EOC tabletop exercise and simulation programs
- Conducted supportive supervision to ensure implementation of EOC plans and procedures
- Provided incentives for 45 EOC staff over the past 3 years and provided equipment and supplies to enhance EOC operations

JEE indicators Status

Liberia has **demonstrated** capacity (score 4) for emergency response coordination, and emergency exercise management. The below table present the JEE indicators and scores.

Technical Area	Indicator	JEE Score (2016)	Self-Assessed Score (2019)	NAPHS M&E score (2021)	Change
Emergency Response Operations	R2.1 Emergency response coordination (<i>New indicator in JEE v2</i>)		3	4	↑
	R2.2 EOC capacities, procedures and plans (<i>Combines R2.1 and R2.2 from JEE v1</i>)	3.5	3	4	↑
	R2.3 Emergency exercise management programme	4	3	4	↑

Challenges

- Lack of national multi-sectoral preparedness and response regulatory framework
- Limited or no understanding of existing national preparedness and response management system by the national leaders
- No budgetary allocation/allotment from national Government for national Emergency preparedness response management including the PHEOC
- Limited resource to complete the development and validation of preparedness regulatory framework
- Dilapidated equipment and furniture at selected public health emergency operation centers
- Consistent attrition of trained staff
- Limited partners support to the PHEOC due to lack of understanding of the PHEOC functions.

Recommendations

- Funding support to support key PHEOC functionalities (development national regulatory framework for preparedness and response, table-top exercises, renovation, furniture, and ICT equipment)
- National leadership should be involved in emergency management activities during preparedness and response
- Government should establish dedicated funding for national Emergency preparedness and response activities
- Need funds to complete the development national regulatory framework for preparedness and response
- Need to build capacity of health workers (Human & Animal) and National leaders in Emergency Management
- Government should establish dedicated account for national Emergency preparedness and response with an annual deposit resource
- The County PHEOCs need renovation, furniture, and ICT equipment

3.14 Linking Public Health and Security

The main objective of this technical area is to strengthen linkage between public health and the security sector for coordinated response to public health emergencies.

Planned National level strategic actions

This technical area has five strategic actions that are linked to 24 activities to accomplished demonstrated and sustained capacity in emergency response. Over the past four years (2018-2021), 25% of planned activities (6) were completed, 29% in progress (7) and 46% have not started (11). The public health and security strategic actions are described below:

1. Strengthen military and other security agencies' healthcare response capacities
2. Strengthen the Liberia National Fire Service response plan and standard operating procedures (SOPs)

3. Strengthen regional and continental collaboration of security sector for Health Disaster response (APORA, ECOWAS, MRU)
4. Strengthen collaboration between public health sector and security sector
5. Review and Update LNP Strategic Plan/ SOP to reflect Emergency Health Response

Progress to-date

- Conducted workshops to develop MOU and SOPs with triggers for collaboration between public health sector and the security sectors
- Conducted monthly joint security meetings to integrate efforts for strategic response
- Conducted quarterly meetings between security agencies and public health sector
- Nominated contact points for collaboration between public health and security sectors
- Conducted after-action reporting of experiences during national disasters (Lassa fever, AAR, and COVID-19) once annually
- Created a medium for communication of health-related information sharing amongst public health and security sectors

JEE indicators Status

Liberia has **demonstrated** capacity (score 4) for emergency response coordination, and emergency exercise management. The below table present the JEE indicators and scores.

Technical Area	Indicator	JEE Score (2016)	Self-Assessed Score (2019)	NAPHS M&E score (2021)	Change
Linking Public Health and Security Authorities	R3.1 Public health and security authorities (*e.g. law enforcement, border control, customs) are linked during a suspect or confirmed biological event *Criteria for level 4 became more stringent with revised JEE tool	4	3	2	↓

3.15 Medical Counter Measures and Personnel

A national framework for transferring (sending and receiving) medical countermeasures, public health and medical personnel from unaffected regions (rapid response teams/national emergency medical teams), and international partners during public health emergencies for case management of events due to IHR relevant hazards is critical for health security.

Objectives

1. Develop a plan for sending and receiving medical counter measures during public health emergencies
2. Develop a national plan for receiving and sending health personnel during public health emergencies.

Planned National level strategic actions

This technical area has six strategic actions that are linked to 37 activities to accomplished demonstrated and sustained capacity in medical counter measures and personnel. Over the past four years (2018-2021), only 3% of the planned activities were completed (1), 8% in progress (3) and 89% have not started (33). The medical counter measures strategic actions are described below:

1. Develop a national plan and guidelines for medical counter measures during public health emergencies
2. Develop MOUs with suppliers for procurement of medical supplies during emergencies
3. Develop MOUs with neighboring countries for sharing medical supplies and personnel during public health
4. Develop a national plan for sending and receiving health personnel during public health emergencies
5. Establish pool of technical personnel for supporting public health emergencies in-country and in other countries
6. Develop MOUs with neighboring countries for sharing health personnel during public health emergencies

Progress to-date

The major progress made thus far is the organization of a stakeholder meeting to develop a strategy and plan for medical countermeasures during public health emergencies.

JEE indicators Status

Liberia has **limited** capacity (score 2) in medical counter measures during emergencies. The below table present the JEE indicators and scores.

Technical Area	Indicator	JEE Score (2016)	Self-Assessed Score (2019)	NAPHS M&E score (2021)	Change
Medical Countermeasures and Personnel Deployment	R4.1 System in place for activating and coordinating medical countermeasures during a public health emergency	4	3	2	↓
	R4.2 System in place for activating and coordinating health personnel during a public health emergency	4	2	2	↔
	R4.3 Case management procedures implemented for IHR relevant hazards (R2.4 from JEE v1)	2	2	2	↔

3.16 Risk Communication

Risk communication is a strategic pillar during health emergency that ensures the population, especially, affected communities and vulnerable population are aware of the situation and the ways in which they can prevent themselves and their local communities.

Objectives

1. Strengthen risk communication systems at all levels for effective dissemination of real time information to the public.
2. Promote a strong communication mechanism with partners, line ministries and agencies of government.
3. Strengthen community engagement at all levels.
4. Develop a mechanism to address rumors and misinformation before, during, and after a health emergency.

Planned National level strategic actions

This technical area has seven strategic actions that are linked to 43 activities to accomplished demonstrated and sustained capacity in risk communication. Over the past four years (2018-2021), only 2% of the planned activities were completed (1), 49% in progress (21) and 49% have not started (21). The risk communication strategic actions are described below:

1. Strengthen risk communication capacity
2. Update national risk communication plan
3. Strengthen inter-sectorial and interagency communication
4. Publish public health best practices in Liberia
5. Strengthen capacity for community engagement
6. Establish community outreach programs and regularly conduct IEC material testing with members of target audience.
7. Establish a rumor tracking, reporting and management system

Progress to-date

- Trained 4,000 communication volunteers from communities across Liberia
- Developed survey tools to collect RC data
- Developed tool to collect rumors from the community which was validated during the COVID-19 pandemic; however, system to monitor rumors is not yet established
- Ongoing sensitization on the guidelines for rumor collection and reporting
- Ongoing community assessments to identify community perceptions and rumors related to the response during emergency outbreak response

JEE indicators status

Liberia has **demonstrated** capacity (score 4) in internal and partner coordination for emergency risk communication and public communication for emergencies. There is

developed capacity (score 3) for communication engagement with affected communities and addressing perception, risky behaviors and misinformation. However, capacity for risk communication systems for unusual/unexpected events and emergencies is limited (score 2). The below table present the JEE indicators and scores.

Technical Area	Indicator	JEE Score (2016)	Self-Assessed Score (2019)	NAPHS M&E score (2021)	Change
Risk Communications	R5.1 Risk communication systems for unusual/unexpected events and emergencies	3	1	2	↑
	R5.2 Internal and partner coordination for emergency risk communication	4	4	4	↔
	R5.3 Public communication for emergencies	4	4	4	↔
	R5.4 Communication engagement with affected communities	2	3	3	↔
	R5.5 Addressing perceptions, risky behaviors and misinformation	3	2	3	↑

Challenges

- The SOP developed is not holistic and did not reflect gaps from the fifteen counties
- The sub-national level training of RC focal points on community engagement did not take into consideration other sectors, such as Agriculture and EPA.

3.17 Points of Entry

Port of entries are relevant during pandemic to ensure that travelers with the disease don't enter or leave the country and to ensure global health security. POEs are expected to implement public health measures required to prevent, detect and manage a variety of public health risks in a multi-sectoral approach.

Objectives

- Develop capacity for National public health emergency contingency plan for responding to public health emergencies occurring at points of entry
- Ensure designated PoEs have access to appropriate medical services including diagnostic facilities, vaccination as well as prompt emergency care and referral of ill travelers to nearest health facility.

Planned National level strategic actions

This technical area has nine strategic actions that are aligned to 36 activities to achieved demonstrated and sustained capacity at point of entries. Over the past four years (2018-2021), 50% of the planned activities were completed (18), 28% in progress (10) and 22% have not started (8). The POE strategic actions are described below:

1. Develop a national contingency plan for port health services
2. Map existing resources and develop inventory for emergency response

3. Review list of designated PoE, with the inclusion of land crossings Ports of Entry
4. Develop SOPs, guidelines, and reporting tools for port health services
5. Strengthen the capacity of designated PoEs in IHR requirement
6. Develop MOUs between designated PoEs and their referral facilities
7. Strengthen capacity for vaccination services at 14 PoEs
8. Review and update Integrated Border Management Strategy
9. Strengthen cross-border collaboration with neighboring countries

Progress to-date

- Developed, validated, and disseminated the national contingency plan for PoEs. Additionally, sensitized personnel at each POE on the National contingency plan
- Developed inventory of existing boarder facilities by service type and other resources (IPC, Isolation, etc.)
- Developed SOPs and reporting tools for port health services
- Developed MOU and conducted monthly coordination meetings between designated PoEs and their referral facilities
- Strengthened capacity for vaccination services including Yellow Fever for the 4 designated PoEs
- Conducted on-site hands-on training and simulations exercises with the relevant authorities at the designated PoEs; Formed border committees at 39 PoEs

JEE indicators status

Liberia has **demonstrated capacity (score 4)** for establishment points of entry and effective response at points of entry. The below table present the JEE indicators and scores.

Technical Area	Indicator	JEE Score (2016)	Self-Assessed Score (2019)	NAPHS M&E score (2021)	Change
Points of Entry	PoE.1 Routine capacities established at points of entry	2	3	4	↑
	PoE.2 Effective public health response at points of entry	1	2	4	↑

Challenges

No allocation from Government to support POE activities and partners have not committed to support planned activities.

Recommendations

- Allocate resources in the national budget to support Points of Entry activities
- NPHIL and partners should collaborate and coordinate resources for POE activities

3.18 Chemical Events

A robust surveillance and response capacity for chemical risks or events, that includes effective communication and collaboration among the sectors responsible for chemical safety, including health, industry, transportation, waste disposal, animal health and the environment are essential to national health security.

Objectives

1. Establish/strengthen surveillance system for chemical events and risks
2. Strengthen capacity for emergency response to chemical events

Planned National level strategic actions

This technical area has four strategic actions that are linked to 28 activities devised to achieved demonstrated and sustained capacity in chemical events. Over the past four years (2018-2021), none of the planned activities were completed, 7% in progress (2) and 93% have not started (26). The chemical events strategic actions are described below:

1. Develop regulations on chemicals (Importation, Handling, Management, Storage, Utilization, Risks and Disposal)
2. Build capacity for chemical events, intoxication, and poisoning surveillance.
3. Develop and implement a response Plan for chemical incidents
4. Establish capacity for response to chemical events within OH strategy

Progress to-date

- Established technical committee at the national level
- Organized stakeholders' meetings to review existing regulations and revise
- Conducted nation-wide inventory of all chemicals in country by EPA
- Developed Guidelines on chemical importation and transport

JEE indicators Status

There was no improvement in JEE scores for both indicators as there is still limited capacity. The below table present the JEE indicators and scores.

Technical Area	Indicator	JEE Score (2016)	Self-Assessed Score (2019)	NAPHS M&E score (2021)	Change
Chemical Events	CE.1 Mechanisms established and functioning for detecting and responding to chemical events or emergencies	1	1	2	↑
	CE.2 Enabling environment in place for management of chemical events	1	1	1	↔

3.19 Radiation Emergencies

Most third world countries including Liberia don't have the capacity to deal with radiation emergency. However, timely detection and effective response to potential radiological emergencies and nuclear incidents with cross-sectoral coordination is necessary. This requires effective coordination among all sectors involved in radiation emergency preparedness and response.

Objectives

1. Establish/strengthen surveillance system for radio-nuclear events and risks
2. Strengthen capacity for emergency response to radio-nuclear events

Planned National level strategic actions

This technical area has four strategic actions that are linked to 28 activities proposed to be attained, demonstrated and sustained capacity in radiation emergencies. Over the past four years (2018-2021), none of the planned activities were completed, in progress and 100% have not started (all activities-28). The radiation emergencies strategic actions are described below:

1. Strengthen capacity for detection, reporting and response to radio-nuclear events
2. Create Inventory of Nuclear and Radioactive Substances and high-risk sites
3. Procure equipment for monitoring radio activity
4. Develop and implement a Radiological and Nuclear hazards response plan by 2019

There has been no progress made in radiation emergencies since the launch of the NAPHS in 2018. The major binding constraints have been lack of resources and capacity to implement plan activities.

JEE indicators status

Liberia has no capacity (score 1) in radiation emergencies and there has been no concerted efforts to strengthen the country's capacity in this area. The below table presents the JEE indicators and scores.

Technical Area	Indicator	JEE Score (2016)	Self-Assessed Score (2019)	NAPHS M&E score (2021)	Change
Radiation Emergencies	RE.1 Mechanisms established and functioning for detecting and responding to radiological and nuclear emergencies	1	1	1	↔
	RE.2 Enabling environment in place for management of radiological and nuclear emergencies	1	1	1	↔

Chapter Four: NAPHS Implementation Challenges

The implementation of the NAPHS was faced with numerous challenges. These operational and systematic bottlenecks that impeded the smooth implementation includes the following:

- The NAPHS was developed based on the first version of the JEE tool at the time the WHO IHR Benchmark document was available. Using the benchmarks to assess the JEE put Liberia in a precarious position that requires a revision of plan activities to ensure that indicators are achieved.
- COVID-19 severely disrupted the implementation of activities in many technical areas following the mid-term review/self assessment in 2019.
- Lack of national multi-sectoral preparedness and response regulatory framework. The revised Public Health Law that encompasses most of the one health sector mandate has not been passed.
- **Weak Coordination:** The One Health platform is skewed towards human and animal health while environmental health is neglected. Also, few of the technical areas do not have a designated focal person (e.g. Human resources, Medical countermeasures, etc)
- **Predictable domestic financing:** The MOH, NPHIL and other stakeholders need to advocate and exert frantic efforts for national government to allocate and increase funds for the IHR implementation.
- **Effective and efficient use of REDISSE funds:** There are persistent delays and many bottlenecks in the use of REDISSE funds that are expected to support health security strengthening.
- **Detection in Animal and Environmental Health:** There are limited laboratory capacity and weak surveillance systems for the detection of diseases in animal, food and water.
- **Workforce Development:** There is no workforce strategy that define the public health workforce needs, training requirements, career path and retention to address the IHR core capacity gaps.
- **Preparedness for Chemical and Radiological Events:** Capacity for prevention, detection and response is minimum. A well-coordinated mechanism, strategic plan and funds are needed to improve this technical area.
- **Insufficient equipment, supplies, reagents, and consumables** for medical counter measures for detection, preparedness, and response.
 - No support has been provided for CLOs and national staff to conduct quarterly visits and supportive supervision respectively
 - There are no surveillance officers for animal health at the district level
 - No capacity for veterinary officers and wildlife rangers

Chapter Five: Conclusion and Recommendations

5.1 Conclusion

The NAPHS sets out objectives and activities to improve capacities in health security under the themes; prevent, detect, respond and other IHR areas as highlighted below.

The NAPHS consists of 123 strategic actions that are linked to 610 activities across 19 technical areas that are expected to be implemented over a five-years period beginning 2018. As of 2021, 19% of planned activities were successfully completed, 30% in are progress and 51% have not started. Over 90% of planned activities not started in 3 technical areas (food safety, medical countermeasures and chemical events) and no activity have started in radiation emergencies technical area. The table below summarized performance by each technical area.

#	JEE Technical Area	Summary Activity	# of Activities	# Completed	In-progress	# Not Started	Comp	In-p	Not Started
1	National Legislation	5	15	8	3	4	53%	20%	27%
2	HR Coordination	3	27	16	7	4	59%	26%	15%
3	Antimicrobial Resistance	6	32	2	13	17	6%	41%	53%
4	Zoonotic	5	38	4	11	23	11%	29%	61%
5	Food Safety	6	22	1	1	20	5%	5%	91%
6	Biosafety & Bio-security	6	18	1	1	16	6%	6%	89%
7	Immunization	7	13	9	4	0	69%	31%	0%
8	National Laboratory System	11	61	8	12	41	13%	20%	67%
9	Surveillance	13	67	14	28	25	21%	42%	37%
10	Reporting	7	21	5	13	3	25%	65%	15%
11	Human Resources	6	25	1	11	13	4%	44%	52%
12	Emergency Preparedness	8	50	12	18	20	24%	36%	40%
13	Emergency Response Operations	5	25	11	6	8	44%	24%	32%
14	Linking public health and security	5	24	0	19	5	0%	79%	21%
15	Medical Counter Measures	6	37	1	1	35	3%	3%	95%
16	Risk Communication	7	43	1	21	21	2%	49%	49%
17	Point of Entry	9	36	18	10	8	50%	28%	22%
18	Chemical Events	4	28	0	2	26	0%	7%	93%
	Radiation Emergencies	4	28	0	0	28	0%	0%	100%
	Total	123	610	112	181	317	18%	30%	52%

The plan has 49 objectives across the 19 technical areas that are aligned to the 610 activities. The evaluation found only 2.8% of the 49 objectives accomplished under the immunization technical area. Over 8 in 10 (85.7%) objectives have been started and are ongoing and below 10.2% are yet to be started specifically in **radiation emergencies, chemical events, medical countermeasures and biosafety and biosecurity.**

Liberia has **demonstrated capacity** in 12 (20%) indicators: Emergency response operations (3), Immunization (2), Surveillance (2), Points of Entry (2), risk communication (2), and Human resources (1); five areas with 12 indicators have **developed capacity** (20%): twenty (2) indicators have **limited capacity** in either all or 75% of their indicators: national legislation (3), antimicrobial resistance (3), biosafety and biosecurity (2), emergency preparedness (2), and chemical events (2). Two key technical areas have **no capacity** in any of the indicators: radiation emergencies (2), and food safety (2).

The evaluation also considered the IHR 2005 technical areas of prevent, detect, respond and other IHR. The following sections provides an analysis of these four technical areas.

Prevent

There are seven technical areas under prevent; national legislation, policy and financing, IHR coordination, AMR, Zoonotic diseases, food safety, biosafety and biosecurity and immunization. A total of 165 activities were planned, a quarter (25%) was successfully implemented and 50% have not started. The technical areas with demonstrated and developed capacities are immunization, IHR coordination and zoonotic diseases. AMR, food safety and biosafety and biosecurity are the poorly performing technical areas. Table 1 below provides the IHR prevent technical areas and the associated capacities.

Table 1: IHR prevent technical capacities scores

Technical Area	Indicator	JEE Score (2016)	Self-Assessed Score (2019)	NAPHS M&E score (2021)	Change
National Legislation, Policy and Financing	P1.1 The State has assessed, adjusted and aligned its domestic legislation, policies and administrative arrangements in all relevant sectors, to enable compliance with the IHR (<i>Combines P1.1 and P1.2 from JEE v1</i>)	2	2	2	↔
	P1.2 Financing is available for the implementation of IHR capacities (<i>New indicator in JEE v2</i>)		2	2	↔
	P1.3 A financing mechanism and funds are available for timely response to public health emergencies (<i>New indicator in JEE v2</i>)		2	2	↔
IHR Coordination, Communication, and Advocacy	P2.1 A functional mechanism established for the coordination and integration of relevant sectors in the implementation of IHR	3	3	3	↔
Antimicrobial Resistance	P3.1 Effective multisectoral coordination on AMR (<i>New indicator in JEE v2</i>)		3	3	↔
	P3.2 Surveillance of AMR (<i>Indicator combines P3.1 and P3.2 from JEE v2</i>)	1	2	2	↔
	P3.3 Infection prevention and control	2	2	2	↔
	P3.4 Optimize use of antimicrobial medicines in human and animal health and agriculture	1	2	2	↔
Zoonotic Disease	P4.1 Coordinated surveillance systems in place in the animal health and public health sectors for zoonotic diseases/pathogens identified as joint priorities	2	3	3	↔
	P4.2 Mechanisms for responding to infectious and potential zoonotic diseases established and functional	2	3	3	↔
Food Safety	P5.1 Surveillance systems in place for the detection and monitoring of foodborne diseases and food contamination	1	2	1	↓
	P5.2 Mechanisms are established and functioning for the response and management of food safety emergencies	1	2	1	↓
Biosafety and	P6.1 Whole-of-government biosafety and	1	1	2	↑

Biosecurity	biosecurity system is in place for all sectors (including human, animal and agriculture facilities)				
	P6.2 Biosafety and biosecurity training and practices in all relevant sectors (including human, animal and agriculture)	2	1	2	↑
Immunizations	P7.1 Vaccine coverage (measles) as part of national programme	3	4	4	↔
	P7.2 National vaccine access and delivery	4	4	4	↔

Detect

The IHR 2005 respond areas consists of the National Laboratory, real time surveillance, reporting and human resource capacity. An evaluation found that a total of 174 activities were planned of which 16% were successfully implemented, 40% are ongoing and 44% have not started. Table 2 below describes the IHR detect area performance.

Table 2: IHR detect technical capacities scores

Technical Area	Indicator	JEE Score (2016)	Self-Assessed Score (2019)	NAPHS M&E score (2021)	Change
National Laboratory System	P7.2 National vaccine access and delivery	4	4	4	↔
	D1.1 Laboratory testing for detection of priority diseases	2	3	3	↔
	D1.2 Specimen referral and transport system	3	3	3	↔
	D1.3 Effective national diagnostic network	2	3	3	↔
	D1.4 Laboratory quality system	1	2	2	↔
Surveillance	D2.1 Surveillance systems (<i>Combines D2.1 and D2.4 of JEE v1</i>)	4	4	4	↔
	D2.2 Use of electronic tools	2	3	3	↔
	D2.3 Analysis of surveillance data	4	4	4	↔
Reporting	D3.1 System for efficient reporting to FAO, OIE and WHO	2	3	3	↔
	D3.2 Reporting network and protocols in country	2	3	2	↓
Human Resource Capacity	D4.1 An up-to-date multisectoral workforce strategy in place	2	2	2	↔
	D4.2 Human resources are available to effectively implement IHR	1	2	2	↔
	D4.3 In-service trainings are available (<i>New indicator in JEE v2</i>)		3	3	↔
	D4.4 FETP or other applied epidemiology training programme is in place	3	4	4	↔

Respond

The IHR respond areas consists of five technical areas-preparedness, emergency response operations, linking public health and security, medical countermeasures and personnel deployment and risk communication. A total of 179 activities were planned under respond. The evaluation found only 22% of planned activities were successfully completed, 27% are ongoing and 51% have not started. Table 3 below provides the IHR prevent technical areas and the associated capacities.

Table 3: IHR respond technical capacities scores

Technical Area	Indicator	JEE Score (2016)	Self-Assessed Score (2019)	NAPHS M&E score (2021)	Change
Preparedness	R1.1 Strategy emergency risk assessments conducted and emergency resources identified and mapped	2	2	2	↔
	R1.2 National multisectoral multi-hazard emergency preparedness measures, including emergency response plans are developed, implemented, and tested	1	1	2	↑
Emergency Response Operations	R2.1 Emergency response coordination (<i>New indicator in JEE v2</i>)		3	4	↑
	R2.2 EOC capacities, procedures and plans (<i>Combines R2.1 and R2.2 from JEE v1</i>)	3.5	3	4	↑
	R2.3 Emergency exercise management programme	4	3	4	↑
Linking Public Health and Security Authorities	R3.1 Public health and security authorities (*e.g. law enforcement, border control, customs) are linked during a suspect or confirmed biological event *Criteria for level 4 became more stringent with revised JEE tool	4	3	2	↓
Medical Countermeasures and Personnel Deployment	R4.1 System in place for activating and coordinating medical countermeasures during a public health emergency	4	3	2	↓
	R4.2 System in place for activating and coordinating health personnel during a public health emergency	4	2	2	↔
	R4.3 Case management procedures implemented for IHR relevant hazards (<i>R2.4 from JEE v1</i>)	2	2	2	↔
Risk Communications	R5.1 Risk communication systems for unusual/unexpected events and emergencies	3	1	2	↑
	R5.2 Internal and partner coordination for emergency risk communication	4	4	4	↔
	R5.3 Public communication for emergencies	4	4	4	↔
	R5.4 Communication engagement with affected communities	2	3	3	↔
	R5.5 Addressing perceptions, risky behaviors and misinformation	3	2	3	↑

Other IHR

The other IHR technical areas are point of entry, chemical events and radiation emergency. A total of 92 activities were planned, 20% were successfully completed, 13% in progress and 67% have not started. POE is the only technical area that have made significant progress in this domain. Table 4 below provides the IHR prevent technical areas and the associated available capacities.

Table 4: Other IHR technical capacities scores

Technical Area	Indicator	JEE Score (2016)	Self-Assessed Score (2019)	NAPHS M&E score (2021)	Change
Points of Entry	PoE.1 Routine capacities established at points of entry	2	3	4	↑
	PoE.2 Effective public health response at points of entry	1	2	4	↑
Chemical Events	CE.1 Mechanisms established and functioning for detecting and responding to chemical events or emergencies	1	1	2	↑
	CE.2 Enabling environment in place for management of chemical events	1	1	1	↔
Radiation Emergencies	RE.1 Mechanisms established and functioning for detecting and responding to radiological and nuclear emergencies	1	1	1	↔
	RE.2 Enabling environment in place for management of radiological and nuclear emergencies	1	1	1	↔

In conclusion, Liberia has done well and gradually improving IHR 2005 capacities through the implementation of the NAPHS. The country's demonstrated and developed capacity is estimated at 51% to deal with emergencies. With the level of accomplishments, there are lot more that is desire to achieve full capacity under the IHR 2005. The recommended actions in section 5.2 are critical to reach full IHR capacities and to successfully implement the NAPHS.

5.2 Recommendations

The below actions have been proposed to address the challenges experienced during the implementation of the NAPHS:

- Advocate for the creation of a budget line in the national budget for IHR implementation and health emergency
- Conduct IHR resource remapping (REMAP) and ensure that Government and development partners commit to the successful implementation of the NAPHS to improve the IHR core capacities especially in technical areas with no or limited capacities;
- Develop, finalize and implement the NAPHS M&E Plan to track progress
- Reprioritize activities following the NAPHS implementation monitoring and REMAP exercise
- Present outcome of the NAPHS implementation monitoring and REMAP exercises at a higher forum (UNCT) to mobilize resources
- Develop and review operational plan for the implementation of prioritized activities annually
- Support the country to develop and disseminate all the benchmark required SOPs, particularly for coordination and linking public health to security
- Create a repository for the NAPHS verification documents to facilitate smooth evaluation and to improve documentation and record keeping
- Improve coordination and collaboration among pillars
- Delegate focus persons for IHR technical areas with no delegated focal person (e.g.; human resources and medical counter measures)
- Develop and implement activities based on the bench marks
- Develop and implement a National Workforce Strategy that define the public health workforce needs, training requirements, career path and retention strategy to address the IHR core capacity gaps.
- Develop capacity for prevention, detection and response for chemical events and radiation emergency. A well-coordinated mechanism, strategic plan and funds are needed to improve this technical area.

Annex A: JEE Scores for 2016, 2019 and 2021

Technical Area	Indicator	JEE Score (2016)	Self-Assessed Score (2019)	NAPHS M&E score (2021)	Change
National Legislation, Policy and Financing	P1.1 The State has assessed, adjusted and aligned its domestic legislation, policies and administrative arrangements in all relevant sectors, to enable compliance with the IHR (<i>Combines P1.1 and P1.2 from JEE v1</i>)	2	2	2	↔
	P1.2 Financing is available for the implementation of IHR capacities (<i>New indicator in JEE v2</i>)		2	2	↔
	P1.3 A financing mechanism and funds are available for timely response to public health emergencies (<i>New indicator in JEE v2</i>)		2	2	↔
IHR Coordination, Communication, and Advocacy	P2.1 A functional mechanism established for the coordination and integration of relevant sectors in the implementation of IHR	3	3	3	↔
Antimicrobial Resistance	P3.1 Effective multi sectoral coordination on AMR (<i>New indicator in JEE v2</i>)		3	3	↔
	P3.2 Surveillance of AMR (<i>Indicator combines P3.1 and P3.2 from JEE v2</i>)	1	2	2	↔
	P3.3 Infection prevention and control	2	2	2	↔
	P3.4 Optimize use of antimicrobial medicines in human and animal health and agriculture	1	2	2	↔
Zoonotic Disease	P4.1 Coordinated surveillance systems in place in the animal health and public health sectors for zoonotic diseases/pathogens identified as joint priorities	2	3	3	↔
	P4.2 Mechanisms for responding to infectious and potential zoonotic diseases established and functional	2	3	3	↔
Food Safety	P5.1 Surveillance systems in place for the detection and monitoring of foodborne diseases and food contamination	1	2	1	↓
	P5.2 Mechanisms are established and functioning for the response and management of food safety emergencies		2	1	↓
Biosafety and Biosecurity	P6.1 Whole-of-government biosafety and biosecurity system is in place for all sectors (including human, animal and agriculture facilities)	1	1	2	↑
	P6.2 Biosafety and biosecurity training and practices in all relevant sectors (including human, animal and agriculture)	2	1	2	↑
Immunizations	P7.1 Vaccine coverage (measles) as part of national programme	3	4	4	↔
	P7.2 National vaccine access and delivery	4	4	4	↔

National Laboratory System	D1.1 Laboratory testing for detection of priority diseases	2	3	3	↔
	D1.2 Specimen referral and transport system	3	3	3	↔
	D1.3 Effective national diagnostic network	2	3	3	↔
	D1.4 Laboratory quality system	1	2	2	↔
Surveillance	D2.1 Surveillance systems (<i>Combines D2.1 and D2.4 of JEE v1</i>)	4	4	4	↔
	D2.2 Use of electronic tools	2	3	3	↔
	D2.3 Analysis of surveillance data	4	4	4	↔
Reporting	D3.1 System for efficient reporting to FAO, OIE and WHO	2	3	3	↔
	D3.2 Reporting network and protocols in country	2	3	2	↓
Human Resource Capacity	D4.1 An up-to-date multisectoral workforce strategy in place	2	2	2	↔
	D4.2 Human resources are available to effectively implement IHR	1	2	2	↔
	D4.3 In-service trainings are available (<i>New indicator in JEE v2</i>)		3	3	↔
	D4.4 FETP or other applied epidemiology training programme is in place	3	4	4	↔
Preparedness	R1.1 Strategy emergency risk assessments conducted and emergency resources identified and mapped	2	2	2	↔
	R1.2 National multi sectoral multi hazard emergency preparedness measures, including emergency response plans are developed, implemented, and tested	1	1	2	↑
Emergency Response Operations	R2.1 Emergency response coordination (<i>New indicator in JEE v2</i>)		3	4	↑
	R2.2 EOC capacities, procedures and plans (<i>Combines R2.1 and R2.2 from JEE v1</i>)	3.5	3	4	↑
	R2.3 Emergency exercise management programme	4	3	4	↑
Linking Public Health and Security Authorities	R3.1 Public health and security authorities (*e.g. law enforcement, border control, customs) are linked during a suspect or confirmed biological event *Criteria for level 4 became more stringent with revised JEE tool	4	3	2	↓
Medical Countermeasures and Personnel Deployment	R4.1 System in place for activating and coordinating medical countermeasures during a public health emergency	4	3	2	↓
	R4.2 System in place for activating and coordinating health personnel during a public health emergency	4	2	2	↔
	R4.3 Case management procedures implemented for IHR relevant hazards (<i>R2.4 from JEE v1</i>)	2	2	2	↔
Risk Communications	R5.1 Risk communication systems for unusual/unexpected events and emergencies	3	1	2	↑

	R5.2 Internal and partner coordination for emergency risk communication	4	4	4	↔
	R5.3 Public communication for emergencies	4	4	4	↔
	R5.4 Communication engagement with affected communities	2	3	3	↔
	R5.5 Addressing perceptions, risky behaviors and misinformation	3	2	3	↑
Points of Entry	PoE.1 Routine capacities established at points of entry	2	3	4	↑
	PoE.2 Effective public health response at points of entry	1	2	4	↑
Chemical Events	CE.1 Mechanisms established and functioning for detecting and responding to chemical events or emergencies	1	1	2	↑
	CE.2 Enabling environment in place for management of chemical events	1	1	1	↔
Radiation Emergencies	RE.1 Mechanisms established and functioning for detecting and responding to radiological and nuclear emergencies	1	1	1	↔
	RE.2 Enabling environment in place for management of radiological and nuclear emergencies	1	1	1	↔

