Final Report

Impact of international public health deployments on national outbreak preparedness and response in Africa Union member states

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"If we apply the same principles that we use in many other contexts, to think about … I really don't like the word "deployment" in the first place; nor do I like the phrase "rapid support"; "rapid response". Because I think it detracts from the intention, hopefully, of the colleagues leading this work. So I think if there's a recognition that this is not primarily an altruistic effort of one helping the other, but a means of solidarity … And mutually, we have forged improvement in our collective [long-term] health security."

Study participant, 2025

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Glossary of Acronyms

AAR	After Action Review
Africa CDC	Africa Centres for Disease Control and Prevention
AVoHC	Africa Volunteers Health Corps
EOC	Emergency Operation Centres
ETU	Ebola Treatment Unit
EVD	Ebola Virus Disease
FELTP	Field Epidemiology and Laboratory Training Programme
Go-data platform	Surveillance System
IEC	Information Education & Communication
IMS	Incident Management System
IPC	Infection Prevention Control
LMIC	Low & Middle Income Countries
MoH	Ministry of Health
NPHI	National Public Health Institute
NTF	National Task Force
ODA	Overseas Development Assistance
PHEOC	Public Health Emergencies Operation Centre
PPE	Personal Protective Equipment
RCCE	Risk Communication & Community Engagement
SITREP	Situation Report
SoPs	Standard Operating Procedures
ToR	Terms of Reference
UK-PHRST	UK Public Health Rapid Support Team
UKHSA	UK Health Security Agency
US CDC	US Centres for Disease Control
WHO	World Health Organisation
717	7 days to detect 1 day to notify 7 days to respond

Executive summary

Between March 2023 and November 2024, the UK-PHRST and Africa CDC undertook a study to evaluate the impact of international deployments[1] on the national capacities of ODA-eligible countries for outbreak preparedness, readiness and response, primarily (but not exclusively) focused on Africa Union Member States. In so doing we sought to uncover any evidence of the difference made in the short and longer term by international deployments to the countries of deployment. The study objectives were threefold:

1. To explore uptake and sustainability of deployments (by international experts/teams) in a country's outbreak response capacities. For practical reasons of access we focused on countries served by Africa CDC and UK-PHRST, in this study mostly from the African region.
2. To assess national perspectives on the value/contribution of deployments of international experts/teams within their countries in their response to and preparedness for outbreaks.
3. To assess the perspectives of other key stakeholders including the deployees, incident managers, deploying organisations on the value of the contributions made through these deployments.

The study employed a mixed methods approach, involving a review of academic and grey literature; internal documents from both organisations; key-informant interviews, a survey and two case studies in Namibia and Nigeria. Study participants included those who were deployed (i.e. deployees), those involved with deployment management within deploying organisations as well as those in receipt of the deployees.

Findings suggest that evidence for the impacts of international deployments in academic literature is sparse, with very limited exploration and documentation occurring on the status and growth of long-term and sustainable global health security capabilities within countries of deployment. There is, however, significant evidence from this study on the impact and value derived from international deployments; alongside great insight into the issues that urgently require attention at the national and international levels, if impact is to be maximised. The study found that short-term deliverables which occurred through international deployments were valued by countries, achieving their objectives in the short run – deployment objectives were achieved in the vast majority of cases and national stakeholders assessed these contributions as useful. While the majority of these deployments are designed to assist countries to deal with immediate emergencies, we also found evidence of longer-term impacts of international deployments, particularly in terms of systems, protocols and processes; physical infrastructure and equipment being in place for other disease outbreaks; knowledge of disease outbreak response being maintained and applied to other outbreaks; and enabling improved ways of working.

Seventy-seven percent (N=110/142) of survey participants (deployees and recipients of deployments) in the study reported that recent international deployments had *fully contributed* to improving the country's or region's public health emergency response system while 22% stated that they had partially contributed. Eighty-four percent (N=120/142) of survey participants believed that international deployments had made contributions to sustainable changes in disease outbreak management in their countries; consolidation of these gains was seen as occurring through ongoing training, retention of personnel skilled in outbreak preparedness, securing greater political buy-in nationally demonstrated through the establishment of more appropriate and agile funding mechanisms to enable more effective preparation and response to outbreaks. The latter points were raised by every stakeholder group in this study – all of them emphasising the intentional approach which member states themselves must adopt to enable effective and sustainable approaches to outbreak management.

Many national (MoH/NPHIs/academia and NGOs) and external (international deploying agencies operating in-country) stakeholders in our case study countries viewed their countries and those with which they worked as better equipped to deal with disease outbreaks than was the case a decade ago. However, it was universally agreed that a need for international deployments, in most countries but in differing scenarios, remains.

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1. For the purpose of this study, we defined an **international deployment** as the placement of multidisciplinary specialist(s) by international organisations to support disease outbreaks occurring in LMICs. We applied a broad definition of the term "impacts" as 'any short-term, intermediate term or long-term contributions of international deployments on enhancing the outbreak response, readiness, preparedness, control or prevention capacities of the LMICs.'

The study also explored stakeholders' views and vision for the future of international deployments. A key theme that emerged was the need for receiving countries to be central to the deployment process. The role of receiving countries in international deployments is often viewed as being limited in the decisions about who is received in their country, and in the direction and approach to carrying out the deployment. Respondents identified several factors that would enhance the future design and delivery of international deployments including having more clearly defined processes and procedures, greater alignment with country needs, greater levels of communication and dialogue amongst all parties to minimise operational challenges pre and during the deployment; and perhaps most importantly, ensuring that deployments are not delivered as discrete, one-off activities with no linkage to addressing areas of related need identified during the deployment itself.

Recommendations

The findings of this study demonstrate significant value added to national outbreak capacities through international deployments. The 15 recommendations that follow are provided to further strengthen deployment impacts. Twelve recommendations address two stakeholder groups – national stakeholders (MoH and NPHI) and deploying agencies. The remaining three recommendations are specifically addressed to national ministries of health/public health institutes but do not directly impact international deployments. Rather, they are designed to impact the national environment enabling them to maximise the impact of international deployments.

Eight recommendations are made to deploying agencies to further strengthen deployments and their impact as follows:

1. **Ensure optimal preparation pre-deployment** – the degree of preparation of a deployee was directly linked to the degree of effectiveness of the deployment by both deployment agencies and national governments. Efficient onboarding processes, comprehensive briefings including country, political and cultural contexts, knowledge of national health systems, key focal points (including national NPHI) were among the core subject areas required of deployees.

   Effective deployees were identified as those who are flexible, have a capacity and willingness to be readily integrated into existing systems as required, and a collaborative spirit that recognises the value of and need for mutual, peer-to-peer learning on the job.

2. **Ensure deployees match country requirements** – all stakeholders wanted deploying agencies to deploy individuals whose skills, knowledge and experience align closely with the country's needs. Areas of particular emphasis included relevant skills and experience, knowledge of country, culture and overall context, flexibility and willingness to integrate within the existing system, support for on-the-job peer-to-peer learning, connections with relevant stakeholders including national agencies. They also called for deployees who had broader, relevant skills and experiences that would enable them to effectively pivot should the need arise.

3. **Institute or strengthen existing knowledge management systems** – this reinforces the need to retain, within deploying organisations, the capacity to capture, coordinate, share and apply knowledge and learning from the deployment exercises to enable sustainable benefits for their practice.

4. **Create learning exchange opportunities between countries** – a strong recommendation from stakeholders was to promote an exchange of skills and learning by enabling staff from countries of deployment (where limited opportunities exist) to themselves become deployees to other countries thereby opening up greater opportunities for shared learning and contribution.

5. **Advocate for the leveraging of national institutions** – the engagement of national institutions, beyond the standard public health institutions such as academic, research institutes and NGOs/civil society groups was seen as pivotal to any long-term and sustainable capacity strengthening national efforts. While this was seen as falling largely under the jurisdiction of the MoH/NPHI, deploying agencies were also seen as having a role to address this need – most likely through an advocacy and/or funding role to national governments to broaden the scope of national resources brought to bear on the management of outbreaks.

6. **Ensure that capacity strengthening and knowledge exchange are formally embedded in deployments wherever possible** – all stakeholders felt that during the deployment itself presented a good opportunity to share knowledge and skills and promote learning; and this needed to be included in the ToR or other formal documentation between the deploying agency and the country of deployment.

7. **Consider more flexible and longer deployment periods** – in line with matching the country's requirement, a strong recommendation was that deploying agencies be more flexible about the duration of deployment according to the outbreak severity and need.

8. **Develop deployment impact evaluation framework –** the need for a framework to allow for the systematic assessment of deployments that promote sustainable outbreak management capacities within countries to be developed collaboratively by both stakeholder groups was voiced by both national and deploying agency stakeholders.

For National Ministries of Health/National Public Health Institutes, there were four recommendations related to effective execution of international deployments and their potential long-term impact:

1. **Assume a central role in the deployment –** across all stakeholders the need was emphasised for national governments to continue to assume greater levels of leadership and indeed the central role in the management of disease outbreaks, and specifically in the deployment process.

2. **Develop tailored deployment plans for the use of international deployees in outbreak response –** stakeholder groups were in agreement that the roles, responsibilities and objectives of the deployment all needed to be clearer than they sometimes are, while recognising the need for flexibility should priorities change once in country.

   The study advocated for the development of "personnel deployment plans". These are plans for receiving deploying personnel and would include details of when and how to trigger timely and effective mobilisation of technical assistance during emergencies, specifically outlining clear protocols, communication channels, training requirements, and logistical arrangements. This was seen as enhancing preparedness, coordination, and response capabilities, ultimately contributing to a more efficient, effective and well coordinated emergency response.

3. **Leverage national institutions –** the engagement of national institutions was seen as pivotal to any long-term and sustainable capacity strengthening national efforts. Respondents recommended that national bodies actively engage with existing national capacities within the country, particularly from academia, research institutes and civil society/ NGOs to ensure that they are maximising internal capacities in the management of outbreaks both for the duration of the deployment and/or in addressing follow-up activities at the conclusion of the deployment.

4. **Establish formal performance frameworks on what is expected through the deployment –** stakeholders advocated for the development of frameworks that include measurable Key Performance Indicators (KPIs) to evaluate the effectiveness of deployments and ensure alignment with national MoH goals. This would bring greater clarity and accountability to deployment outcomes and create a mechanism to specify and agree mutual expectations and results from the deployment. This is over and beyond the normal Terms of Reference.

The last thee recommendations are addressed to MoH/NPHIs to further strengthen national outbreak responses and ensure sustainable impact. While they do not pertain specifically to international deployments, they nevertheless have a significant bearing on national capacities and a country's readiness to receive and work, in the most efficient and effective manner, with international deployees.

1. **Institute rolling budgets to support outbreak management in and out of emergency situations –** all stakeholders identified the need for flexible and adequate rolling budgets (regularly updated by adding new budget periods and additional funds) that are easily accessible for national emergency response teams without having to navigate challenging bureaucratic processes.

2. **Identify key specialist roles required, increase the rate of human resource development and provide financial incentives to staff –** the single most unifying recommendation was an urgent call to national governments to address the human resource crisis in many countries. Stakeholders called for countries to identify skills gaps and provide an accelerated training programme to develop these skill sets. This was seen as particularly urgent given the slow rate at which different skill sets are being produced nationally, the lack of financial incentive for these highly trained staff to remain in many countries, and the rapidity at which these staff are recruited by international agencies.

3. **Institute/strengthen existing knowledge management systems across the outbreak management process –** the goal of knowledge management is to enable an organisation to retain valuable information on its practice for it to learn from and grow. Embedding an effective knowledge management system was seen as crucial in enabling national institutions to capture, store, retrieve, share, manage, learn from and apply their collective knowledge.

1
Introduction

1 Introduction

Between March 2023 and November 2024, a research partnership between Africa CDC and the UK-PHRST was developed to evaluate the impacts of international deployments on the national capacities of ODA-eligible countries for outbreak preparedness, readiness and response, primarily (but not exclusively) focused on Africa Union Member States for practical reasons of access.

In the UK and around the world, millions of pounds are spent every year on rapid deployment to support ODA-eligible countries to avert or contain public health emergencies of national and/or international concern.[2,3] The allocated budget of the Health Emergencies Programme of the World Health Organisation between 2022 and 2023 is estimated at US $1250 million.[4] A considerable proportion of this funding was committed to sending short term technical and/or operational experts to outbreak sites to assist with the epidemic response. Africa CDC's budget spend in this regard, between 2020 and 2023, is estimated to be in the region of US $18 million.[5]

When public health emergencies occur across the world, these specialist teams are deployed to support countries by a range of institutions – government, regional bodies, international and national organisations. The models employed by these teams differ widely. Some are characterised by multi-disciplinary skill sets, rapid deployability, often focusing on epidemic preparedness and response, sometimes with context-specific research, capacity sharing and learning happening either simultaneously or after the deployment. Others are deployment-specific addressing just one function. Deployment times can vary greatly from a few days to many months. Whichever method is adopted, the intent of the exercise, working alongside national partners, is to help strengthen capacity to safeguard populations from public health threats.

While the results of a deployment are documented mainly through post-deployment debriefs and reports, there is limited understanding of the impacts of these approaches.[6] There are limited published evaluations in the academic literature and little evidence of the occurrence of systematic evaluations following these deployments.[7,8,9] There is also limited understanding of the impacts of these deployments or the sustainability of these efforts long term. This study sought to understand the nature of the impacts of these deployments, and explore what, if any, difference is made to national capacities and how this occurs.

1.1 Study aim and objectives

This study is designed to explore the impacts of international deployments on the national capacities of ODA-eligible countries for outbreak preparedness, readiness and response. Its specific objectives are threefold:

1. To explore uptake and sustainability of deployments (by international experts/teams) in a country's outbreak response capacities. For practical reasons of access we focused on countries served by Africa CDC and UK-PHRST, in this study mostly from the African region.

2. To assess national perspectives on the value/contribution (impact) of deployments of international experts/teams within their countries in their response to and preparedness for outbreaks.

3. To assess the perspectives of other key stakeholders including the deployees, incident managers and deploying organisations on the value of the contributions made through these deployments.

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2
Methodology

2 Methodology

This is an impact evaluation employing a mixed methods approach, involving the following elements of data collection.

2.1 Review of secondary data

A critical literature review of academic and grey literature was undertaken to situate the study more broadly. Following the agreement of key search terms, exclusion and inclusion criteria and data sources, the critical review incorporated a total of 52 items from 17,213 at first screening and 131 at second screening. The grey literature examined consisted largely of deployment debriefs and organisational reports from a range of sector-related organisations.

A review of existing UK-PHRST and AVoHC[10] internally-generated monitoring, reporting, evaluation and learning data was similarly undertaken. Information reviewed included the deployment objectives/terms of reference (ToRs); reports on the results of the deployment, including its successes, challenges and recommendations; post deployment surveys from deployees and focal persons in deployed-to countries and quarterly reports. A total of 19 UK-PHRST deployments and 19 AVoHC deployments, undertaken between 2020 and 2023, were reviewed.

2.2 Collection of primary data

In-depth interviews

As illustrated in Table 1, a total of 83 interviews were conducted with participants from ten countries – Burkina Faso, Burundi, Cameroon, Malawi, Namibia, Nigeria, South Africa, Uganda, Zambia and Zimbabwe – and included ministry of health officials, sub-national health officials, members of public health institutes, partner organisations, civil society representatives, incident managers, deployees and management of deploying organisations, to capture the varying perspectives on the contributions of deployments to national response, readiness and preparedness capacity.

In-depth interviews were conducted initially online in 2-3 selected countries from within the 25 participating AVoHC deploying countries to develop the interview guide. A two-stage approach was followed in undertaking interviews. First, open-ended questions were asked of the selected participants about (1) their assessment of the purpose, value and outcomes of deployments to their country (2) about the features of deployments that countries found to be effective and not effective in supporting their outbreak capacities and (3) about the perceived impact and sustainability of deployments. We identified key themes including the most and least helpful features of deployments that enable country-level capacities and areas of impact as perceived by countries. This analysis was used to develop the interview guide for the mainstage of the study as well as the development of the survey instrument.

Table 1: Distribution of study interviewees

On-line	Number
National health authorities	10
Sub-national health authorities	11

10. The African Health Volunteers Corps (AVoHC) is a team of African volunteer medical and public health professionals established by the African Union to support emergency response to disease outbreaks in Africa.

National public health institutes	12
Civil society representatives	6
Deployees	10
Partner agencies	11
Deploying agencies	6
Subtotal	**66**
F-2-F	**Number**
Nationals	17
Total	**83**

Online survey

An online survey was conducted among national representatives, deployees, incident managers and senior management from deploying organisations from all countries to which Africa CDC and UK-PHRST had deployed in the previous three years. Out of a total of 510 complete responses received, 10% (51) respondents had deployed internationally in the past three years, 18% (93) had received deployments in that time period and 31% (161) had both deployed themselves and received deployments. The remaining 41% (213) had not deployed or received deployments during the period, meaning that many of the survey questions were not relevant to them. Between 100-200 respondents answered each substantive question of interest. Respondents came from a wide range of countries; most common were Nigeria (19% N=82) and Ethiopia (16% N=68).

The most common types of organisations were Africa CDC (33%, N=46), a government ministry (28%, N=39), a government department (17%, N=24) or an NGO (10%, N=14). Respondents had worked for these organisations for a median of three to four years. Thirty-two percent of respondents had more than 10 years' experience of deployments (N=36), 39% (N=25) had five to ten years' experience, and the remainder had below five years' experience. Seventy-eight percent of respondents were male (111) and 22% (31) were female; and 81% were aged between 31-50 (122).

Case studies

Case studies took place in Nigeria and Namibia to explore in-depth two different national perspectives from countries with varying deployment histories in relation to international deployment. The case studies explored the "deployment journey" and experience of Nigeria, a country with a medium level of deployment (19 international deployments from 2020 to 2023) and Namibia, a country with a relatively low level of deployment (four in the same time period). An explanatory case study approach was used to identify why and how deployments were experienced by these countries and identify views on any impact created. This enabled an exploration of the issues that underpin or are causally related to both the positive and negative experiences, outcomes and impacts of deployments experienced by countries. Multiple sources of evidence were analysed, including quantitative and qualitative data to allow us to draw hypotheses about the impacts of deployment in differing contexts.

2.3 Limitations of the methods

All evaluation methods have limitations that we need to be aware of to help contextualise the findings and the degree of certainty/confidence we can attribute to them. The complexity of the real world in which this study is situated and the events that define the period of the study added layers of complexity to the execution of this study. This context needs to be taken into consideration as the findings are considered.

Three limitations in particular are important to highlight:

- **Potential for recall bias:** The time that had elapsed between the period under investigation and the commencement of the study (the study was executed beginning in 2023 and covered the preceding three years) enhances the potential for recall bias.

- **Limited number of interviews:** Reaching an extremely busy workforce in the midst of ongoing emergency situations was challenging; hence findings are based on a moderate number of interviews and are indicative and directional rather than definitive.

- **Difficulty generalising case study findings:** The findings from the case studies in two of 25 AU countries are indicative and by no means transferable onto other countries in which the evaluation team did not have the opportunity to engage.

3
Findings

3 Findings

In this chapter we report findings in four main categories – short-term contributions and outputs of international deployments; long-term impacts of international deployments; achieving sustainability in outbreak preparedness and response; the future of international deployments. Throughout the findings, we make extensive use of quotations to showcase the unique voices and perspectives of many study participants.

3.1 Short-term contributions (outputs) of international deployments

In this section, we present evidence relating to the short-term contributions made by international deployments. In other words, the short-term or immediate contributions which were made during the deployment to the specific disease outbreak being addressed. It is important to note that the short-term or immediate response to managing an outbreak is, in reality, the raison d'être of most deployments.

KEY FINDINGS

1	The short-term contributions delivered by international deployments between 2020 and 2023 were numerous and diverse, with around half contributing to two or more areas of the following response activity – surveillance, laboratory, IPC, epidemiology, clinical case management and RCCE.
2	National and external stakeholders identified five categories of short-term contributions: provision of equipment and physical infrastructure; development of systems, protocols and processes; provision of knowledge via training; overall coordination of activities; and provision of human resources. Multiple examples were provided of international deployments making positive short-term contributions in these areas.
3	The contributions of international deployments, while perceived as valuable, were not perceived to be universally effective; rather, the perceived effectiveness of their contribution depended on the expertise of the individual(s) deployed, what support and infrastructure were available nationally, and what "extra" the deployee added to the outbreak response.
4	There was something of a disconnect between the views expressed by external stakeholders and national stakeholders regarding the effectiveness of these contributions. The latter were more positive while external stakeholders were more likely to express a degree of scepticism regarding the overall effectiveness of these deployments.

3.1.1 Number & types of short-term deployments

International deployments tend to involve multiple short-term outputs, across a range of response components. In this study we focus on the six most common response components identified: surveillance, laboratory, IPC, epidemiology, clinical case management and RCCE.[11] Of the 72 country-specific responses included in our systematic review,

11. A framework initially developed for this study included 10 response components: epidemiological, surveillance, laboratory, data management, infection, prevention and control (IPC), risk communication and community engagement (RCCE); clinical case management, logistics, finance, coordination. The focus of the study was narrowed to the six most recurring components reported above following a review of the literature and internal documents.

around half involved multiple response components while slightly fewer than half involved single response components. The UK-PHRST and Africa CDC deployments included in our internal review contributed to an average of two response components per deployment. In our Nigerian and Namibian case studies, research participants described deliverables in multiple response components associated with the international deployments with which they had been involved.

At least one third of responses included in our literature review sought to address each one of six specific areas of capacity at the national level – surveillance, laboratory, clinical case management, IPC, epidemiology or RCCE. Responses which contributed to co-ordination, logistics or data management were somewhat less common, and just one response sought to address finance.

Deployments undertaken specifically by UK-PHRST and Africa CDC between 2020 and 2023 were most likely to address four response components – surveillance, laboratory, IPC and epidemiology. All Africa CDC missions contributed to epidemiological capacity, whilst those undertaken by UK-PHRST were equally likely to contribute to each of the four areas. Between the UK-PHRST and Africa CDC there was only one instance of deploying for clinical case management capacity between 2020 and 2023.

3.1.2 Short-term contributions: the perspectives of national and external stakeholders

National and external (international but country-based) stakeholders were invited to provide details on the contributions made from a range of deployments with which they had been involved.

National stakeholders described a wide range of contributions made by these international deployments. Five key areas of contributions emerged:

- **Provision of equipment and physical infrastructure –** this included the provision of resources such as testing kits, PPE and vehicles to facilitate the transportation of staff and resources, as well as the construction of more substantive physical infrastructure such as treatment units and vaccination sites. An interviewee in Malawi described how deployees constructed Cholera Treatment Units (CTUs) to the prescribed standard; while in Zambia, an interviewee described a wide range of technical equipment that was installed at the EOC for co-ordinating the COVID-19 response, noting:

> **"They provided … screens to monitor the situations that recorded how the outbreak was actually evolving and even provided internet connectivity so that there's no interruption. We also received other electronic gadgets for contact tracing and data entry".**

External stakeholders also discussed this area of contribution, with one interviewee describing the contribution of an international deployment in relation to laboratories as follows:

> **"You move from [having] one lab in the country that has capacity, to maybe more than 15 laboratories in different regions that have capacity to test COVID-19 specimen".**

- **Development of systems/methods, protocols and processes –** many of the outputs described by national stakeholders involved the development of systems/methods, protocols and processes. These occurred across a range of areas, chiefly surveillance, epidemiology and laboratory testing. In Zambia, an interviewee described how the international deployment with which he was involved developed a system of genomic sequencing during the COVID-19 pandemic. In Malawi, another interviewee described how the deployees with whom he worked developed a bespoke sample reference system for COVID-19 testing. In many instances, the work of international deployments involved extending systems and processes that already existed at the national level to regional or local levels, particularly in terms of surveillance.

  External stakeholders had less of a focus on this area – possibly because many of these individuals were less likely to be working in an "on-the-ground/hands-on" manner than was the case for national stakeholders.

- **Provision of knowledge via training –** several national stakeholders reported how the international deployments with which they had been involved had contributed to effective disease outbreak management by expanding the knowledge of in-country teams, primarily through the provision of training. In Uganda, one interviewee described how Africa CDC had trained 1000 village health team members to undertake community health surveillance in response to an Ebola outbreak, noting:

> **"That knowledge was passed on and even up to now it's still existing".**

Much of the transfer of knowledge or learning exchange was informal and simply occurred as national stakeholders working alongside deployees discussing problems and potential solutions as they arose.

Several external stakeholders also discussed short-term contributions of deployments in terms of the provision of training and "distilling of knowledge" to those working in-country and on the frontlines. One external interviewee explained it as follows:

> **"In all of those cases, when we're providing the technical expertise and technical advisors, they actually spend a lot of their time doing what we would term low-level capacity-strengthening activities, so they're training the local workforce in a particular technique, or to use a particular tool".**

- **Overall coordination of activities –** co-ordination of the overall response was seen as a key contribution of international deployments. Such co-ordination was often restricted to the national level but sometimes extended to regional and sub-national levels. In Burundi, one interviewee described it as follows:

> **"These teams have made a huge contribution to the preparation, prevention and even response to the various epidemic interventions, because as soon as they were deployed in the field, it was easy to keep track of the various players in the field … At the same time, it acted as a relay between the central level and the intermediate or peripheral level in terms of advice and coordination of interventions".**

- **Provision of human resources –** the most common depiction of the short-term contributions of international deployments offered by national and external stakeholders did not relate to the provision of material resources or knowledge but rather, to the availability of additional human resources – to undertake similar tasks to those already being undertaken by country-based staff. International deployees acted as 'surge capacity', where particular skills or knowledge existed in-country, but not among a sufficiently large group of individuals. This was the situation in Cameroon, where one national stakeholder described how:

> **"In the framework of COVID-19, since all the resources were overused and overwhelmed, the deployment of more people was a good thing for the system. It was useful. It lessened the workloads of our teams at the national and at the regional level".**

Deployees were seen as acting as additional members of existing national teams, undertaking similar tasks within the existing management structures. As well as lessening the pressure on other team members, such a contribution was seen as enabling countries to maintain routine work other than those directly relating to the main outbreak response. This was the case in Burkina Faso, captured below by one interviewee:

> **"In response to the COVID-19 pandemic, we could say that we were going to stop our routine operations, particularly for acute or chronic illnesses, whereas you know, in our countries, we still have the problem of the future, malnutrition, maternal and infant mortality. We need to have the human resources to continue working and to have all the human resources to prepare to meet health deadlines. So these deployments are often very important in order to have the resources. And, when we say resources, we mean humans".**

A number of external stakeholders also described the short-term contribution of international deployments in terms of the provision of "surge capacity" – essentially defined as making available additional human resources with particular skills that were either not available or were not available in a sufficient quantity in the country at the time of deployment. As one interviewee stated:

> **"Especially at the height of the outbreak, you need additional human resources with a certain level, and sometimes the delay in the response or delay in having that national expertise may lead to expansions of those outbreaks. And sometimes those outbreaks go beyond the capacity of the countries. So, this is why the international experts are required to augment the capacity of the member states".**

In addition, a small number of national stakeholders reported that these additional hands had reduced the severity, length or the degree of mortality and morbidity during the outbreaks. In Cameroon, an interviewee captured this sentiment as follows:

> **"Over the last three years, we've been able to work hand in hand with the consultants we've received. And all the times we've had epidemics, the peak hasn't been so high. And the duration over time has decreased".**

The perspectives of national stakeholders who responded to our survey were similar. When discussing how deployments had contributed to improving a

country or region's emergency response system, there was a widespread focus on the idea of deployees' work leading to strengthening or improving existing systems and processes as well as strengthening staff or community knowledge or awareness – reflecting two of the themes emerging from our qualitative interviews above. Some examples cited included "data management reporting processes which were improved to give real-time information on COVID-19 restrictions," and "contributions to the acceleration of tracing, screening, isolation, care and treatment of cases and contacts in the community."

Evidence from this study clearly suggests that international deployment outputs or deliverables made tangible contributions to the outbreak response as well as wider outbreak management issues in the short run.

In the next section we consider how effective study participants assessed these contributions as being.

3.1.3 Perceived effectiveness of the short-term contributions of international deployments

Our internal review included data from partners who had worked with UK-PHRST deployees, reflecting on how far they [the deployees] had met agreed short-term objectives. Similarly, in our interviews with external stakeholders, we asked them to consider the issue of the effectiveness of the international deployments with which they had been involved overall. We also asked participants in our survey who had received deployments, or been deployed, at the national level about their views on this matter.

Taken together, these data paint a mixed picture regarding the effectiveness of international deployments over the period of review:

Achieving deployment objectives – data provided by UK-PHRST's deployment partners in relation to the achievements of international deployments paints a generally positive picture. In 2021-22, all deployment partner organisations felt the objectives of deployments were fully met. For 2022-23, 89% of deployment partners reported that the objectives of deployments were fully met, while 11% felt these were only partially met. Those who reported that the objectives were only partially met cited insufficient time with deployee(s) and insufficient human resource to fully address needs. In addition, in 2022-23, 94% of partners rated UK-PHRST's contribution as "useful", with 6% regarding it as having been "fairly useful". All deployment partners responding in 2021-22 viewed the deployments as useful.

Similarly, a vast majority of participants in our survey (82%; N=116/142) felt that the objectives of the most recent deployment with which they had been involved were fully met and 18% (N=26/142) that they were partially met, with no one indicating that the deployments' objectives were not met at all. Among the 18% who stated that the objectives were only partially met, the over-riding reason offered to explain this was constraints within the country of deployment, primarily relating to available budgets and funding – a point we return to in the next section.

Ninety percent (N=128/142) of survey respondents rated the deployees' contributions to the country's or organisation's work as being helpful and 8% (N=12/142) as being fairly helpful. Just 1% (N=1/142) felt that this was unhelpful and 1% did not know. There was little difference of opinion between deployees and those who had worked with or managed deployees – 90% (N=97/108) and 92% (N=115/125) respectively rated deployees' contributions as helpful. Moreover, between 80-90% of respondents agreed with each of a range of positive statements about the deployments or deployees they had been involved with in the past three years, with very few respondents disagreeing in each instance, as shown in Figure 1. There were no significant differences between deployees and those who had hosted deployments in their responses to these statements.

External stakeholders' views – among some of the external stakeholders we interviewed there was a marked degree of scepticism regarding the effectiveness of short-term contributions of international deployments. As some interviewees noted, this perception may have been influenced by the fact that they themselves were not working directly "on the frontlines" where they may have more readily discerned how effective or not a contribution had been. Nevertheless, a widespread element of scepticism existed, expressed by one interviewee as follows:

> **"I didn't see anything where I'm like, oh yeah, this is great. Like, if they hadn't come, none of this would have happened. So, yeah, I think neutral".**

There was some feeling that international deployments should bring in skills that were not available within receiving countries as one interviewee observed:

> **"Maybe ten years ago in many African countries, in terms of outbreak response you don't have maybe a lot of expertise for example. If you see now, I think that the case from Cameroon, I think that people have the capacity to solve a lot of the problem themselves."**

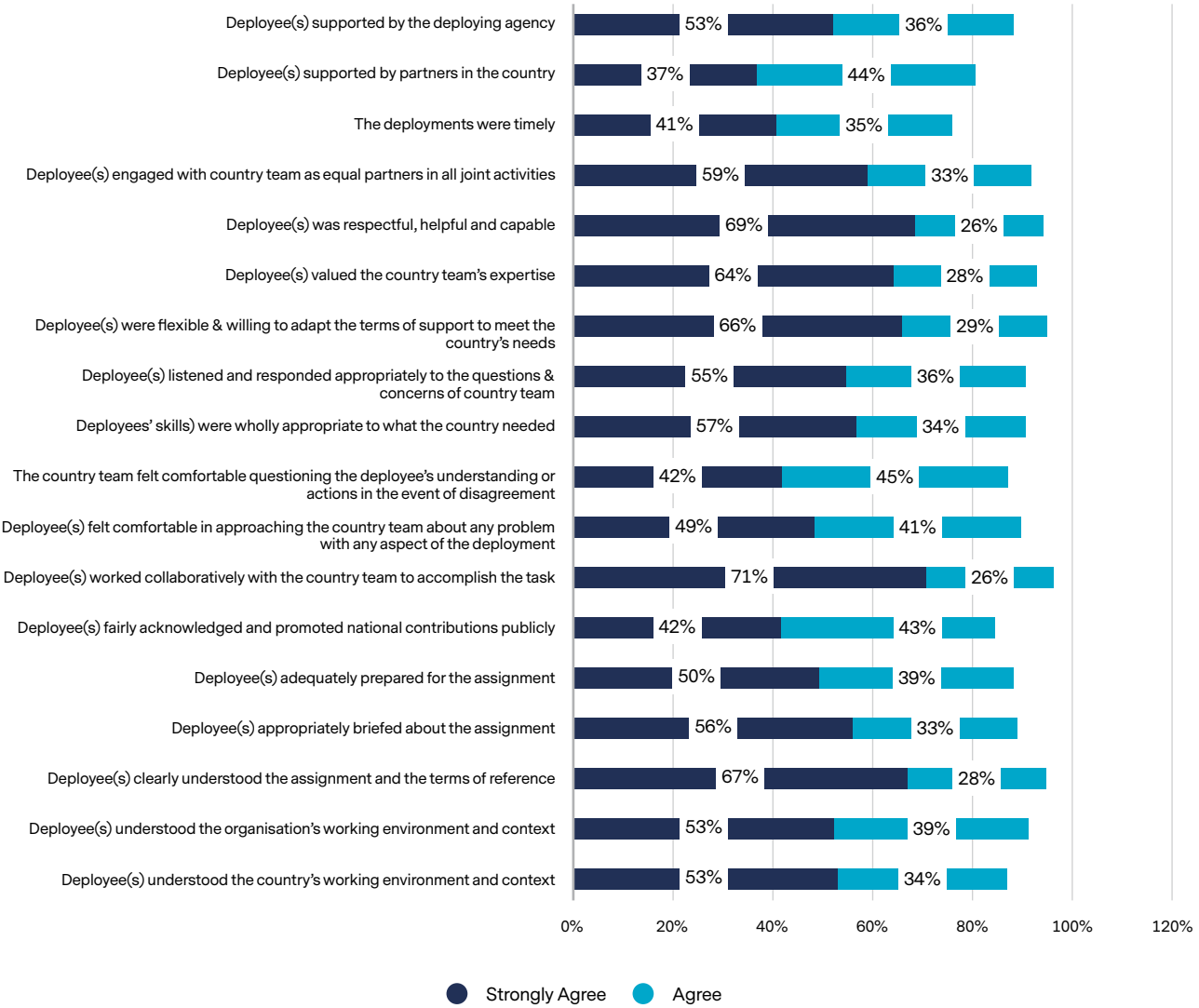
The upshot of this scepticism was a conclusion among some external stakeholders that some, but by no means all, international deployments had contributed to helping receiving countries to combat disease outbreaks in the short-term. One interviewee succinctly expressed it as follows:

> **"Out of the deployments, probably 40% would be good deployments … But generally, somewhere between 40% and 50% of the deployment, some of them are just, okay an additional hand. But we have also seen deployments which are critically covering either an operation, or a fundamental policy or fundamental changes, a few of them like that".**

In other words, on a short-term basis, international deployments were not perceived to be automatically nor universally effective; rather their effectiveness depended on the qualities of the individual deployed, what was available nationally to support the outbreak, and what "extra" the deployees added to the outbreak response. This position was also reflected among nationals, although to a lesser extent. The quality of the individual deployee was a critical factor among national responders in assessing effectiveness, including their skills/expertise and experience as well as their ability, willingness and humility to readily work alongside national and other international counterparts.

Figure 1: Views about all deployments in past 3 years

Agreement with statements on deployments & deployees.



3.2 Long-term impacts of international deployments

In this section, we consider longer-term impacts which may derive from short-term contributions and which influence a country's ability to respond to later, and different, disease outbreaks. In other words, were the contributions which occurred in the short run sustained beyond the time and context of the specific disease outbreak; and did they contribute to enhancing countries' outbreak preparedness and response capacities in the longer term?

KEY FINDINGS

1	There is limited evidence in the academic literature and in organisations' own assessments of international deployments achieving longer-term impacts in terms of countries' outbreak management.
2	This study, however, found evidence of long-term impacts of international deployments, particularly in terms of: systems, protocols and processes; physical infrastructure and equipment being in place for other disease outbreaks; knowledge of disease outbreak response being maintained and applied to other outbreaks and enabling improved and sustainable ways of working.
3	77% of survey participants (N=110/142) reported that recent international deployments had *fully contributed* to improving the country's or region's public health emergency response system while 22% stated that they had partially contributed to these.
4	84% of survey participants (N=119/142) believed that international deployments had made substantial contributions to sustainable changes in disease outbreak management in their countries.
5	Views regarding the ability of countries to deal with future disease outbreaks *independently* were mixed; all stakeholders agreed that the capacity to respond independently would depend on the nature and severity of the disease outbreak.

3.2.1 Limited evidence regarding long-term contributions of international deployments

Minimal substantive measurement of impact – while our internal review of recent international deployments undertaken by UK-PHRST and Africa CDC unearthed evidence of a wide range of short-term contributions, summarised in the previous section, there was little evidence of how these outputs had, could or would be translated into strengthening capacities within the countries of deployment in the longer-term. While this may be understandable as reviews of missions tend to be completed shortly after the point of departure from the country, it does highlight a gap – the lack of continuity plans for systematically addressing post-deployment, response-related issues identified during the response; and the lack of a monitoring or evaluating framework for evidencing this longer term result.

Limited academic evidence – additionally, there is limited evidence in the academic literature and in organisations' own assessments of deployments of these short term contributions achieving long-term impacts on countries' capacities to manage outbreaks in the future. Indeed, a review of the academic literature identified a dearth of published literature evaluating longer-term impacts of deployments linked to substantive enhancements of national capacities to manage outbreaks. On the one hand this is not surprising given the short-term nature of these deployments; on the other hand, however, the absence of this type of evidence is of concern given the vast amounts of funding that accompany international deployments.

3.2.2 Evidence of long-term impact in three substantive areas

National and external stakeholders were inevitably better-placed to observe the long-term impacts of international deployments on countries' outbreak preparedness and

response; in the former case, they continued to work in-country after deployees had departed, and, in the latter case of external stakeholders, these individuals had ongoing relationships with national teams.

Perceptions about international deployment impacts – respondents to our survey, who had either received deployments or been deployed in the past three years, were generally positive in speaking about the impacts of these deployments. Seventy-seven percent (N=110/142) thought that the most recent deployment with which they had been involved fully contributed to improving the country's or region's public health emergency response system and/or its plans for effective epidemic preparedness, response, evaluation and learning (75% of deployees and 79% of in-country staff); while 22% felt that this has been partially achieved. Considering all the deployments with which they had been involved, 80% (N=113/142) of respondents felt that, on the whole, these had created long-term impacts for the relevant country or region's public health emergency response system (this proportion was identical for deployees and in-country staff). Moreover, 85% (N=121/142) thought that the deployments with which they had been involved had a made a substantial contribution to sustainable changes in their country or region's public health emergency response system and/or its plans for effective epidemic preparedness, beyond the outbreak for which the deployment occurred, while 13% (N=18/142) felt that the contribution had been limited as shown in Table 2 below.

Three clear categories of long-term impacts emerged from our qualitative interviews and from open-ended data provided by survey respondents: (1) systems, protocols and processes put in place for other disease outbreaks (2) physical infrastructure and equipment in place and used as is or repurposed to address other disease outbreaks and (3) knowledge of disease outbreak response maintained and applied to other outbreaks. These impacts were also observed as short-term contributions, as noted in the previous section, but were seen to have been effectively embedded and sustained over time.

3.2.3 Systems, protocols and processes in place for other disease outbreaks

Interviewees provided evidence that the systems, protocols and processes developed by deployees in response to specific disease outbreaks had been maintained and were being used, or were available for use, for other disease outbreaks. This was particularly the case for co-ordination and surveillance systems and processes, which it was noted are largely applicable to any disease outbreak. Focusing on the coordination aspect, a national stakeholder in Zambia described how this had created impact:

> **"COVID really helped with system strengthening. And with that, if we're to have something come now, we have a platform we can work on. I can start with coordination, even for a few days … because now we always work through the Public Heath Emergency Centre. So, you have this unified command every time".**

Table 2: Survey participants opinions on impacts of international deployments

Participant perceptions on contributions and impact of international deployments	% (N=142)
Deployment *fully contributed* to improving the country's or region's public health emergency response system	77
Deployment *partially contributed* to improving the country's or region's public health emergency response system	22
Deployments created *long-term* impacts for the country or region	80
Deployments have made *substantial contribution to sustainable changes* in their country or region	84
Deployments have made *limited contribution to sustainable changes* in their country or region	13

In terms of surveillance, an external stakeholder described its impact as follows:

> **"If there was a specific gap … I think from our surveillance and analytics side a very, very clear one was we were having challenges within the Ebola response with data information systems and analytics, and a deployment was made – a team which joined the Ministry of Health, has developed a document that enabled them to follow a specific method of doing analytics. And that has now become the standard of response analytics".**

Some national stakeholders occasionally noted that it was harder to sustain and further develop systems, processes and protocols, without the presence of international deployees as the quote below from a Cameroonian interviewee illustrates:

> **"We've kept these procedures, this way of doing things, these strategies that we developed together, we've kept them. But it's important to note that it's a bit difficult to maintain the same level when you have the support of partners and when you don't … Because when we say partner support, not only is there technical support, but there is also financial support. There's a whole range of things that follow on from that".**

Survey respondents identified impacts that ranged from the highly generic and wide-ranging to the very specific. Individual respondents referred to the "continuing existence of coordination structures that can respond to disaster situations within the required timeframe", "enhanced disease surveillance, early warning, and rapid response systems", and "better documentation to curb EVD in Uganda".

Workshop participants in the Nigeria case study pointed towards enhanced surveillance systems, setting up and equipping the PHEOC, improved PHEOC operations and management and the development of After-Action Reviews (AAR) which provide detailed recommendations on how to improve on subsequent responses. They also identified the development of "products" such as IEC materials (e.g. for community awareness creation) and SOPs (e.g. for sample selection and transportation) as elements where deployments had had a long-term impact. Interviewees described how, in response to specific disease outbreaks, deployees had set up systems that had, and could, be used effectively in relation to later outbreaks, once the international deployees had departed. One interviewee explained:

> **"[During] one of the WHO deployments to Lagos, one of the [people] we worked with, was able to set up a system for data capture for Lagos that they used with visual displays and everything, which they can always use for any other kind of outbreak with modifications here and there".**

Such improvements had actively been used to address later outbreaks as another interviewee explained:

> **"They helped us to automate a system where once you enter all the data, you generate your charts, your map, and generate a Sitrep. And since then, we've been using that for every one of the outbreaks".**

A further interviewee described how an unprecedented focus by international deployments on IPC during the COVID-19 pandemic led to greater infrastructure in this area:

> **"Where, with the support of Africa CDC in convening expertise, bringing in colleagues from within the continent and beyond the continent to work with us … we further developed our own competence … And now there are clear outputs: we have a new IPC model, we're driving the development of IPC across the public health ecosystem. This is influential work, not only in outbreak response, but in more longer-term issues like antimicrobial resistance and things like that."**

Workshop participants from the Namibia case study identified the key systems impacted long-term by international deployments as their "Go-data" platform which had enhanced national capacity in surveillance, the development of SOPs, an EMT structure, an Incident Management System at national and sub-national levels, and the establishment of a PHEOC at sub-national levels.

3.2.4 Physical Infrastructure and equipment in place for other disease outbreaks

In many countries, national and external stakeholders described how physical infrastructure constructed or installed by deployees continued to be used in response to other disease outbreaks. In Uganda, an interviewee described how a mobile laboratory, deployable within 24 hours or as needed, and left behind by deployees from the German government was still in use, saying:

> **"Imagine where we were … now we have the capacity".**

In Cameroon, interviewees recounted how treatment centres constructed by MSF and UNICEF in response to a cholera outbreak were being used for other disease outbreaks. An external stakeholder elaborated on this point:

> **"If you take the COVID-19 model, which is the most recent model you have in many countries, I think that now in the country we have capacity in all the technology. We have a lab which has biomolecular capacity for example, in all the technology in the country. This is something that in 2020 when COVID started, this was not the reality in the country".**

In several instances, physical infrastructure constructed by international deployments had been re-purposed as this interviewee from Uganda explained:

> **"The Ebola treatment units were built, I think about two. So, these are now the structures that the Ministry of Health is using to support trainings, similar trainings in terms of response and preparedness … they will be used as … centres of excellence for the Ministry of Health".**

Other interviewees noted that, while long-term infrastructure had been created as a result of international deployments, in some cases this was no longer used for its original purpose, although it could be reconfigured to do so in the case of a disease outbreak. A number of testing centres set up during this period were no longer used as they were surplus to requirements, for example.

In Cameroon, there was some evidence that equipment purchased or supplied through an international deployment continued to be used, often for different purposes. An interviewee described how the equipment installed in the COVID-19 vaccination centres, which had now been decommissioned, had been moved to the districts for them to use, including telescopes and computers. In Malawi, the oxygen plants constructed by international deployees in hospitals in response to the COVID-19 outbreak were still in use for a range of other diseases.

However, interviewees frequently described how they had encountered problems with continuing to use equipment supplied by international deployments, due to issues of maintenance and licencing. This is considered in greater detail in the next section.

Workshop participants in the Nigerian case study pointed towards improved laboratory networks in the states for improved disease detection, including reduced turnaround times for laboratory results as long-term benefits derived from equipping national facilities.

Interviewees in our Namibia case study described how infrastructure built by international deployees during the COVID-19 pandemic and supplied laboratory equipment were now being used in relation to a wider range of diseases outbreak:

> **"We continue to do that [run our labs now] on our own, because our system – how it was designed from the lab side – was not only to respond to COVID, but also to be used for diagnostic purposes, for surveillance purposes, for other infectious disease".**

While there was generally a positive response to the ongoing use of equipment and infrastructure, there were also sentiments expressed about the inability of existing systems to absorb and maintain some of this equipment to existing standards.

3.2.5 Knowledge of disease outbreak response maintained and applied to other outbreaks

Almost universally, national and external stakeholders indicated that their experiences of working with (and receiving training from) international deployees had equipped them with a greater knowledge and confidence to respond to disease outbreaks. Many interviewees indicated that they had effectively used this increased knowledge and confidence in subsequent disease outbreaks as expressed by this interviewee from Burundi:

> **"I've benefited a lot from this deployment in terms of capacity building, which has enabled me to manage the province well … which is my responsibility in terms of preparing responses to epidemics".**

More broadly, several interviewees outlined how the knowledge acquired by their colleagues through training had improved their preparedness in relation to other disease outbreaks. An interviewee from Burkina Faso:

> **"Today, our 13 regions can perform viral loads. We have staff trained in the incident management system. We have staff, in any case, on FELTP, at the advanced level. We have almost a dozen who have been trained at CDC US. We have human resources who are now aware of the situation".**

Respondents to our survey described the impacts of international deployments on their knowledge – in relation to the public health workforce and communities more generally. Examples cited include: "knowledge, expertise and awareness of disease outbreak and response nationally and politically", "increase(d) awareness of the importance of infection prevention and control (most hospitals in the country have infection control focal persons", "more capable public health emergency [frontline] workforce", and the fact that "it has created a body of experts in infectious diseases response that will be instrumental in future fights against such diseases".

Interviewees in our Nigeria case study described how the experience of working alongside international deployees had increased their own knowledge and enabled mutual learning in relation to outbreak response, thereby increasing their confidence in dealing with similar outbreaks independently in the future:

> **"Having worked together with national and international teams, we're more confident in our work. We seem ready, more prepared than we were in the past. So, I think that it is all because of the experience of standing shoulder to shoulder against these common outbreaks and having learned from each other".**

There was some sense that international deployments had contributed to Nigeria's long-term outbreak response capacity by identifying and addressing skill gaps expressed by one interviewee as follows:

> **"We were able to learn weaknesses that were apparently blind spots for us".**

Interviewees in the Namibia case study reported how international deployments had enabled long-term impacts in Namibia's capacity to respond to disease outbreaks by increasing confidence, knowledge and networking opportunities with their international counterparts. It was felt that Namibia was now better equipped to plan an outbreak response as expressed by this interviewee:

> **"The impact also is that people now are aware that one needs to have a plan, a response plan, a costed one. Before you can just run around the country without a plan. So … I think this has become known to most of the people at the government level, ministerial level, country level that we need a multisectoral costed plan."**

More generically, it was felt that Namibians were now more confident about their ability to respond to a disease outbreak, with one interviewee noting:

> **"One aspect that I would also like to mention is that feeling, that confidence that the country gained, you know that … I think it's a soft skill, it's not easily measurable, but you feel it, that the country feels like we have been empowered and we are able to take charge. During the pandemic … there was a lot of leadership that arose through the pandemic. Skills, people's confidence were built, and you found a lot of leaders coming up. And those leaders are in the system, they became health leaders that are leading the health agenda, the health sector in the country today".**

By working with deployees, it was felt that people working in Namibia had now become part of international networks which they could draw upon for advice or guidance in times of disease outbreaks. In this regard, in relation to laboratory capacity, one interviewee described the benefits and impact of these networks:

> **"From our side, what we've done with most of the people who came to our lab, who we have interacted with, who have helped us – we have kept contacts, and we always write to them if we have issues and say do you know someone who can help us with this? There's more like what we call a community of practice".**

Both survey respondents and interviewees discussed how international deployments had helped to secure improved ways of working in the country or organisation where they took place – these primarily related to improvements in communication and co-ordination. Specifically, individual survey respondents referred to, "strengthened local emergency response capabilities, improved coordination and communication between national, regional, and local health authorities", and "improved coordination and communication between different government agencies and non-governmental organisations involved in the management of health emergencies".

While there was clear evidence of these longer-term impacts on national capacities, the systems to capture and retain these critical areas of knowledge for countries was not always evident. The study found evidence that the protocols, data, lessons learned and evaluation findings following outbreaks were often not stored centrally in an easily accessible repository but were on "people's laptops" – severely impacting institutional capacity to retain and build on this knowledge/memory. When viewed alongside the significant staff turnover that occurs within these countries, the extent of knowledge erosion through a lack of knowledge management systems and staff attrition becomes apparent.

3.2.6 Mixed views regarding whether countries are better equipped to deal with future outbreaks on their own

The study sought to identify countries' perceptions of their own readiness to independently address future outbreaks with little or no external assistance. It was widely emphasised across a range of countries that such readiness would depend on the nature and severity of any disease outbreak. Beyond this, there were mixed views regarding countries' current levels of preparedness, with interviewees within the same country sometimes expressing different views. This is not necessarily surprising, given that we spoke to a range of individuals who had different levels of association and familiarity with the various elements of the outbreak response system.

National stakeholders in Burkina Faso, Burundi and Malawi were relatively positive about their countries' abilities to deal with future disease outbreaks, which they felt had been sufficiently enhanced by their previous experience of deployments. An interviewee in Malawi stated:

> **"So I am confident to say okay, maybe Malawi can manage to respond to outbreaks. Generally, I think we have that capacity within the government health system at this moment, which was not there before the major emergencies came".**

However, national stakeholders in Uganda, South Africa and (interestingly) another interviewee in Malawi, whilst acknowledging the significant long-term impacts secured by deployments, were less confident that their countries were currently equipped to deal with a disease outbreak independently. In response to the question on capacity to address outbreaks independently an interviewee in Uganda summarised it as follows:

> **"The answer is no, we cannot respond independently without international support".**

Another respondent from South Africa captured what was the underlying sentiment by many in this study:

> **"It's going to take us a while to build the required capacity to respond to pandemics".**

Interviewees in the Nigeria case study universally felt that the international deployments undertaken between 2020-2023 had improved Nigeria's capacity to deal with similar outbreaks in the longer-term.

In Namibia, the workshop assessed Namibia's capacity to respond independently to outbreaks as "fair" and at around 50%; depending on their scale and severity. Interviewees were also largely unconvinced that Namibia has full capacity to respond to future outbreaks independently. While some felt this might be achieved within the next three to five years, others believed Namibia had this ability in some areas, such as surveillance and case management, but not in others – primarily laboratory capacity.

That capacity has been strengthened is evident from the data gathered in this study. That countries assess their operational capacity to be stronger in some areas than others is also evident. It is safe to assume that a country's capacity to independently respond to the next disease outbreak differs widely from one country to the next and is very much a function of the nature and severity of the outbreak.

3.3 Achieving sustainability in outbreak preparedness and response

In this section, we consider the factors which have helped and hindered countries' achievement of longer-term sustainability in their outbreak response management – and what further is needed in this area to ensure that the gains achieved from international deployments are sustained.

KEY FINDINGS

1 Three factors were seen to have contributed to the sustainability of the contributions made by international deployments over the past three years:

- Consecutive outbreaks have led to a cumulative growth in outbreak preparedness experience.
- Continuously strengthening national response systems during and post deployment.
- Deployments have developed skills in-country.

2 Four themes were identified which hindered the achievement of sustainability in outbreak preparedness:

- Sustaining the achievements of deployments can require additional skills and funding.
- Learning from deployments is primarily based on people not systems – staff attrition limits the knowledge and learning available.
- There is a tendency for deploying organisations to treat each disease separately.
- Lack of political will which can lead to a lack of funding.

3 Two objectives were consistently identified which need to be met in the future to ensure the long-term sustainability of the positive impacts of international deployments:

- Retention and ongoing training of personnel skilled in outbreak preparedness.
- Securing greater political will and more appropriate and agile funding mechanisms to respond readily to outbreaks.

Factors contributing to sustainability

Below we discuss the three factors identified as contributing to the sustainability of gains made by international deployments.

3.3.1 Consecutive outbreaks have led to a cumulative growth in outbreak management

National stakeholders described how the experience of consecutive disease outbreaks over the past decade has led to a period of continuous growth in their countries' outbreak management capacities. This growth has occurred for several reasons. First, because of the infrastructure and learning gained from multiple international deployments; secondly, outbreak management as a whole is now given greater prominence across the globe because of the significant challenges and negative outcomes experienced in past disease outbreaks.

A national stakeholder from Uganda described how the experience derived from multiple outbreaks had, over time, led to improvements in their country's ability to respond:

> **"Uganda's response system, with every outbreak that we handle, the situation gets better in the [next] outbreaks. Because now you look at how COVID actually provided so many complexities. After COVID we were hit by Ebola … We thought that everything was going to get out of hand. But it is surprising that within 69 days the outbreak had been contained. So to me I think this is based on the experiences that we had after containing previous outbreaks".**

An interviewee from South Africa, with reference to a continent-wide system for improving outbreak response, described how more priority was now given to this area by many nations:

> **"The beautiful thing is, prior to COVID countries were dragging their feet. I think with COVID, it brought out the need and now countries are asking please come help us – we need to get this done".**

External stakeholders also acknowledged that the experience of consecutive outbreaks had incrementally increased countries' outbreak preparedness, as they developed the processes and infrastructure required to address them (sometimes as a result of deployments). This was felt to be the case particularly regarding laboratory capacity improvements which occurred during the COVID-19 pandemic, as one external stakeholder explained:

> **"I think the lab thing has actually changed post-COVID, where countries that didn't have diagnostic labs that could do PCR molecular diagnostics now do. So that particular landscape is different now than it was a few years ago".**

EOCs both at a national and subnational level and designated independent Public Health Institutes were also identified as infrastructure that now exists in many countries where it did not a decade ago.

Participants in the Namibia case study spoke positively about a number of internal structures and infrastructure that had been developed as part of or in response to individual deployments, which they felt would be sustained into the future. These included the development of a digital learning centre and the National Disaster Risk Management System. In Namibia, one interviewee felt that the development of EMTs, reflecting the model used in a number of deployments, had ensured Namibia would be able to sustain learning from deployments, rather than having to call upon outside help in the future. They explained:

> **"The wish was from the clinicians in Namibia to build up their own emergency medical team. To be able to not be dependent on someone coming from the outside. But especially if something happens within Namibia that they have a team from national and regional clinicians that can respond to different outbreaks".**

3.3.2 Continuous strengthening of national response systems, not just in response to disease outbreaks

In many countries, outbreak preparedness is now being developed on an ongoing basis and not just as a short-term response to individual disease outbreaks. Part of this development is clearly prompted by a period of learning following the experience of international deployments. An interviewee from Burkina Faso described how, after each outbreak, they had carried out an intra-action review and an external after action review (undertaken by an external consultant), "to put forward plans and suggestions for correcting our various shortcomings". As they explained:

> **"[These two reviews] really enabled us to capitalise on everything that was done … They also constitute a memory of what has been done, which we can always refer [back] to in order to move forward".**

National stakeholders also described a number of international initiatives to improve outbreak response, often delivered by deploying organisations during a deployment. In relation to the cholera outbreak, an interviewee from Malawi described it as follows:

> **"The silver lining is that Malawi has been taken on board for the flagship initiatives for WHO and Africa CDC, the EPR emergency preparedness and response, so we've been included for all the three initiatives – that's for surveillance, for preparedness and for response … So I think from that if we actually do get the necessary support to actually implement this, we should be able to handle anything."**

When discussing what factors had helped to ensure the sustainability of the contributions of international deployments, external stakeholders primarily focused on the fact that national outbreak response systems were being strengthened on an ongoing basis, frequently highlighting the continual work of their own organisations in this regard. In a number of instances, external stakeholders emphasised that the building of countries' response systems had occurred post-deployment, with a sub-set of deployees staying on to ensure that this work was undertaken. As one external stakeholder described it:

> **"Once an outbreak is declared over, for Africa CDC we are not leaving the country; we agree with the country to stay for a period, we may downgrade our mission, de-escalate our mission, but we still keep some staff to support the recovery period. And during this recovery period, we agree with the country about some of the activities to be conducted in the recovery period. This is in order to ensure that the country has a good capacity to continue later with the response. And during this recovery phase, we agree about maybe some sort of formal training to be conducted, some on-job activities, on-job training to be conducted … Then after the recovery period, we do the link with our**

> **divisions in Africa CDC. So like surveillance team to have their long-term plan to support the country to strengthen their surveillance; maybe IPC, also, within Africa CDC to have the long-term plan to support the country later on, and so on, based on the gap that we witnessed within the country."**

External stakeholders also emphasised that much of this work took place outside of periods of disease outbreaks, as one interviewee noted:

> **"I think capacity to respond to things doesn't happen during deployments … it happens in kind of peacetime, right? It's a preparedness activity. So … respectful partnerships between technical agencies and people to sort of co-identify, collaboratively identify and develop programmes or projects or activities which can build that capacity in peacetime is obviously the most beneficial thing".**

In other words, whilst international deployments were clearly perceived as contributing to sustainability, much of this work was regarded as being delivered outside the context of international deployments delivered in response to specific disease outbreaks.

3.3.3 In-country and local capacity strengthening facilitated by international deployments

It was widely felt that the short-term contributions made by international deployments were most often sustained in the longer-term when these had been achieved alongside or in conjunction with locally based staff, who could subsequently take the work forward once the deployees had departed.

Such development of skills in-country could be achieved in a number of ways. Some international deployments recruited locally-based staff to undertake some of their activities (rather than bringing in international staff); others undertook training with in-country staff at a local level, or trained country-based staff to deliver further training. In many instances, national stakeholders simply gained and exchanged knowledge and ideas by working closely alongside deployees, as discussed previously.

Inevitably, securing long-term outbreak management capacity in all its facets is achieved by continually growing and actively using local knowledge and capacities; this in turn relies on that knowledge remaining in situ. We consider the challenges presented by this in the next section.

What hindered achieving sustainability?

Four themes were identified which had hindered or were continuing to hinder the achievement of sustainability in outbreak management:

- Sustaining the achievements of international deployments can require additional skills and funding.
- Learning from deployments is, in reality, primarily based on people not systems.
- A tendency for deploying organisations to treat each outbreak separately, rather than building and working with one integrated outbreak response system.
- A lack of political will lead to a lack of funding for national outbreak management funding.

3.3.4 Sustaining the achievements of international deployments can require additional skills and funding

In many instances, national stakeholders felt that to sustain the achievements of deployments additional funding or skills were required at the country level, which were not always available. This was most commonly the case in relation to physical products, namely technology and equipment. While these were frequently donated by international deployees on their departure, it was not simply the case that local staff could continue to use them without issue for long periods into the future.

Countries often found themselves unable to fulfil a number of additional requirements relating to equipment and technology – including the need to meet costs and expertise required to maintain equipment, difficulties with maintenance contracts and issues with licensing. A national stakeholder in Zambia described this issue:

> **"In terms of things like infrastructure – it's these donations we receive from mostly the lab – where you'll find that yes, there is some good equipment that has come from that partner. And, yes, you are trained on it, and you begin to use it. But the sad thing is that, because it's a donation, continuity usually lacks. So once time for maintenance comes, this government doesn't have money to service that equipment. So slowly they begin to break down, and eventually you push that machine in the corner. Until next outbreak – another donor, new equipment!"**

It was widely felt that it was easier to sustain a short-term contribution made by international deployees, if there was no associated financial cost – and this may be the reason why it appears that systems, processes and protocols were more likely to have been maintained into the longer-term, compared with physical infrastructure and equipment. In terms of technology, a national stakeholder from Uganda outlined how this had led to a preference for no-cost solutions, not requiring a licence and ideally being available on an Opensource basis, noting:

> **"A reporting system that is internet based, then you come and introduce a new tool. That is Go-data. That is, for reporting they will just pick this and integrate it into those internet-based reporting systems. Now those are easy to sustain, especially where there is no cost implication … Usually the ones that die off are the ones that would require a heavy investment. So when the funder moves, then the country that cannot find somewhere to get that money, to commit to such a kind of intervention or capacity then it slowly dies off. That's the in-country challenge. But capacities that do not have a cost related to them will actually be around, will actually stay".**

External stakeholders also noted that sustaining the achievements of deployments long-term could require additional skills and funding. Once again, this was particularly seen to be the case for equipment or infrastructure, as compared with those associated with processes and protocols (which would not generally have costs attached). In relation to the national laboratory in Cameroon, one external stakeholder noted the following:

> **"The only issue that may occur is the maintenance of this equipment, and the reagents for each disease. Because every new gene pathogen that you have to sequence has its own reagent that you have to use. And the country is not always able, when there is an emergency, to deploy financial support to those activities".**

Participants in our Namibia case study acknowledged that additional skills and funding were needed in a range of areas, including ensuring funding mechanisms are in place to keep laboratories operational, maintaining an up-to-date roster of trained staff; ensuring that clinical engineers are trained on maintaining equipment; ensuring that avenues to access spare parts are clear, affordable and identified *before* purchasing equipment on behalf of countries; ensuring ongoing training is embedded into staff employment obligations; maintaining a cadre of trainers with state-of-the-art training in their various fields; producing and acting on reflection and learning sessions such as AARs; and ensuring activities are underpinned by a robust monitoring, evaluation and learning framework that is operationalised.

3.3.5 Learning from deployments is primarily based on people not systems – staff attrition limits the knowledge and learning available

Short-term contributions of international deployments were more likely to be translated into long-term impacts when knowledge and skills had been shared with those working in-country. However, this presents a challenge, as staff inevitably move on, taking the skills and knowledge they have acquired with them. This was widely identified as a factor that hindered the long-term sustainability of skills in outbreak preparedness gained from deployments, as summarised by an external stakeholder in Burkina Faso:

> **"Memory is a bit lacking, and that's one of the shortcomings we have in terms of sustainability. Memories are based more on people than on well archived documentation … In other words, even if the documents, guidelines and opinions have been developed, they haven't actually been validated or disseminated or stored institutionally … instead he puts it all in his machine [laptop]".**

There was also a strong acknowledgement from external stakeholders that learning from deployments is primarily based on people not systems – which could be a problem, if those who have acquired new skills or learning do not remain in their posts, organisations or countries for a significant period. One interviewee presented it as follows:

> **"The biggest elephant in the room is the availability of human resources. And so, you know, if the current trends continue, where human resources for health are leaving the system … then Zimbabwe will continue to have a challenge".**

It was widely emphasised that governments needed to improve conditions of service including remuneration and career paths; otherwise interviewees pointed to a trend for individuals trained in outbreak management to seek better conditions and opportunities elsewhere. As one external stakeholder stated:

> **"The truth is, I understand people. For example, I will not work for the government to give for example, $500 per month when I can go to support another country and I have $5000".**

The seriousness of this issue of many governments not adequately financing critical national public health staff is perhaps best captured by this interviewee:

> **"So I train all these people … after training them, they will go … So the government doesn't know that it is a futile effort for you to be spending so much money to train somebody, and you cannot maintain it or retain them. Why are we talking about sustainability? You know how much they spent on me to go to the US to come back? If I really want to leave, I would have left. All this money is a futility … Why can't they say OK, this man is very useful to us. Let's give him what WHO is giving his counterpart? Or don't even give him that – give half of it! I want to stay and work in my country. People will stay … "**

Indeed, as alluded to in the quote above and elsewhere in this report, international deployments themselves, ironically, could be seen to be part of the problem by offering better opportunities to those in-country workers whom they have trained. The following quote from an external stakeholder below succinctly captures and elaborates on this dilemma:

> **"We have been working with government for a long time. We needed to have a team in government that we will work with over some time, mentor them to do the work … Because there's a lot of institutional memory that would have to be transferred to them. It's not just a matter of transferring documents or records, but we need to work together so that they see … the way we teach people in medicine and public health, it's not just about, you know, reading up stuff – you need to work with people who will mentor you. So I've mentored a team of about five people over the last three years, but right now, none of them is working in the country. They've all left. So, for the transition to continue – and this is a microcosm that applies to the whole healthcare sector; you have a lot of partners coming in to implement programmes, and working with government people, but they keep moving out. And I think the rate has really accelerated in the last two years. So all the people I've mentored, I worked with, good people, they've left. One is working with UKHSA now, in the UK. Another one is working with CDC. One has joined Management Sciences for Health, another one has gone back to the teaching hospital. The fifth one, who was the coordinator, has joined a fellowship in Germany. So they are no longer available. So this is a problem that we have. So I can't see anything being done about it, honestly. I can't."**

In section 4 where we consider what is needed in the future, we will examine how the tendency for trained staff to move elsewhere might best be dealt with in terms of sustaining learning gained from international deployments.

3.3.6 There is a tendency for deploying organisations to treat each disease outbreak separately, rather than building and working with one integrated outbreak response system

There was some feeling among a small number of national stakeholders that there is a tendency for some deploying agencies to treat each disease outbreak separately, meaning it is more difficult to apply any tangible contribution gained from a deployment to one disease outbreak to other unassociated disease outbreaks. This tendency was described succinctly by this interviewee:

> **"It's been declared there is a polio case … Do you know it was so hard to pick up the COVID system to respond for polio? We needed to set up another system which means integration is also a problem. I don't think in my understanding, that this is a problem only in this country, but even where resources are coming from. You know, we struggled a lot with the WHO team to tell them that no, we're going to use the same EOC for polio; they said no, up to now we had to build in another EOC. But you know, you cannot afford to upset them … we will also have other partners like WHO, US CDC who are coming in with their own parallel programmes, pushing the same to governments to respond in that same manner. So that's where the main challenge is".**

It should be noted that most national stakeholders felt that the systems, processes and protocols developed by international deployees had been sustained precisely because they were transferable to other disease outbreaks, as detailed previously. Therefore, the tendency to deal with each disease outbreak separately

may emanate from deploying organisations themselves rather than being a feature of outbreak management systems as a whole.

3.3.7 A lack of political will, can lead to a lack of funding

As noted previously, it was felt that sustaining some contributions from international deployments requires additional funding, particularly in relation to physical infrastructure and equipment. However, external stakeholders and nationals in some countries felt that there was currently insufficient political will to secure such funding, hindering the sustainability of such contributions and outbreak preparedness more generally. Such a sentiment was described by one national stakeholder who explained:

> **"If you look at other outbreaks that we've experienced, I think what really challenges us the most is the funds to actually implement even our plans … we have very good plans, even preparedness plans are very good, they're there. If we were just able to implement those, then we'll be at a different place, but that is really limiting. And it's something that as a country we're trying to work on so that we should be able to quickly mobilise and support ourselves to a certain extent, before calling out that international support".**

Ultimately, such a lack of political will and, subsequently, funding meant that some countries felt that while they had partially sustained the contributions of deployments in terms of systems and infrastructure, they would nevertheless be limited in responding independently in the future because of an absence of the required financial resources. This was the case in Uganda, as expressed by an national stakeholder who stated:

> **"The answer is no, we cannot respond independently without international support. Now, Uganda is actually … let me say, a developing country and resources are limited. So, we cannot respond to outbreaks independently because of the resources, we don't have enough funds … if Ebola outbreak was declared today, we will not even have the money to … today's the 14th you will not even have the money for the 15th which is tomorrow, for the resources".**

External stakeholders frequently perceived the lack of funding to sustain outbreak preparedness to be the direct result of a lack of political will or interest in ensuring its sustainability, on the part of the government. One interviewee provided an example of how a lack of political will in Cameroon had limited the country's preparedness to respond to a cholera outbreak, stating:

> **"For the past two years only the Ministry of Health has been implementing activities to fight cholera in Cameroon. And we know that the portion of activity to be implemented against cholera by the Ministry of Health represents less than 10% of what is supposed to be done … The Ministry of Environment has to work, the Ministry of Water and Energy and all the other ministries need to do their own part of the work. [From our perspective] although we're not supporting the fight against cholera – we've been talking about that to the Ministry of Health, that it is a multi-sector intervention if we want to fight cholera. But they need some sort of multi sector plan, and multi subsector approach to fight cholera. But that never happened".**

The type of situation described above was prevalent in a number of countries included in this study. It also spans every component of work in outbreak management.

In the Namibia case study, procurement was identified as an area where national processes needed to be further streamlined, to sustain and apply important learning from previous deployments, rather than resorting to requests for further external help to secure the necessary medical supplies quickly. As one interviewee explained:

> **"We need to look at our policies to say: if it's an emergency, for emergency use, how quick can we get it into the country?"**

It's obvious that without the political will to allocate funds to this critical sector of work in numerous countries, the reality of sustainability becomes quite challenging.

What is needed in the future?

Two objectives were consistently identified as necessary to ensure the long-term sustainability of the positive impacts of the international deployments in countries.

- To enable retention and ongoing training and continuous professional development of personnel skilled in outbreak preparedness
- To secure greater political will and more appropriate funding mechanisms to respond to outbreaks

3.3.8 To enable retention and ongoing training and continuous professional development of personnel skilled in outbreak preparedness

We previously noted that the training of in-country staff was an aspect of deployments that enhanced the sustainability of their contributions. Many national stakeholders indicated that their countries were undertaking work to build up the numbers of personnel trained in the required skills for outbreak management – both to have the numbers required in the event of a future disease outbreak and to circumvent the impact of individual staff leaving. It was widely recognised that this work was long term and would require many individuals to be trained in the different skill-sets required. A national stakeholder from South Africa described the thinking and work currently underway to address this issue as follows:

> **"It's going to take us a while to build the required capacity to respond to pandemics. We need I think, on the continent we need more than 1000 epis and we're sitting with something … no we need 3000 we're sitting with something like 600 or 700. So to develop fully qualified field epidemiologists, it takes two years. So how many years do we require to get that capacity? Where programmes on average are generating 10 to 15 graduates every two years – so we are going to have to ramp up and really rapidly across the continent. If we have another pandemic next year, we will not be ready locally in South Africa, we will not be ready. It's going to take us to have one district epidemiologist per district, it's going to take us 10 years with our current level of output".**

Participants in our Nigeria case study indicated that, for the gains in terms of improved systems, knowledge and confidence to be sustained in the long-term, the retention of in-country staff was critical – and thus the high level of turnover within Nigeria's public health system was widely regarded as highly problematic. As one interviewee stated:

> **"The chances of continuity first of all depends on staff retention. There's been a lot of attrition in the staff capacity".**

The retention of staff was regarded as particularly important because of limitations in existing systems for retaining knowledge and learning. As one interviewee explained:

> **"Our knowledge management system is very poor. We don't have repositories for these things, these things are just lurking in people's emails and their computers here and there. We don't have a knowledge management system that enables us – independent of individuals – to have access to materials".**

A national stakeholder described how, in response to a Lassa fever outbreak, such weaknesses in knowledge management meant that a new member of staff was unable to readily access and draw upon previous learning from an international deployment, thereby limiting how quickly they were able to respond.

3.3.9 To secure a greater political will and more appropriate funding mechanisms to respond to outbreaks

As noted previously, several stakeholders felt that a lack of political will or understanding meant that insufficient funding was made available to prepare for disease outbreaks or to sustain the positive contributions made by international deployments. Stakeholders in several countries identified the allocation of flexible and accessible emergency funds as a potential solution to this problem, so that these could be drawn on immediately an outbreak was declared. Turning to international partners to secure emergency funding was often seen as a lifesaver where the alternative was having to engage with restrictive/inflexible national budgeting systems to access these funds. As a national stakeholder from Cameroon explained:

> **"We need emergency funds and this emergency fund – [it is not] just the funds of government [that] should be put [into it], but the funds of all agencies. It should be … [a] mandatory emergency fund, because sometimes we really experience difficulties to mobilise funds during emergencies".**

3.4 The future of international deployments

In this section, we consider a range of perspectives regarding the future of international deployments. While many national and external stakeholders and other participants in our case study countries viewed their countries and those with which they worked as better equipped to deal with disease outbreaks than was the case a decade ago, it was universally agreed that a need for international deployments, in most countries, remains.

KEY FINDINGS

1	Deployment receiving countries should be centre-stage in the process of deployment – in the planning, direction and execution of the deployment in greater ways than they have been to date, in practice and not merely in theory. Deployments should be instigated by the host country not third parties. Deploying organisations and receiving countries should develop more clearly defined processes and timescales for international deployments.
2	The aims of a deployment should be aligned with the specific needs of a country and agreed in advance.
3	A greater degree of pre-deployment planning and training is required.
4	Outstanding areas of development should be reviewed at the end of a deployment and plans developed to address them.
5	International deployment agencies should support country learning exchanges enabling staff from countries which traditionally 'receive' deployments to themselves be able to deploy to other countries.

A number of views were put forward by the different groups interviewed as to how international deployments might best be designed and delivered in the future. Underlying all of these views was a need for receiving countries to be central to the deployment process. In the perception of many interviewees the role of receiving countries in international deployments was viewed as often being overly limited in decisions about who is received in their country, as well as in the direction and execution of the deployment – and as such, seen to inhibit positive contributions and the achievement of long-term sustainability.

The following key factors are seen as pivotal in enabling the growth and sustainability of outbreak management capacities in AU countries and the wider Global South.

3.4.1 Deploying organisations and receiving countries should develop more clearly-defined processes and timescales for international deployments

National stakeholders felt that the contributions of international deployments would be more effective if deploying organisations, and the receiving countries themselves, had in place more detailed and precise processes regarding what these would involve. Several countries indicated they were developing guidelines and processes regarding how to work best with international deployees. An interviewee from Uganda outlined their thinking regarding how such processes would better contribute to securing positive impacts from international deployments in the long run:

> **"If we had our manual, the guidelines, how they're supposed to come, how they're supposed to be incorporated into our systems, our teams, and … which districts or where do they go and work … what support do they get from the country, and what support do we get from them. Yeah, all these should be specified. And I know there are countries that had this, but for Uganda as a nation we don't have those guidelines for international deployees who come to help us, so we don't really get enough from them".**

Similarly, national stakeholders felt that deploying organisations could also improve their processes and protocols in relation to international deployments, to maximise the effectiveness of their contributions. A national stakeholder from Zambia outlined how, by improving such procedures, Africa CDC (and, by default), other deploying organisations might be able to respond more effectively:

> **"I think Africa CDC should maybe learn lessons from the deployments in terms of efficiency in the recruitments. I think at some point, we had, you know, responders coming maybe when the outbreak is beginning to tip off. So, if there's a**

> **way that Africa CDC can be more efficient, maybe also apply the 717 approach in terms of immediately there is a notification at least within seven days we see, you know, responders being deployed to support, because I think it's critical in the beginning of the outbreak that whatever actions are done would determine how long the outbreak could potentially go. If you go in aggressively, you will obviously be able to contain the outbreak within the shortest period of time. But I think if the outbreaks are notified, and then Africa CDC is only recruiting and deploying people a month or a year later than that, in terms of impact that would reduced".**

3.4.2 Undertake a greater degree of pre-deployment planning and training

When asked to identify their top three priorities for an international deployment, by far the most universal priority identified by respondents to our survey was for a pre-arrival understanding of the country context – including politically, socially, culturally and health-wise; this priority was selected by more than two-thirds of respondents (69%). Two of the other four priorities selected by at least four in ten respondents also related to the work of deployees pre-arrival – namely having a pre-arrival understanding of the deployees' roles within the country (45%) and having a pre-arrival understanding of the country's needs (40%).

Many survey respondents felt that a greater degree of pre-deployment planning and training would have achieved a great impact from deployments. One respondent captured this widely shared view as follows:

> **"Proper organisation before deployment would have improved our action in the field. I suggest an online training taking into consideration all needed training including IPC, clinical management of the diseases responsible of the outbreak, public health measures, security in the field, cyber security and so on should be compulsory for everyone before deployment".**

Another respondent suggested the following:

> **"More time spent understanding the organisational and political landscape prior to deployment and investment in relationship building before deployment".**

This reference to relationship building in the last quote alludes to an underlying need demonstrated throughout this study – that is, that the strengthening of national capacities is a long-term effort that is greatly enabled by the development of relationships of mutual trust and support.

3.4.3 The aims of a deployment should be aligned with the specific needs of a country and agreed in advance

- National stakeholders in several countries regarded a failure to understand a country's needs and contexts (by deploying organisations) as a barrier to them making an impactful contribution.
- National stakeholders proposed a number of remedies to this problem, when thinking about future international deployments. A stakeholder from Cameroon recommended that greater levels of discussion should take place between the receiving country and the deploying organisation in advance, regarding the needs of the former, explaining that:

> **"If we want this deployment to really be beneficial to the country, as I said, it should be based on the needs of the country. So a discussion must be made between the country and the organisation that wants to deploy. For example, this kind of behaviour that is not … how can I say … beneficial … is continuing from [organisation]. Because two or three weeks ago they just deployed an epidemiologist in the country. I don't know why the epidemiologist is there, what are the TORs? We didn't express any need".**

Additionally, a number of national stakeholders recommended that their own countries undertake an assessment of their own needs in advance of any deployment. An interviewee from Uganda outlined in detail how this might lead to a deployment including an appropriate number of deployees with the required skills-sets:

> **"It is all on the National Task Force (NTF) table, that is where the needs are laid out. Every time we are responding to an outbreak … we do what we call a response plan. Okay, we have a plan, and that plan details what our needs are, and we have our development and implementing partners on that table. Who actually … some of them can pledge they can say, Oh, I think I'll take item A and tackle it, and I'll tackle Item B, Item C. Right. And in so doing, because in our plan, we**

> **said we'll need 18 epidemiologists, they also know what the Ministry of Health can provide out of the 18 epidemiologists … say the ministry can provide 8. Alright, the gap is 10. Right? So, if we can have that organised before the flight from their member states happens. Then that will be very good … We are a bit lucky that most of the deploying agencies have audiences in Uganda. Right? Some of them don't. They just … they just sit in their member states and say, 'I think Uganda needs 18 epidemiologists' and the next thing you know is that 18 epidemiologists have been flown in to come. And then when they come to the table, sometimes even the NTF advocates with them, and we send them back, can we tell them please no".**

There was a clear view among external stakeholders that future deployments should be more bespoke and tailored to the needs and wishes of receiving countries, reflecting the view of national stakeholders that they should be based upon an assessment of the country's needs undertaken at the outset. As one external stakeholder stated:

> **"It's thinking of what in an acute situation is genuinely useful and impactful, and it's adding value and does not introduce additional complications, or complexities, which you would be otherwise best off without".**

Other stakeholders commented on the need for countries to be more specific in defining their ask so that only targeted expertise is deployed over and beyond what is available in the country. In many cases, interviewees acknowledged a tendency for previous deployments to be too generic, involving the deployment of 'standard' teams, with little prior consideration of what was specifically needed in the receiving country.

As a result of this preference, external stakeholders indicated that their own organisations needed to respond by developing approaches which ensured that the deployments which they delivered were more bespoke and geared towards the needs of individual countries. In this regard, an interviewee from Africa CDC explained:

> **"One of the lessons learned during COVID-19 times [is] that we need to have in each one of the member states, at least 50 national rapid responders within AVoHC roster. They know the context of the country, they know the language, the culture, and it is easy and quick to deploy them when an emergency happens to augment the capacity of the country. So I think this is the model that we are heading to as Africa CDC".**

Workshop participants in the Namibia case study identified a number of specific areas where they felt international deployments may be needed in the future, including logistical support, surveillance, laboratory capacity, advocacy for financial support; technical support (responding to high consequences pathogens; responding to protracted or stage 3-4 outbreaks); capacity strengthening, sharing of innovative approaches, and flexible funding that could be adapted to the country's needs. Reflecting the view that Namibia was able to respond independently to disease outbreaks in some areas but not others, interviewees felt that the role of future deployments should be highly specific, either providing "surge capacity", where human resources were limited, or "technical expertise" that is not available within Namibia. They felt it was the role of the Namibian government to manage the response to future disease outbreaks, with international deployments serving a role as, *"a backstop…to support and remind and ensure that national governments take it as priority number one, to coordinate the outbreak and emergency response".*

Participants in the Nigeria case study identified four specific areas which they would like international deployments to address in the next five years: continued health and workforce development; laboratory capacity; resource/funding brought in as part of the deployment; and monitoring and evaluation. There was a desire for deployees to have skills specific to the Nigerian context, including coming from similar backgrounds to the country (Global South), being able to communicate in the country's languages and being familiar with its culture. Without exception, both workshop participants and interviewees felt it is crucial to undertake needs assessments prior to arrival in country to identify gaps requiring additional capacities – and that this assessment should then form the basis for all deployments.

3.4.4 Deployments to be instigated by host countries

Linked with the above preference for individual deployments to be bespoke to the needs and contexts of receiving countries, external stakeholders expressed a strong view that, in future, deployments should be instigated by the receiving countries themselves. One interviewee described how this scenario would ideally play out in practice:

> **"Ministry is leading, we are there to support their vision, their response, to fill the gaps. If they need some other technical input about how to improve the response, we can provide those technical inputs; if they need human resources, if they need financial resources, different**

> **medical supplies or commodities – we are there to support them. But the main one who's responsible for this response is the country, not any of the international partners".**

External stakeholders acknowledged that receiving countries would need to have certain processes and systems in place, to ensure they were able to identify the need for, and thus instigate, international deployments. One interviewee captured this view:

> **"The model that we are looking for is for all the countries to have the Emergency Operation Centre, and have an incident management structure. So I think this should be our entry point for deployment – speak with the incident manager who is responsible for this incident, and coordinate this with him. So whatever support we're doing, this should be under the incident management structure for the country".**

It was acknowledged that structures of this nature already existed in some, but not all countries. It was also acknowledged that their development was necessary if the new preferred model of deployment was to be effective in the future. As another interviewee explained:

> **"I think that can only come if the host country feels that it is its responsibility to fight disease outbreaks rather than waiting for others to come and support you fight this. I think there are countries in Africa – like Rwanda – who are already doing a lot in that domain. I think it's the responsibility of Cameroon and other countries that are not doing so to put those structures in place".**

3.4.5 Outstanding areas of development should be reviewed at the end of a deployment and plans developed to address them

To maximise long-term sustainability, it was widely felt among national stakeholders that, rather than simply departing once their work was completed, deployees should extend their stay (or hand over to a more relevant technical group) to work with in-country staff to identify progress made during the deployment and outstanding gaps, needs and solutions. An interviewee from Burkina Faso linked such activities with the process of agreeing a country's needs prior to deployment, outlined above, stating:

> **"During this support, these agencies obviously are able to see which capacities still need support for the group, or at least the structure, and still participate or still have feedback on the results of the response, the gaps or at least the shortcomings that were noted during the post-support review. And I think that at this level, it can facilitate the next support when we have to deal with such situations".**

Along similar lines, an interviewee recommended that deployees should:

> **"Mentor our people in terms of trainings, maybe after the deployment, they can extend it like a one week, maybe the last week and then they give us the experiences of … our weakness, maybe what they found out and also build, try to build the capacity of the local staff who are here for sustainability in case next time they're not there, to utilise our local staff for the response."**

3.4.6 Deployment should be a two-way process

Many national stakeholders expressed the view that the process of deployment should be a two-way process, with countries such as those included in this study also having the opportunity to deploy their staff (and share their learning) with other countries – and not solely be recipients of deployment. It was felt that such a process would increase expertise within the countries, as, in both instances, they would learn directly from the experiences of others. Such an approach, and its benefits, were captured by an interviewee from Burundi:

> **"Because we've noticed in our country, that in Burundi, we don't have any experts who go out. I don't know whether we can put in place an approach or strategies to ensure that we too have experts who could be deployed … but at a time when they are not deployed in our country, who could be beneficial to our country, to give guidance on authority as experts".**

Participants in the Namibia case study expressed the view that future deployments should be part of a two-way process, with Namibia becoming both a recipient of deployments, as needed, and a provider of international deployees – both to assist other countries in responding to outbreaks and, in doing so, to increase national skills and expertise. As one interviewee noted:

> **"Deployment (should) be a two way process: a lot of African colleagues here, they have a lot of experience. And they should be also more involved in deployment, let's say in Asia, or somewhere else, or depending, maybe even also in Europe, depending on of course, the diseases and the experiences. So I think it should be more general exchange and not more this North-South".**

Participants in our Nigeria case study also recommended promoting South-South co-operation and deployments; but perhaps the expressed frustrations of one interviewee best captures how seriously this issue is felt in many quarters. It is important to note that this national stakeholder was speaking of South-to-South deployments – so deployments from within the continent of Africa:

> **"It is seems always the same nationalities deploy … and we are asking, why? Does it mean that, for example, we are not good to be deployed? This is a real question: why always the same nationalities, always the same people? Why? Why? What is the issue? So for me, everybody … the mechanism, the system, the mechanism of enrolment of the rapid response team should be the way that there is some equity and transparency regarding all the countries. Yes, because even me, for example … maybe I'm not the rapid response team, I'm a national professional … "**

3.4.7 Deployments to be specifically undertaken to build capacity

There was a strong view among external stakeholders that during international deployments there should be specific attempts to build long-term capacity in receiving countries. As one interviewee stated:

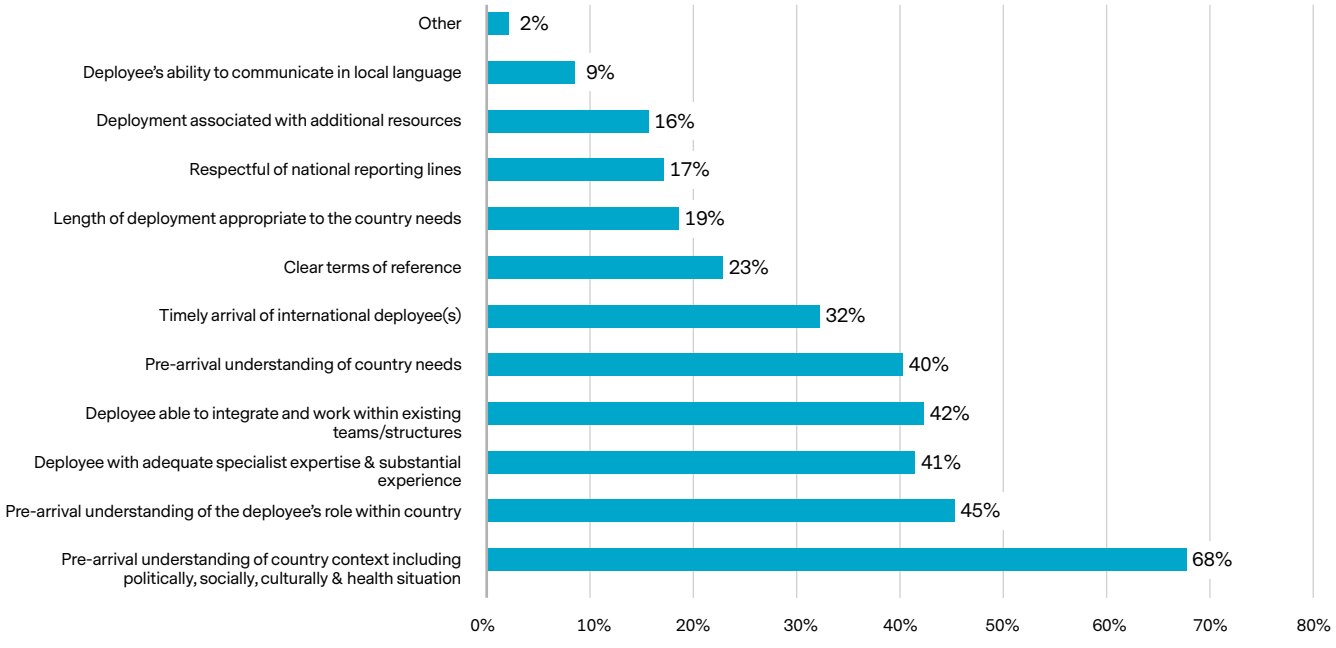
> **"When you are deploying internationals [it should be] not only to do the job, but also to build the capacity in the country during the response period and during the recovery period. This should be in the ToR for the responders, for any organisation that does international deployment".**

However, it was also recognised that entirely separate "deployments" could be delivered which focused solely on long-term capacity strengthening, outside of the context of responding to a specific disease outbreak. In this regard, an interviewee from Africa CDC described its workings:

> **"The other sort of model that we are now doing, which is new, is this sort of 12-week, three-month capacity-strengthening deployments with two people seconded by Africa CDC … they're sort of deployments, but not response deployments. So, one's a research project, and one is a capacity-strengthening deployment".**

Figure 2 below summarises survey respondents' assessment of the most important priorities for effective international deployments.

Figure 2: Top priorities for effective international deployments



4
Conclusions

4 Conclusions

"So I think we always benefitted [from deployments]. What we have suffered from a bit over the last few years almost being victims of our own success, from a Nigerian perspective. So many people were deployed and have worked, and their work was recognised, and have now because of the difference in remuneration, NCDC has lost a lot of resource to Africa CDC itself, to WHO AFRO, to MasterCard Foundation, to a lot of other actors in the filed just because public sector salaries are so poor in Nigeria at the moment, especially with the inflation and foreign exchange crisis."

Study participant, 2025

International deployments do create impact in the countries of deployment. Particular areas of impact identified in this study include the creation and enhancement of systems, protocols and processes; physical infrastructure and equipment being in place for other disease outbreaks and knowledge of disease outbreak response being maintained and applied to other outbreaks thereby enabling improved ways of working. Seventy-seven percent of survey participants in the study reported that recent international deployments had *fully contributed* to improving the country's or region's public health emergency response system while 22% stated that they had partially contributed to this impact.

Eighty-four percent of survey participants believed that international deployments had made contributions to sustainable changes in disease outbreak management in their countries. The consolidation of these gains was seen as occurring through the retention of personnel skilled in outbreak preparedness and ongoing training; securing greater levels of political will and commitment nationally; and having more appropriate, rolling and agile funding mechanisms to enable more effective preparation and response to outbreaks.

Despite these gains there are obvious challenges and barriers to impactful deployments. Both national and international stakeholders identified three main themes in terms of barriers:

1. **The characteristics of deployments** (short deployments with a high turnover of deployees and the non-continuity of teams; deployments involving insufficient levels of resourcing and funding; limited and unclear communication between deploying agency/the deployee and the country and not addressing identified needs post-deployment).

2. **Deployment approaches** (a failure to identify the country's needs including not addressing cultural and language contexts, an inability to coordinate the work of large numbers of international partners); and

3. **Characteristics of deployed-to countries** (limited infrastructure in some countries and a mistrust of the agendas from some international partners).

What about stakeholder views on the future of international deployments and the capacities of countries to undertake effective deployments

independently? Many national and external stakeholders and participants in our case study countries viewed their countries and those within which they worked as better equipped to deal with disease outbreaks than was the case a decade ago. However, it was universally agreed that a need for international deployments, in most countries but in differing scenarios, remains. Underlying all the views about the future of international deployments was the need for deployed-to countries to be more central to the process of deployment – in the planning, direction and execution of the deployment than they have been to date. External stakeholders recommended that future deployments should be instigated by host countries, while national stakeholders recommended that outstanding areas for development should be reviewed at the end of each deployment and collaboratively advanced.

As indicated above, most survey respondents (84%) reported that international deployments had contributed to sustainable changes in disease outbreak management in their countries citing the experience and continuous in-country strengthening of national systems pre and post deployment as pivotal in this effort. Factors which act as barriers to sustainable approaches were also identified. Looking to the future the study identified both national and international responsibilities to ensure that sustainable systems of outbreak management during deployments become the norm. These include enabling ongoing training and retention of personnel skilled in outbreak preparedness and securing greater political will and more appropriate and agile funding mechanisms to respond readily to outbreaks. The latter points were raised by every stakeholder group in this study – all of them emphasising the critical and intentional approach which member states themselves must adopt to enable effective and sustainable approaches to outbreak management.

Finally, the study explored stakeholders' views and vision for the future of international deployments. A central theme that emerged was the need for receiving countries to be central to the deployment process. Respondents identified several factors that would enhance the future design and delivery of international deployments including having more clearly defined processes and procedures, greater alignment with country needs, greater levels of communication and dialogue amongst all parties to minimise operational challenges pre and during the deployment; and perhaps most importantly ensuring that deployments are not delivered as discrete, one-off activities with no linkage to addressing areas of related need identified during the deployment itself.

Across the study there are specific areas of action that have emerged for the different stakeholder groups involved in this study – for the agencies that deploy and for the national public health systems . These are addressed in detail in the recommendations chapter which follows.

5 Recommendations

5 Recommendations

In this section we provide fifteen recommendations grouped into two main categories – national stakeholders (MoHs/NPHIs – eight recommendations) and deployment agencies (four recommendations). The three remaining recommendations are specifically addressed to national ministries of health/public health institutes but do not directly impact international deployments. Rather, they are designed to impact the national environment enabling them to maximise the impact of international deployments.

Eight recommendations are made to **deploying agencies** to further strengthen deployments and their impact as follows:

STRENGTHEN PRE-DEPLOYMENT PREPARATION

1 **Ensure optimal preparation pre-deployment –** the degree of preparation of a deployee was directly linked to the degree of effectiveness of the deployment by both deployment agencies and national governments. Efficient onboarding processes, comprehensive briefings including country, political and cultural contexts, knowledge of national health systems, and key focal points (including national NPHI) were among the core subject areas required of deployees.

Effective deployees were identified as those who are flexible, have a capacity and willingness to be readily integrated into existing systems as required, and a collaborative spirit that recognises the value of and need for mutual, peer-to-peer learning on the job.

MATCH DEPLOYEES TO COUNTRY NEEDS

2 **Ensure deployees match country requirements –** all stakeholders wanted deploying agencies to deploy individuals whose skills, knowledge and experience align closely with the country's needs. Areas of particular emphasis included relevant skills and experience, knowledge of country, culture and overall context, flexibility and willingness to integrate within the existing system, support for on-the-job peer-to-peer learning and connections with relevant stakeholders including national agencies. They also called for deployees who had broader, relevant skills and experiences that would enable them to effectively pivot should the need arise.

BUILD KNOWLEDGE MANAGEMENT SYSTEMS

3 **Institute or strengthen existing knowledge management systems –** this reinforces the need to retain, within deploying organisations, the capacity to capture, coordinate, share and apply knowledge and learning from the deployment exercises to enable sustainable benefits for their practice.

PROMOTE CROSS-COUNTRY LEARNING EXCHANGES

4 **Create learning exchange opportunities between countries –** a strong recommendation from stakeholders was to promote an exchange of skills and learning by enabling staff from countries of deployment (where limited opportunities exist) to themselves become deployees to other countries thereby opening up greater opportunities for shared learning and contribution.

ENGAGE NATIONAL INSTITUTIONS BROADLY

5 **Advocate for the leveraging of national institutions –** the engagement of national institutions, beyond the standard public health institutions such as academic, research institutes and NGOs/civil society groups was seen as pivotal to any long-term and sustainable capacity strengthening national efforts. While this was seen as falling largely under the jurisdiction of the MoH/NPHI, deploying agencies were also seen as having a role to address this need – most likely through an advocacy and/or funding role to national governments to broaden the scope of national resources brought to bear on the management of outbreaks.

EMBED CAPACITY BUILDING IN DEPLOYMENTS

6 **Ensure that capacity strengthening and knowledge exchange are formally embedded in deployments wherever possible –** all stakeholders felt that during the deployment itself presented a good opportunity to share knowledge and skills and promote learning; and this needed to be included in the ToR or other formal documentation between the deploying agency and the country of deployment.

ADOPT FLEXIBLE AND LONGER DEPLOYMENT DURATIONS

7 **Consider more flexible and longer deployment periods –** in line with matching the country's requirements, a strong recommendation was that deploying agencies be more flexible about the duration of deployment according to the outbreak severity and need.

ESTABLISH A DEPLOYMENT IMPACT EVALUATION FRAMEWORK

8 **Develop deployment impact evaluation framework –** the need for a framework to allow for the systematic assessment of deployments that promote sustainable outbreak management capacities within countries to be developed collaboratively by both stakeholder groups was voiced by both national and deploying agency stakeholders.

For **National Ministries of Health/National Public Health Institutes,** there were four recommendations related to effective execution of international deployments and their potential long-term impact:

STRENGTHEN NATIONAL LEADERSHIP IN DEPLOYMENTS

9 **Assume a central role in the deployment –** across all stakeholders the need was emphasised for national governments to continue to assume greater levels of leadership and indeed the central role in the management of disease outbreaks, and specifically in the deployment process.

DEVELOP TAILORED DEPLOYMENT PLANS

10 **Develop tailored deployment plans for the use of international deployees in outbreak response –** stakeholder groups were in agreement that the roles, responsibilities and objectives of the deployment all needed to be clearer than they sometimes are, while recognising the need for flexibility should priorities change once in country.

The study advocated for the development of "personnel deployment plans". These are plans for receiving deploying personnel and would include details of when and how to trigger timely and effective mobilisation of technical assistance during emergencies, specifically outlining clear protocols, communication channels, training requirements, and logistical arrangements. This was seen as enhancing preparedness, coordination, and response capabilities, ultimately contributing to a more efficient, effective and well coordinated emergency response.

MAXIMISE ENGAGEMENT OF NATIONAL INSTITUTIONS

11 **Leverage national institutions –** the engagement of national institutions was seen as pivotal to any long-term and sustainable capacity strengthening national efforts. Respondents recommended that national bodies actively engage with existing national capacities within the country, particularly from academia, research institutes and civil society/NGOs to ensure that they are maximising internal capacities in the management of outbreaks both for the duration of the deployment and/or in addressing follow-up activities at the conclusion of the deployment.

ESTABLISH FORMAL DEPLOYMENT PERFORMANCE FRAMEWORKS

12 **Establish formal performance frameworks on what is expected through the deployment –** stakeholders advocated for the development of frameworks that include measurable Key Performance Indicators (KPIs) to evaluate the effectiveness of deployments and ensure alignment with national MoH goals. This would bring greater clarity and accountability to deployment outcomes and create a mechanism to specify and agree mutual expectations and results from the deployment. This would be over and beyond the normal Terms of Reference.

The last three recommendations are addressed to MoH/NPHIs to further strengthen national outbreak responses and ensure sustainable impact. While they do not pertain specifically to international deployments, they nevertheless have a significant bearing on national capacities and a country's readiness to receive and work, in the most efficient and effective manner, with international deployees.

ESTABLISH FLEXIBLE ROLLING BUDGETS

13 **Institute rolling budgets to support outbreak management in and out of emergency situations –** all stakeholders identified the need for flexible and adequate rolling budgets (regularly updated by adding new budget periods and additional funds) that are easily accessible for national emergency response teams without having to navigate challenging bureaucratic processes.

ACCELERATE WORKFORCE DEVELOPMENT AND INCENTIVES

14 **Identify key specialist roles required, increase the rate of human resource development and provide financial incentives to staff –** the single most unifying recommendation was an urgent call to national governments to address the human resource crisis in many countries. Stakeholders called for countries to identify skills gaps and provide an accelerated training programme to develop these skill sets. This was seen as particularly urgent given the slow rate at which different skill sets are being produced nationally, the lack of financial incentive for these highly trained staff to remain in many countries, and the rapidity at which these staff are recruited by international agencies.

STRENGTHEN KNOWLEDGE MANAGEMENT SYSTEMS

15 **Institute/strengthen existing knowledge management systems across the outbreak management process –** the goal of knowledge management is to enable an organisation to retain valuable information on its practice for it to learn from and grow. Embedding an effective knowledge management system was seen as crucial in enabling national institutions to capture, store, retrieve, share, manage, learn from and apply their collective knowledge.

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