

REQUEST RESPONSE

Understanding the current state and sustainability of the Data Hubs in North East Nigeria

In Nigeria, many initiatives have attempted to improve data on learners, educators, school infrastructure and facilities. Data Hubs were established across different states to ensure a systematic, reliable and regular collection of quality data that can be accessed and used for education planning and response to crisis. These hubs are office spaces equipped with the appropriate technology, competent staff, and clear guidelines concerning data collection from learning centres and the provision of accessible data and feedback on data to users and providers respectively.

This request seeks to inform decision-making within the Education Can't Wait (ECW) operations in Nigeria, and broader government/development partner engagement on education data management systems, by understanding whether and how the Data Hubs increase coherence of and access to data, at what cost, and with what impact.

The request encompasses the following research questions:

1. Since the closure of the Addressing Education in North East Nigeria (AENN) programme in 2021, to what extent did the Data Hubs established in Local Government Education Authorities (LGEAs) in Borno and Yobe State remain functional and staffed, fulfilling their role to greatly enhance data flows and use for education decision making? How sustainable in practice were they and how did they evolve and adapt to shifts in context, demand and additional support provision?
2. To what extent did education Data Hubs integrate and support broader humanitarian data tracking and support systems with government and EiEWG/development partners in North East Nigeria?
3. What conclusions can be drawn on the utility and potential for LGEA-focused Data Hubs to enhance education data systems and humanitarian data flows in Northern Nigeria, that have varying insecurity and education management capacity gaps? What are the trade-offs in focusing education data management capacity and resources at individual, school, LGEA, and state levels - how could Data Hubs be adapted to fulfil a major role in future education data systems, and is LGEA the optimal location to house them?

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ACRONYMS

AENN	Addressing Education in North East Nigeria
ECW	Education Cannot Wait
ECR	Education Crisis Response
EiE	Education in Emergencies
EIEPC	Education in Emergencies and Protracted Crises
EIEWG	Education in Emergencies Working Group
EMIS	Education Management Information System
FCDO	Foreign, Commonwealth and Development Office
GESI	Gender Equity and Social Inclusion
GPE	Global Partnership for Education
IDP	Internally Displaced Persons
INGOs	International Non-governmental Organisations
IRC	International Rescue Committee
KII	Key Informant Interviews
LGEA	Local Government Education Authority
MoE	Ministry of Education
NEMIS	Nigeria Education Management Information System
NGOs	Non-governmental Organisations
OOSC	Out of School Children
OTL	Opportunity to Learn
RANA	Reading and Numeracy Activity
RERA	Rapid Education Risk Analysis
SAME	State Agency for Mass Education
SUBEB	State Universal Basic Education Board
UNICEF	United Nations International Children's Emergency Fund
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNDP	United Nations Development Programme
USAID	United States Agency for International Development

EXECUTIVE SUMMARY

This report is provided as part of a wider response and interrogation into the current state and sustainability of the Data Hubs established in Borno and Yobe States in North East Nigeria. The Data Hubs were part of the USAID/FCDO-funded Addressing Education in North East Nigeria (AENN) project implemented by FHI360 and its local and international partners. The assessment will also help to inform future decisions regarding the Data Hubs in Northern Nigeria in support of Nigeria's drive to enhance education provision through the recently launched DOTS framework.

The report was commissioned by FCDO through a Query Request to understand: (a) the current functionality of the Data Hub, (b) the sustainability and adaptation of the Data Hubs, (c) the extent to which the Data Hubs are integrated with humanitarian data tracking and support systems of the Data Hubs and (d) the utility and potential of Local Government Education Authorities (LGEAs) becoming hosting locations of Data Hubs in the wider Northern Nigeria. These objectives were used to gather evidence using the following methods:

- Desk Review of reports, documents, academic literature related to Education Management Information Systems (EMIS), and specific reports about the Data Hubs in Yobe and Borno.
- Primary data collected through site visits and Key Informant Interviews (KII) with local, national, and international stakeholders responsible for implementing and operating the Data Hubs since their establishment.

The continuing insecurity in the North East states of Borno and Yobe, the nature of the Data Hubs Query, and the recent flood disaster in Maiduguri constituted constraints that led to a purposive selection of Data Hubs in urban LGEA locations. Key findings related to the query confirmed that the sampled Data Hubs continue to function as sources of both education and humanitarian data. However, their functionality is severely constrained by resource deficits, including staffing, power, connectivity and heavy dependence on the support of partners for IT provision. These challenges are deep-seated and require careful consideration before expanding their operations to other Northern Nigerian states. The following recommendations could form part of this strategic reflection:

- The Data Hubs can be operated in an autonomous capacity so that they function optimally. Their autonomy will entail the provision of appropriate technology, recruiting qualified staff, and a (legal) policy framework outside of EMIS units of SUBEBs and MoEs. The Data Hubs may be established as an agency run by professionals with the autonomy to collect credible data using modern communication and technology support. Currently, the Data Hubs function within the government system assuring sustainability since the government provides the infrastructure and supports staff salary.
- The current focus of the Data Hubs on data collection and on-demand access can be expanded to ensure information flows back to schools and related agencies for timely decision-making in a rapid response situation, such as the North East.
- The Data Hubs should be provided with Standard Operating Procedures that will include ethics of data collection, protection and ethical use for planning and disaster preparedness and response.
- Long-term funding commitment for the Data Hubs will ensure that they remain functional and able to withstand the changing political environment.
- In the current context of the Data Hubs, a potential route to integration with the broader humanitarian data tracking is for them to serve as access points to data services of relief organisations operating in the area. However, even this option will require long-term infrastructural support for the Data Hubs to fulfil this limited humanitarian role. Raising the status of the data hubs to a sub-agency level and professionalising the operations to support

humanitarian data tracking and other educational emergencies can be tested in one of the most cooperative States and the lessons learned can be scaled up or expanded to other States.

- LGEAs are good locations for the Data Hubs because of their proximity to data sources and end users.
- Donors and implementing partners (including UN bodies, GPE, and ECW) could provide leadership, guidance and strategies for activity implementers to develop common standards of IT provision to overcome closeout anxieties of crisis-affected areas hosting multi-sectoral donor agencies.
- The States acknowledge the usefulness of the Data Hubs and the use of the data for private business enterprises, indicating that a well-developed and professionally managed Data Hub can self-sustain. Testing the professionalisation of the Data Hub will be a worthwhile investment that may interest development partners.

1. BACKGROUND TO DATA HUB DEPLOYMENT IN BORNO AND YOBE STATES

This report is part of a more comprehensive response and interrogation into the current state of Data Hubs established in Yobe and Borno States in the North East of Nigeria, which have experienced insurgency for more than a decade. The crisis has led to the displacement of millions, including 2.8 million children, further worsening the abysmally poor education situation in the region. A 2021 UNICEF North East report quoted literacy rates of 50.5 per cent and 31.8 per cent for boys and girls, respectively. The report noted that 74.8 per cent of children in Borno State have never attended school (UNICEF 2021). In addition to disrupting the education of more than 2 million children, the Boko Haram insurgency has resulted in the destruction of thousands of schools and the killing of hundreds of teachers since 2009, as the group attempted to impose an Islamic State in the region. The most recent flood disaster in Maiduguri (Vanguard, September 2024), that reportedly displaced more than 1 million residents, only serves to highlight the cross-cutting issues affecting the interruption of education of IDP children and the well-being of their parents and caregivers.

The Data Hubs in Borno and Yobe States were part of the USAID/FCDO-funded Addressing Education in North East Nigeria (AENN). They were implemented by FHI360 and its local and international partners. The programme sought to address ‘... the immediate needs of 302,500 children and youths’ in the three-year period of its operation (2019–2021). As part of the AENN initiative, FHI360 drew from its experience implementing Reading and Numeracy Activity (RANA) in Katsina and Zamfara States in particular, where Dashboards were used to monitor how learning progressed under conflicts and school closures in the two states during the Covid-19 Pandemic. With the experience of those Dashboards, FHI360 determined that a more proactive, widely consulted Data Hubs system, serving the needs of development partners, humanitarian activities and education policymakers in the states, would provide the much-needed data to support its educational activity. To that end, FHI360 launched 37 Data Hubs in the offices of SUBEBs and LGEAs, which helped monitor pupils’ progress through a combination of secondary humanitarian/security data, monthly school monitoring visits, and an annual school census. The annual school census data was collected and made available through the automated dashboard for 90 per cent of the target schools across 16 LGEAs in Yobe State; in Borno State, Data Hubs had not started annual school census data collection before the end of AENN.

Typically, it would have taken a year to produce annual school census data, but it was made clear that there were differing outcomes for the Data Hubs in Borno and Yobe. Whereas Yobe was able to operate the Data Hubs as fully functioning and integrated education hubs, AENN continued to encounter challenges of buy-in from Borno throughout the implementation period. Cost considerations were a factor, although the central operating infrastructure was supplied to the States free of charge. Where ongoing costs were to be incurred, AENN provided low-cost and no-cost software options. Still, resistance to connectivity cost and related adoption issues inhibited success with the Borno data activity. As per FHI360 colleagues, Borno was able to support the collection of secondary humanitarian data and primary school support visit (SSV) monitoring data. Their resistance to collecting the annual school census data was related to uncertainty about whether future donors would tie funding to requirements to use a different platform for the EMIS data collection and reporting.

Other challenges were encountered during implementation in both states. AENN piloted collecting security and context data directly from communities through IVR (interactive voice response) surveys. While effective, the monthly mobile data cost of this primary data collection was not sustainable. As an alternative solution, AENN trained SUBEB staff to aggregate humanitarian data from secondary sources into a central dashboard. This practice could work both to address data linkages and promote the sustainability of the hubs in the future.

FHI360 also expressed significant concern in reports and comments regarding the challenges of

sustainability and development-humanitarian interface of the Data Hubs in crisis-affected areas, such as Borno and Yobe States. It relates to what a respondent referred to as a 'silo mentality' concerning the adoption of IT components of previous donor activity. States such as Borno have experienced changes to IT infrastructure because of new initiatives, which has caused anxieties about being fully on board with the Data Hubs. FHI360 stated that the fear that the AENN Data Hub technology would be replaced by the next donor's recommended platform was a key driver in Borno's reluctance to collect the EMIS data. One recommendation is therefore to develop strategies for standardising IT provision across development partners for better buy-in from local stakeholders.

Additionally, in an internal review of nine Data Hubs in Yobe and Borno, conducted by the IRC in 2022, the document identifies multiple operational obstacles, including inadequate internet connections that hamper data sharing and basic operations, reliance on manual data collection, and unreliable electricity supply. The AENN programme provided solar power systems to 21 Data Hubs in Borno and 18 in Yobe. This was based on an IT assessment which found that generators provided by previous programmes were rarely used due to a lack of budget for fuel. KII respondents mentioned solar power as a legacy of AENN. Additional challenges include limited skill development and training opportunities, logistical difficulties, and budget constraints.

2. METHODOLOGY

In line with the query's request for a broader perspective in understanding the current impact and future relevance of USAID/FCDO-funded Data Hubs in Borno and Yobe States, this report adopted a mixed-method approach to data collection and analysis. A comprehensive review of existing literature on Education Management Information Systems (EMIS) was first undertaken, and significant findings were summarised. National and state EMIS initiatives were also reviewed, including reports specific to the Data Hubs operations in Borno and Yobe.

The second element of the review involved site visits to Data Hubs and the collection of primary data, including conducting Key Informant Interviews with 24 officials: 8 in Borno and 13 in Yobe. The remaining three represented implementers and national EMIS staff. The purposive selection of the two LGEAs (Jere and Konduga in Borno; Damaturu and Fune in Yobe) is based on the short report turn-around period and the light touch expectations of the report findings.

3. OBJECTIVES OF THE REPORT

The report seeks to interrogate, assess, and understand the functionality and sustainability of Data Hubs in Borno and Yobe States. The study was aimed at answering the following research questions:

- Since the closure of the AENN programme in 2021, **to what extent did the Data Hubs established in LGEAs in Borno and Yobe States remain functional and staffed**, fulfilling their role to enhance significantly data flows and use for education decision-making? How **sustainable** were they in practice, and how did they **evolve and adapt to shifts** in context, demand, and additional support provision?
- To what extent did Education Data Hubs **integrate and support broader humanitarian data tracking** and support systems with government and EiEWG/development partners in NE Nigeria?

- What conclusions can be drawn on the **utility and potential for LGEA-focused Data Hubs to enhance education data systems and humanitarian data flows in Northern Nigeria**, which have varying insecurity and education management capacity gaps? What are the trade-offs in focusing education data management capacity and resources at the individual, school, LGEA and State levels; how could Data Hubs be adapted to fulfil a significant role in future education data systems, and is LGEA the optimal location to house them?

4. DATA HUBS IN AN EDUCATION MANAGEMENT INFORMATION SYSTEM (EMIS) ENVIRONMENT

In the literature, Data Hubs, in the context of an EMIS provision, serve as an education office that continually seeks to understand the state of access and quality of education provision. By collecting quality data promptly, EMIS provides information regarding the profile of schools to development partners and humanitarian groups. It also helps education policymakers monitor and plan how to address any uncovered challenges impeding school improvement. In a specific conflict-affected context, providing systematised data for ‘immediate use’ to inform decision-making seems even more critical, as Acharouaou (2019) noted. But, a combination of finance, trained personnel, appropriate technology, and a wider enabling environment are essential for the system to function optimally. Funds are required to sustain the activities of data collectors, provide resources to schools following feedback, and replace and/or maintain EMIS infrastructure. Existing technical staff will need to update their knowledge as new technology is introduced continually, and new technicians will be required as personnel changes occur. Appropriate technology that considers the local context of utilisation is also a prerequisite in successfully implementing a robust EMIS provision. Providing top-of-the-range IT infrastructure, where electricity outages are common, will be a clear case of a mismatch. The wider enabling environment here relates to EMIS policies that provide a legal framework, accountability, localised set-up within the existing education structure, and an all-around, ongoing and engaging partnership within and outside the implementing organisations.

One of the primary uses of data identified by UNESCO is the identification of gaps in the education system that have a bearing on learning outcomes. Such gaps may relate to learners’ performance, availability of resources to engender learning, and identifying specific groups within and out of school that require additional support for better outcomes. EMIS-oriented data can thus serve to motivate a ‘... stronger education system ... [through] accurate, disaggregated, timely data on education’. Such a data-driven analysis by UNICEF led to the now notorious statistics of Nigeria harbouring the largest population of out-of-school children, of which the vast majority live in the northern region.

Questions of equity and equality are often key issues raised within education intervention. Girls, for example, have been consistently shown to experience poor education outcomes due to local cultural practices, including early marriage, preferential treatment for boys, and the wider cross-cutting issue of extreme poverty, especially among families in rural areas. For boys, a cohort of out-of-school children (OOSC) aged between 7-15 is commonly seen in the streets of Northern Nigeria with a begging bowl. These are the Almajiri children whose itinerant Islamiyah schooling lifestyle is viewed both as a critical education challenge and a safeguarding issue for these vulnerable children. Yet, another group falling into this category of marginality is the large population of internally displaced children and their families that have now found ‘safety’ in the cities or camps.

Globally, studies have highlighted the absence of data regarding IDP children in education statistics, even though their number is greater than that of refugees. It is this complexity, even at this granular

level of OOSC, that seems to illustrate the importance of data systems not only in improving learning outcomes but also for creating coordination and co-creation between development partners and humanitarian actors to address the central role that education plays in improving the life chances of all children.

One of the critical questions this report seeks to answer is the extent to which localised Data Hubs, such as those in Borno and Yobe States, are supporting efforts 'to bridge the humanitarian-development divide' through 'data-sharing and tool development for data collection and dissemination'. This is a significant development, as researchers in Education in Emergencies have noted this data gap in conflict situations, hence the suggestion that '... we must foreground data usage in conversation about education data in conflict-affected areas'. In fact, one research expert on EMIS emphasised its importance to governance by likening a policy without data to '... running in [the] dark without a torch light' (Odusanya, 2019). However, it is important to caution policymakers to not assume that EMIS is able 'to replace different sources of ... related data or to become the sole data source'. EMIS of the kind represented by Data Hubs are there '... to better capture and integrate such data' (UNESCO, 2020)

Data is also essential in accountability issues, as learners, teachers, decision-makers and the entire education system are exposed to public scrutiny through publicly available performance data. Custer et al. (2018) designed a proper three-point data cycle in which accountability is featured in two. Their study and analysis of data-driven education systems argued for a holistic approach to data utilisation through which 'generation', 'use' and 'impact' form a 'complex chain' in a robust management information system. In the chain, accountability is emphasised at the level of use, where teachers, headteachers and policymakers at all educational levels can be held to account 'for student learning'. Similarly, at the impact stage, 'stronger accountability relationships' are encouraged between education providers and parents/communities to which the system is answerable. This complex illustration of a data-driven educational system is then underpinned by the 'institutional context', where 'roles and decision-making capabilities', 'power relationships', 'data culture in bureaucracy and civil society', and 'capacity and resources' are at play. A framework with these components can serve as an essential benchmark for understanding the relevance of AENN-OTL Data Hubs utilisation in the Borno and Yobe States. A World Bank report on the utility of data also highlighted a similar 'information cycle' that moves through 'collection, maintenance, analysis, dissemination and utilisation' as essential components of 'an effective EMIS'.

While the above characterisation represents the ideal conditions under which EMIS's data power can be maximally utilised, no country with such a perfect system has been reported. As a World Bank survey of EMIS practices around the world indicated, there are few countries in the world '... with a fully functioning effective system' (Abdul Hamid et al. 2014). Instead, the report on Lessons Learned from World Bank EMIS Operations presented a gloomy picture of shortcomings, including 'Misalignment of Activities and Unrealistic Goals', 'Sustainability Challenges...', 'Missed Integration Opportunities', and the absence of the private sector in EMIS data. The report encouraged education-focused EMIS to go beyond planning for the benefit of central government and aid donors. EMIS operations should tailor their activities towards serving communities from where the data originated: 'It should be seen as a tool for improving learning and instruction, and increasing the information flow back to sub-national, institutional, and client levels for building local oversight and social accountability.' (Abdul Hamid et al. 2014: 17). However, successes were observed in specific areas of EMIS utilisation, such as:

- '(a) development of an EMIS to manage teachers and provide access to education (for example, Afghanistan); (b) utilisation of an EMIS as a management tool (for example, Bosnia and Herzegovina); (c) creation of an online EMIS to improve access to education data (for example, Honduras); (d) use of an EMIS as a tool to strengthen teaching and learning (for example,

Guatemala and Lithuania); and (e) use of an EMIS as a management tool for schools (for example, Malaysia).’ (Abdul Hamid, et al 2014:xiii)

The best examples that the World Bank survey uncovered of good practices for effective EMIS operations came more pervasively from high-income countries, but they were not universally shared even in those countries. Ohio State was cited as where education authorities achieved appreciable success in improving learning outcomes for its primary and secondary schools. This success was attributed to the state’s provision of a legal framework for the EMIS platform, the soundness of its data collection method, transparency in information dissemination, verification and feedback, and professional development for EMIS staff. Similarly, the UK’s Department of Education was singled out for its multi-million spending plans for the consolidation of diverse data systems, leading to ‘... one single repository for all school data...’ including school performance data and results of regulatory inspection that is also available for searches by parents and the public (Abdul-Hamid et al. 2014:25).

The World Bank alone has funded 232 EMIS activities in 89 countries. Yet, these were some of the examples that were found to be approaching EMIS provision more strategically and holistically. It is essential to bear this reality of imperfection in mind when reviewing EMIS systems in low-income and conflict-affected zones, such as Borno and Yobe States in Nigeria.

5. DEVELOPMENT OF EMIS IN NIGERIA

Data collection for use in an educational context has been ongoing throughout Nigeria’s educational planning history. In its electronic format, a donor-inspired Education Data Bank was established in the 1980s by the Federal Government (World Bank 2006). Subsequent revisions of EMIS policy in Nigeria, such as the most recent NEMIS (2021), also occurred following rounds of donor support from UNDP, USAID, FCDO and UNICEF. At the heart of these reviews is the need for decentralisation and sustainability, both of which require long-term funding and technical support from development partners.

A decade ago, USAID funded an Education Crisis Response (ECR) project in the North East of Nigeria, including Borno and Yobe States. The 3-year (2014–2016) accelerated education project was implemented by Creative Associates and its partners, including the International Rescue Committee. By the end of the project, Creative Associates reported success in supporting more than 80,000 children and adolescent youth through an accelerated primary education and psychosocial programme (Thomsen, 2019). The implementing consortium attributed the project’s success to an ‘information feedback loop’, which allowed the project ‘... to adapt to changing contextual factors and develop meaningful relationships with a broad network of key stakeholders in the communities’. This enabled the programme to continually monitor and evaluate local responses to learning strategies and activities. As a consortium of international and local NGOs, including the Federated Muslim Women Association of Nigeria, community engagement was made possible by utilising an adaptive approach that involved formal schools and non-formal learning centres to support the learning of 6 to 17-year-olds. This led to specific measures to address the relatively low enrolment of girls in the programme, including establishing girls-only learning centres. An EMIS programme would do well to adopt this kind of engagement strategy through contextual narratives and real-time interactions with host community data providers and the various inter-agency end-users.

In addition to EMIS quantitative data activities, capturing qualitative information that includes both formal discussions and informal off-the-cuff conversations with local stakeholders can pave the way for a significant understanding of the needs of children, especially in the provision of education in

emergencies. It is also essential in deepening sustainability practices, as the system is gradually returned to local authorities after implementation. However, there appears to be no further information regarding the ECR project's continuity beyond 2016. Nor is there a documented report of a link between ECR and its Borno–Yobe Data Hubs (2020–2022) and the more recent Opportunity to Learn (OTL).

Addressing Education in North East Nigeria (AENN) was the primary implementer of learning activities related to Data Hubs during the USAID/FCDO-funded 3-year intervention programme. AENN established the Data Hubs to support decision-making in the humanitarian and education in the emergency context of the North East, but they expanded to cover local needs for EMIS-oriented school data. The programme reported success in mainstreaming 21, 508 (73 per cent) of its targeted cohort of 29,504 out-of-school children (AENN 2021). However, the potential for the established Data Hubs to inform local education policy and planning was not to be fully realised by the end of the programme. Regarding this information gap, a recurring observation in reports from FHI360 to USAID was that the Data Hubs needed to be more responsive to SUBEB and other education stakeholders for better learning outcomes. For example, in a Rapid Education Risk Analysis (RERA) and Gender Equity and Social Inclusion (GESI) Analysis Report (2021), FHI360 pointed out that 'AENN must work with institutions via Data Hubs to acknowledge the growing demand and improve planning processes to accommodate these changes'; that 'AENN should work closely with governmental agencies, UNICEF, other organisations/programmes, education sector groups (ex. EiEWG), universities and colleges to address education data needs'; that 'AENN's data hubs should consider the gaps in data and key issues that SUBEBs and partners need information about to facilitate planning processes'; that AENN should 'improve communication with NGOs and government entities collecting data on population, security, child protection'. These recommendations from AENN were for strengthening the Data Hubs as valuable tools for education and humanitarian stakeholders. After completing these assessment reports, AENN engaged Borno and Yobe States in co-creating a School Support System (SSV), whereby School Support Officers (SSOs) would be provided with tablets and custom monitoring tools to fill these gaps. Each state created their own custom monitoring tools comprised of lesson and school observations, teacher and head teacher interviews and trained LGEA based SSOs in their use. AENN then worked with the states to design custom dashboards to highlight the trends in educational needs as well as the specific schools needing support (see Annex, Figure 12). Recent briefings from FHI360 have indicated that the limited funds allocated for the Data Hubs and their short implementation cycle contributed to their relative inadequacy as effective EMIS systems for education and humanitarian purposes. They also stated that a longer time period to provide mentoring to help the Data Hub system function fully would be useful in any future implementation of the approach.

Opportunity to Learn Activity (OTL), in which the Data Hubs are incorporated as education planning tools, is funded by the USAID and implemented by the International Rescue Committee (IRC) and a consortium of local and international development partners. The \$25m activity is a 5-year (2021–2026) programme that addresses the foundational literacy, numeracy, social and emotional needs of out-of-school children in Borno and Yobe States (USAID, 2021). In a press release, Acting Mission Director Katie Donohoe was quoted noting that 'the program will strengthen the ability of education authorities in Borno and Yobe States to meet the challenge of rebuilding a ravaged school system and provide learners with a chance for a quality future' (USAID, 2022). The Data Hubs, now supported by FCDO, will play a role in this system-strengthening initiative by expanding their use in education planning in the two states. A follow-up field visit to the OTL-inherited Data Hubs in 2022 added staff capacity to their inventory of challenges.

In 2022, IRC undertook an internal review of the operations of the Data Hubs at the early stage of their adoption into OTL activity remit. The review aimed to determine the utility of data for decision-making purposes in conflict and crisis settings. The initial adoption of the Data Hubs by OTL was preceded by a needs assessment as part of its Q2 commitment (USAID, 2021). The assessment took account of the

state of the hardware, capacity gaps, and funding needs, which is an excellent practice recommended for project preparation in low-income countries, such as Nigeria. The review identified 25 Data Hubs in the two states, of which 9 were urban and semi-urban LGEAs, which were the focus of the research. These Data Hubs (5 in Borno and 4 in Yobe) constitute the data collection points OTL operates. Through a set of critical questions related to data flow, current strengths and challenges of the Data Hubs, and plans for the Data Hubs by OTL, the unpublished research noted the following challenges as they relate to different aspects of the programme:

- Planning and Design: logistics, training resources, power, lack of a mobile system, inadequate funding, time constraints, lack of software for learning assessment/learning observation and real-time data capturing, and lack of equipment
- Collection and Collation: internet connectivity, inadequate hardware/software, inadequate training, and inadequate manuals/guidelines
- Processing and Analysis: inadequate data personnel, data not getting to the right people
- Dissemination, Presentation, and Learning: inadequate data flow
- Sharing (Access to Others): timing in requesting data, no online sharing available
- Storage: no dedicated storage facility, inadequate internet connectivity, inadequate training/capacity on latest software and procedures

The report concluded that there is ‘... a need to clarify and align missions and visions across Data Hubs... [as they are] currently non-existent’. It recommended that ‘... the culture of Data Hubs ... be completely revamped’. The report further noted that ‘... other stakeholders within the system interact with the Data Hubs amidst a lack of a defined purpose and treat them as points of data requests rather than as points of full-service data expertise.’ These are sobering points for reflection, as expansion is being contemplated. One key element in the present report is to examine the relative progress made in overcoming these challenges. The primary data component of the report is aimed at teasing out quantitative and qualitative information regarding the current state and sustainability of the Data Hubs in the North Eastern states of Borno and Yobe.

6. ANALYSIS OF PRIMARY DATA COLLECTION AND KEY INFORMANTS INTERVIEW

Data Hubs Quantitative Data Analysis

This section presents the outcome of the field visits undertaken by the primary data consultant to Yobe and Borno States between 17-30 September 2024. It also incorporates findings from an internal IRC report presenting findings from site visits conducted by the organisation in 2022. Within those states, 10 Data Hubs (5 in each) were visited, and both quantitative and qualitative data were collected from the Hubs. In Borno, the Data Hubs are housed in government facilities in EMIS departments of MoE, SUBEB, SAME, Jere and Konduga LGEAs. In Yobe, they are located in the MoE, SUBEB, SAME, Damaturu and Fune LGEAs). All 10 Data Hubs visited as part of the primary data collection are functioning, and when the observation checklist was administered and analysed, the following additional quantitative data emerged:

- All 10 Data Hubs are provided with desktop computers, ranging from 2 to 16 units. In consultation with the IT Support Leads identified through the Data Hub role-mapping, desktop computers

paired with a UPS (uninterruptible power supply) were recommended over laptop computers, as they provide similar power coverage and would be less prone to theft.

- Five of the Data Hubs have been provided with additional laptop computers, ranging from one to three.
- Nearly all the desktop computers have been provided by development partners.
- At the time of visits, nearly all the Data Hubs have at least one functioning desktop computer.
- While 5 of the 10 Data Hubs have a modem for Internet connectivity, only 1 of the modems is functional.
- All the Data Hubs listed had solar panel except the Data Hub in Fune.
- AENN initially trained 139 Data Hub staff, with each office supported by 2 to 4 staff to fill the 4 Data Hub roles. The number of personnel remaining in the Data Hubs ranges from 3 to 15 in a unit, of which only 1 of the units is operated by a fully trained staff of 5 officials. In 1 of the units, all of the officials were newly deployed, having replaced the original Data Hub staff.

The quantitative data analysis indicates the relatively precarious situation of the Data Hubs, with continued support from the recently launched Opportunities to Learn (OTL) activity in the two states. Their dependence on development partners for basic infrastructure, non-functioning equipment, poor connectivity and relatively untrained personnel mirror the situation of the Hubs at the initial stage of adoption by OTL in 2022. They are still heavily reliant on outside financial support for their operations, putting into doubt their sustainability outside of this support system. The additional challenges of insecurity, power outages and the effect of climate change on the area are real impediments to the viability of the remaining Data Hubs.

Data Hubs Key Informant Interviews

A major component of the query into the current state and sustainability of the Data Hubs in North East Nigeria is the Key Informant Interviews (KIIs) with stakeholders at both state and federal levels. A total of 24 officials were interviewed: 8 in Borno and 13 in Yobe, and the remaining 2 represented NGO and National EMIS personnel. During interviews, they all reported between 3 and 14 years of experience in the operations of the Data Hubs. One head of the unit was reported to have been with the broader IT unit for 24 years. Some Team Leads for the Data Hubs possessed degrees in IT. In addition, two Headteachers from each of the two LGEAs were interviewed, and both confirmed that their roles centred around providing data on school enrolment, attendance and infrastructure. However, quantitative data analysis only identified one Data Hub where all the staff reported being trained.

Regarding these school census activities, KIIs noted how the data collection is conducted using manual and electronic Kobo Collect formats. The physical format involves the annual school census form and is received 'directly from schools through the procurement of their registers for comprehensive analysis,' as one respondent described the process. Once data is collected and entered into the Data Hubs, making the data 'clean' and analysing it for 'trends' and 'patterns' would commence. This would then be interrogated to support local, state and national education decision-making. One respondent even defined the Data Hubs as 'reformation and transformation' tools. IT staff training must have been intensive and regular for the Data Hubs to have achieved this level of sophistication as analytical tools for education decision-making. In 2022, internal review reports into the activities of the Data Hubs indicated concern that data input was limited to school census and that officials did not fully appreciate the system's potential for instigating better learning outcomes,

hence the noticeable inadequacy of data flow.

While the respondents broadly underscored the school census as the data collection activity for the Data Hubs, 'sister agencies' can make specific requests as needed. In such a situation, data personnel are sent to do the fieldwork, or the headteacher is asked to fill in the supplied template before the data is transferred to the local Data Hub for the end-user(s). As an example of this data-on-request practice, one respondent highlighted how '... in the aftermath of a storm, it becomes crucial to gather data on the extent of damage to schools, the displacement of students and teachers, and the resources needed for recovery.' This indicates that the Data Hubs also promote inter-agency collaboration and the much-recommended development-humanitarian interface role that these Data Hubs should perform in Education in Emergency contexts, such as Yobe.

With regard to their client base and the frequency of requests for data, respondents described the vital role that the Data Hubs play in providing quarterly school census updates to state education agencies, such as SUBEB and SAME, the Ministry of Basic and Secondary Education, as well as the Federal Ministry of Education. Development partners, such as Opportunities to Learn (OTL) and UNICEF have regularly requested data regarding the educational profile of Damaturu Metropolitan Area, for example. Graduate students were among individuals who have made requests for education data in the last six months, and it appears that protocols were in place to safeguard access to the data. One respondent, a Data Hubs official, narrated how they turned down a request for data from an INGO, because of its inability to present a proposal regarding the purpose for which the data was demanded.

7. KEY FINDINGS

Functionality

The sections above confirm the existence and functionality of the Data Hubs in Borno and Yobe States, with Data Officials attributing their continued performance to the periodic assessments of the units by FHI360, AENN, and most recently, OTL. The USAID FHI360/AENN education activities between 2020-2022 provided desktop computers, monitors, printers, chairs, standing fans and solar system packages. The responsibility for their maintenance fell on the programme as well. Working desktop computers and laptops have been verified, and KIIs with stakeholders confirmed the importance of the Data Hubs to education and humanitarian activities in the areas. This intervention meant data administration was made more efficient, enabling more informed decisions to enhance education.

However, several challenges hinder the optimal functioning of the Data Hubs. Insecurity in the North East continues to hamper data collection activities and restricts access to established Data Hubs situated away from the major urban centres. Furthermore, despite the acknowledged support from OTL, the effectiveness of Data Hubs is impacted by the challenges of interrupted power, internet connectivity, and inadequate staff incentives and training.

Infrastructure and Resourcing

The Data Hubs established by the 2021 AENN activity are continually in operation, with their functionality reliant on the infrastructure and financial resources provided by both the government and INGO support. Respondents attributed the post-AENN continuation of the Data Hubs to the collaborative efforts of the government, particularly SUBEB, and development partners in maintaining the existing IT system. The Ministry of Basic and Secondary Education, through SUBEB, is a major financier of the Data Hubs activities, and respondent Data Officials consistently praised the education agency for its

support. KIIs mentioned the government's provision of Data Hubs' space and financial support for electricity and internet service payments. The 27 LGEAs in Borno and 17 LGEAs in Yobe house EMIS offices, of which OTL supports 5 LGEA Data Hubs in Borno and 8 LGEA Data Hubs in Yobe. All EMIS offices/Data Hubs, regardless of support from OTL, have staff who are employed and paid by the government.

Additionally, the respondents' focus on the provision and maintenance of IT infrastructure by development partners highlighted donors' critical role in ensuring the Data Hubs' long-term viability. All the Data Hubs visited reported their reliance on partners, such as OTL, to provide computers, connectivity, and training. OTL and Plan International were the specific INGOs identified as the major collaborative partners in this sustainability programme, with all Data Hubs visited during the primary data collection supported by OTL. According to a respondent, OTL has been paying for 'data/airtime to the office' recently.

While the Data Hubs have continued to operate after their initial set-up, their sustainability has been highly contingent on follow-on funding coming from development partners with collaboration from the government, rather than the full handover of funding and support for Hubs to the government. Additionally, challenges related to connectivity persist, including lapsed internet subscriptions, difficulties in accessing data/airtime, and irregular power supply. These ongoing issues highlight resource constraints for the reliable provision of basic infrastructure and services.

Staffing

The availability of qualified and trained staff is critical to the success of the Data Hubs as efficient sources of reliable data in an Education and Crisis Response (ECR) context. Team Leads of the Data Hubs have all been reported to be qualified to degree level, including in IT-related programmes. Additionally, as noted in the background context above, the years of service of Data Officials range from 3 to 24. This continuous experience is useful to the future sustainability of the Data Hubs, as institutional memory in their operations can be therefore preserved through staff retention.

The staffing structure of the Data Hubs was developed by the AENN programme, with four functional roles: Data Collection Manager, Data Manager, Data Use Adviser, and IT Support Officer. The maximum reported number of staff in a Data Hub is five, though the average number of staff in an EMIS/Data Hub unit is four. In Borno, staffing of the Data Hubs is reported under the broader EMIS coverage, with up to 15 data personnel reporting to the Director of Planning and Statistics in the Ministry of Education. The ultimate responsibility for the staff lies with the Education Secretary of the LGEA.

Amongst KII respondents, the perception of staffing level remains low for the efficient running of the Hubs, and respondents felt that the staff capacity should reflect the demand expectation of MDAs, development partners and individual researchers. This perception persists despite the creation and standardisation of the staffing structure as the model for a sufficient division of the Data Hub workload. Perhaps of more significance for the Data Hubs' efficiency is the ongoing training and capacity building of these staff during their employment, a need which was reiterated throughout KIIs and physical inspections of the Data Hubs.

Strategic Engagement

According to the respondents' comments, Data Hubs are increasingly becoming essential features of the state education sector. The Data Officials frequently referenced SUBEB as a critical stakeholder in the KIIs. One Data Official observed that: 'The Data Hub is extensively integrated with government agencies, particularly the Ministry of Basic and Secondary Education, the State Universal Basic Education Board'. The Data Hubs are thus potentially helping to inform education decision-making at both the state and federal levels through regular collection and quarterly dissemination of the school

census to the National Education Management Information Service (NEMIS). In addition, staffing, though not optimal according to the respondents, has not been affected by movement through reassignment, thereby preserving the institutional memory that was on display in the KIIs. The case of all-staff replacement in Borno is thus an exception to this common continuity trend across the inspected Data Hubs in the two states.

While Data Officials describe integration as evidenced by their location within critical education sector stakeholders, such as the MoE and SUBEB, some of their responses regarding integration reflect an idealised role of the Data Hubs. In practice, data flow appears limited and one-directional. Data Officials' discussions about data request and dissemination point to a demand-led operation, in which Data Hubs officials collect tailored data to meet organisational needs as they arise. However, a shift toward continuous engagement and the proactive provision of regularly collected, standardised monitoring data could enhance the value Data Hubs offer to stakeholders, though this would again require increased staff training. Moreover, increased state government support to LGEAs could empower and incentivise Data Hubs to take on a more significant role in data analysis and application. Improving the Data Hubs' strategic engagement and increasing visibility for their contributions to system strengthening could not only improve education outcomes but also help secure ownership and long-term resourcing of the Data Hubs by the host states and LGEAs.

Use of the Data Hubs in Humanitarian Efforts

In the conflict-affected areas of Borno and Yobe, education and humanitarian activities are entwined because of the effects of displacement on the education of children and youth and, ultimately, their life chances. Data Hubs can bring the two strands of EiE together, thereby making interventions less fragmented. As noted in the literature review, ensuring systems integration in EiE provision is of particular concern, as education is one of the first casualties of disaster displacement. This will be felt more acutely by children and young people, who are doubly affected both by the trauma of the displacement and their out-of-school situation in the host community. The fact that in Borno, Yobe and the broader North East, eradicating secular education continues to be part of the battlefield of the Boko Haram insurgency is an indication of the enormous hurdle facing education policymakers in this region.

The Data Hubs are reportedly collecting data beyond the annual school census of student demographics, infrastructure and available resources for budget processes of Ministries, Departments and Agencies. Respondents described the additional impact of the Data Hubs, including supporting humanitarian concerns within the data collection instruments, as indicated by these responses:

'Our data collection ... encompasses information on disasters such as storms, termite infestations, flooding, and school crises ... Including flooding data in our data collection is vital for understanding the vulnerability of schools to natural disasters and implementing preventive measures. In times of school crises, such as security threats or health emergencies, having comprehensive data on the incidents, responses, and outcomes is indispensable for ensuring the safety and well-being of everyone involved.'

'Data Hubs are important in supporting humanitarian donors, specially in an emergency situation like cholera, diphtheria, etc. ... In Damagun, we had an emergency cholera outbreak, and the data from the Data Hub helped greatly in managing it.'

'The data we have are kept for ministries/organisations like the Ministry of Basic and Secondary Education, Ministry of Budget and Economic Planning, National Mass Education, and organisations like the International Rescue Committee (IRC) Plan International, and UNICEF.'

‘Non-governmental organisations like Save the Children, Plan International, and Street Child also request our data to support their initiatives. These organisations often seek information on the number of children enrolled in schools, absenteeism rates, and the challenges faced by educational institutions.’

Sustainability

Research shows that the Data Hubs are integrated into a sustainable entity – the government education system – and that the government pays the staff salaries, owns the facility from which they operate, and makes decisions indicating oversight over them. Therefore, the elements of sustainability are met— participation, stakeholder investment, and ownership.

Despite the success of the Data Hubs in providing data to support education and humanitarian activities, particularly in the North East context in which they operate, the continuing reliance on donor support by the remaining Data Hubs makes it difficult to predict their future sustainability. Data Hubs have successfully managed to sustain operations thus far, but as stated in the sections above, their future depends on expanding their capacity and maintaining relevance. KII respondents overall underlined the importance and potential of ensuring future sustainability of the Hubs, as indicated in the following statements:

‘For sustainability in the next 5 to 10 years, key opportunities include increased funding for technology, a focus on data-driven practices, and partnerships with tech companies. These factors will support the ongoing development.’

‘The future of the data hub is very essential; you can’t do anything without data.’

8. CONCLUSION

Data Hubs offer a valuable opportunity to strengthen both education and humanitarian activities, particularly in conflict-affected areas. As decision-making tools for education stakeholders, Data Hubs have demonstrated their potential to improve access, equity, and learning outcomes. Their functionality has been supported by a combination of government involvement and donor funding, with development partners providing essential infrastructure, equipment and training. When fully deployed, Data Hubs serve as critical coordination interfaces, offering reliable and timely data to inform key decisions.

From inception, the Data Hubs in Borno and Yobe have had to remain flexible in response to the evolving needs of these states. Beyond collecting school census data, the hubs have also captured and disseminated information on displacements due to insurgency, natural disasters, and the psychosocial impacts of an unstable environment. This adaptability has been consistently reported by both past implementers and key KII respondents. Despite facing ongoing challenges—such as limited staff training and inconsistent power and internet supply—the continued operation of these Data Hubs amidst the region's crises underscores their resilience and growing relevance in the education and humanitarian sectors.

Both the desk review and primary data collection have highlighted the Data Hubs' importance in supporting education decision-making at both state and federal levels. Recent federal policies, such as the DOTS policy on the central role of data in improving education outcomes, further underscore the potential for Data Hubs to contribute to the Federal Education Roadmap. With millions of out-of-school children in the North East, the expansion of the Data Hubs could directly address a key priority of the roadmap. Furthermore, the Data Hubs have already begun collecting and disseminating critical humanitarian data, such as information on displacement and the vulnerability of schools to flooding.

These activities also extend to supporting e-learning during insurgent incursions, demonstrating the Hubs' ability to bridge critical data gaps in real time.

However, the sustainability of the Data Hubs remains a critical concern. While government agencies provide essential support through staff salaries and physical space, the Hubs' long-term viability hinges on expanding both financial and operational backing. To ensure sustainability, greater investment is needed in staff capacity-building and IT infrastructure. There is also a clear opportunity moving forward to enhance the strategic engagement of the Data Hubs within the education sector, which could further improve education outcomes. Shifting from a reactive, demand-led approach to one that emphasises continuous, proactive data collection and engagement could offer greater value for stakeholders. Strengthening collaboration between state and federal governments, as well as development partners, will be crucial for securing the future of the Data Hubs.

As the Data Hubs expand, the need for sustainable infrastructure and long-term funding becomes more urgent. Continued appeals for external funding, as highlighted in key informant interviews, indicate that this financial support is unlikely to come from the state or LGEA budgets. Additionally, questions have been raised about the (political) culture related to housing the Data Hubs within larger EMIS units, from which staff are deployed to the units. While this practice has been key to the integration and sustainability of the Data Hubs, it is exposed to systemic inefficiencies at all levels of data generation, use and impact. EMIS reviews, cited elsewhere, have strongly advocated for a robust system that ensures information flows back to sources of generation for better outcomes. Instructively, FHI360 (2024), which implemented the Data Hubs initiative through AENN in Borno and Yobe, listed people, processes, technology and enabling environment as key variables for assessing the capacity of Data Hubs to meet the needs of their clients.

9. WAY FORWARD & RECOMMENDATIONS

In the increasingly data-driven knowledge architecture, access to reliable, timely and disaggregated quality information is crucial to improving education policies and programmes. As an education office, a Data Hub could prove to be a valuable investment in achieving better learning outcomes. This review highlighted the achievements and difficulties of Data Hubs and similar EMIS systems to achieve optimal generation, use and impact conditions. The following recommendations describe positive steps which can support Data Hubs in achieving their objectives:

Functionality

- The Data Hubs can be operated in an autonomous capacity so that they function optimally. Their autonomy will entail the provision of appropriate technology, recruiting qualified staff, and a (legal) policy framework outside of EMIS units of SUBEBs and MoEs. The Data Hubs may be established as an agency run by professionals with the autonomy to collect credible data using modern communication and technology support. Currently, the Data Hubs function within the government system assuring sustainability since the government provides the infrastructure and supports staff salary.

Infrastructure and Resourcing

- LGEAs are good locations for the Data Hubs, because of their proximity to data sources and end users. A narrower focus on supporting local schools to improve the learning experience of children and youth seems to yield greater benefits of the Data Hubs regarding education management. A commitment to their long-term funding outside state and local authority is assumed; and so is their autonomy from state and LGEA control. However, the recent push for local government financial autonomy may usher in new ways of co-financing the operations

of the Data Hubs at this level.

- The status of the Data Hubs could be raised to a sub-agency level and operations professionalised to support data tracking on humanitarian and other educational emergencies. This could be tested in one of the cooperative states, with lessons learned scaled up or expanded to other states. Being subsumed under agency units could also confirm their supportive role in core education activities.

Staffing

- On-going capacity building of the Data Hubs staff to be able not only to collect, but proactively analyse, interpret and present this data, is recommended. The Hubs can then engage with MDAs, development partners and humanitarian organisations through protocols for data collection and access.
- The Data Hubs should be provided with Standard Operating Procedures that will include ethics of data collection, protection and ethical use for planning, and disaster preparedness and response.
- UN/GPE/ECW partners should provide leadership, quality control, guidance and strategies for activity implementers to develop common standards of IT provision and to overcome closeout anxieties of crisis-affected areas hosting multi-sectoral donor agencies.

Strategic Engagement

- Boost the Data Hubs profile by making their supporting role more critical to the activities of development and humanitarian partners. KII respondents are optimistic about this possibility, but only with increased funding and better staff training, entailing an even closer relationship between OTL and the host agencies. Ironically, much of the resources needed to guarantee their sustainability will have to come from partners.
- The current focus of the Data Hubs on data collection and on-demand access can be expanded to ensure information flows back to schools and related agencies for timely decision-making in a rapid response situation, such as the North East. There has been a consistent call for the Data Hubs to be more responsive to such demands since their AENN days. This responsiveness, in turn, can create better integration of education and humanitarian data needs, as schools report their experiences of closures, displacements and overruns due to conflicts and natural disasters. The Data Hubs can play a critical role in generating/tracking/informing education provision.

Use of Data Hubs for Humanitarian Efforts

- In the current context of the Data Hubs, an alternative route to integration with broader humanitarian data tracking is for the Hubs to serve as access points to the data services of relief organisations operating in the area. Remotely based Hubs could also function as satellite 'listening posts' to imminent conflicts and natural disasters in and around the school environment. Mobile data costs alone caused AENN to abandon the collection of humanitarian primary data updates using SMS and IVR methods, pivoting to use SSOs with tablets as primary enumerators. Still, the continuing instability of the states makes operating Data Hubs outside the big urban areas a risky venture. As satellite connectivity becomes more possible, it is a potential solution that can be explored.

Sustainability

- A commitment to providing full support to the operations of the Borno and Yobe Data Hubs beyond the duration of the current OTL activity should be considered as a long-term sustainability strategy. In fact, for close to two decades, the World Bank has been advocating

for such a sustained engagement. Since educational improvements take a long time to emerge, any support to speed up the process must take a long view of investment. Without this extended external funding, basic infrastructure, including solar power, internet connectivity and computers, will continue to be inadequate even for the 10 OTL-supported sampled hubs.

- Long-term funding commitment for the Data Hubs by the UN/Emergency operations, led by UNICEF, including UK funding via GPE/ECW partners will ensure that they remain functional and able to withstand the changing political environment. There is a need to separate their sustainability from the closeout of development programmes with which their operation becomes entangled. Neither the state nor the LGEAs appear capable of providing continuous basic (power and connectivity) support. It is important to consider this long-term funding in ongoing discussions about the expansion of the Data Hubs.

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ANNEX

Data Hub Quantitative Data Analysis

- Ten data hubs were visited in Borno and Yobe states (5 hubs in each)
- Data collection was done in Yobe between the 17th and 20th of September 2024 while data collection in Borno was between the 19th and 30th of September 2024.
- Both qualitative and quantitative data were collected at the 10 hubs.
- The observation checklist was administered in the 10 hubs, and 23 stakeholders were interviewed using the key informant interview guide.
- Manual thematic analysis was done for the qualitative data collected.
- Quantitative data (observation checklist) was entered into and analysed using Microsoft Excel. Outputs were presented with illustrations.
- Data Hubs visited are Borno (MoE, SUBEB, SAME, Jere, and Konduga) and Yobe (MoE, SUBEB, SAME, Damaturu and Fune) Data Hubs.
- All Data Hubs visited are currently being supported by the Opportunity to Learn (OTL) project.
- Data Hubs were in government facilities housed in the EMIS departments.
- There are Data Hubs in MoE, SUBEB, and SAME. There are also hubs in the LGEAs visited.
- SUBEB Data Hub has data on formal basic education while the SAME hub has data on non-formal education
- The data in SUBEB and SAME, that is the formal and non-formal education data, are transmitted to MoE where they are accessible to government, NGOs, and others requesting data.
- All staff in SUBEB-Borno Data Hub were newly posted. Old staff in the EMIS/Data hub office were posted to other departments in the Ministry of Education and other education agencies.

All data hubs have at least one desktop computer. Fig. 1 shows the data hubs and the number of desktops that they have.

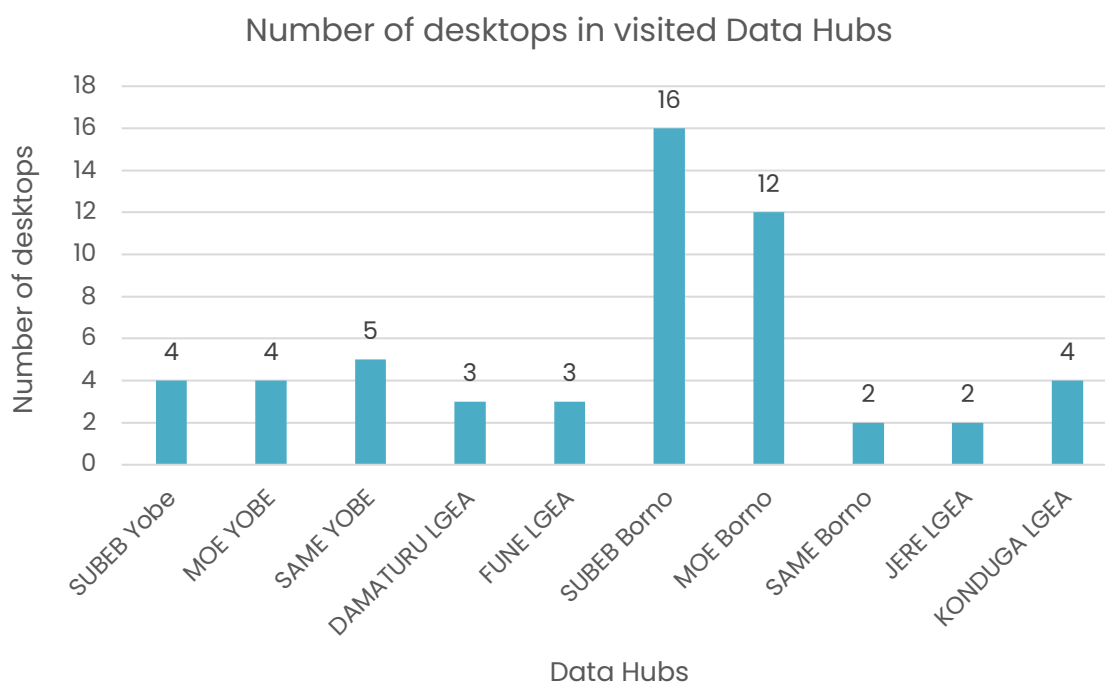


Fig 1: Number of laptops in the Data Hubs visited.

Data Hubs in SAME-Yobe, Fune-Yobe, SUBEB-Borno, and Konduga-Borno have a laptop each in addition to the desktops. Fig. 2 shows the number of laptops in each data hub

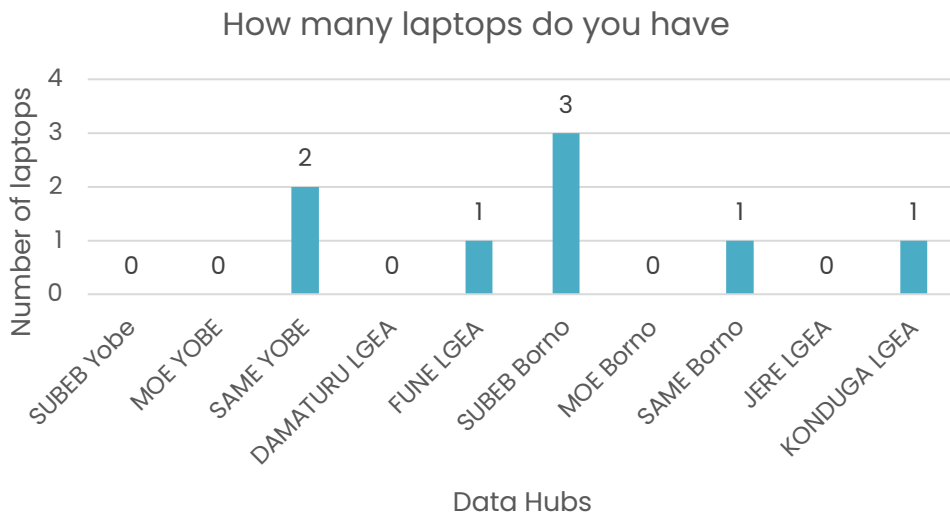


Fig 2: Number of laptops in each Data Hub

Fig 3 shows the total number of computers (desktops and laptops) in the Data Hubs

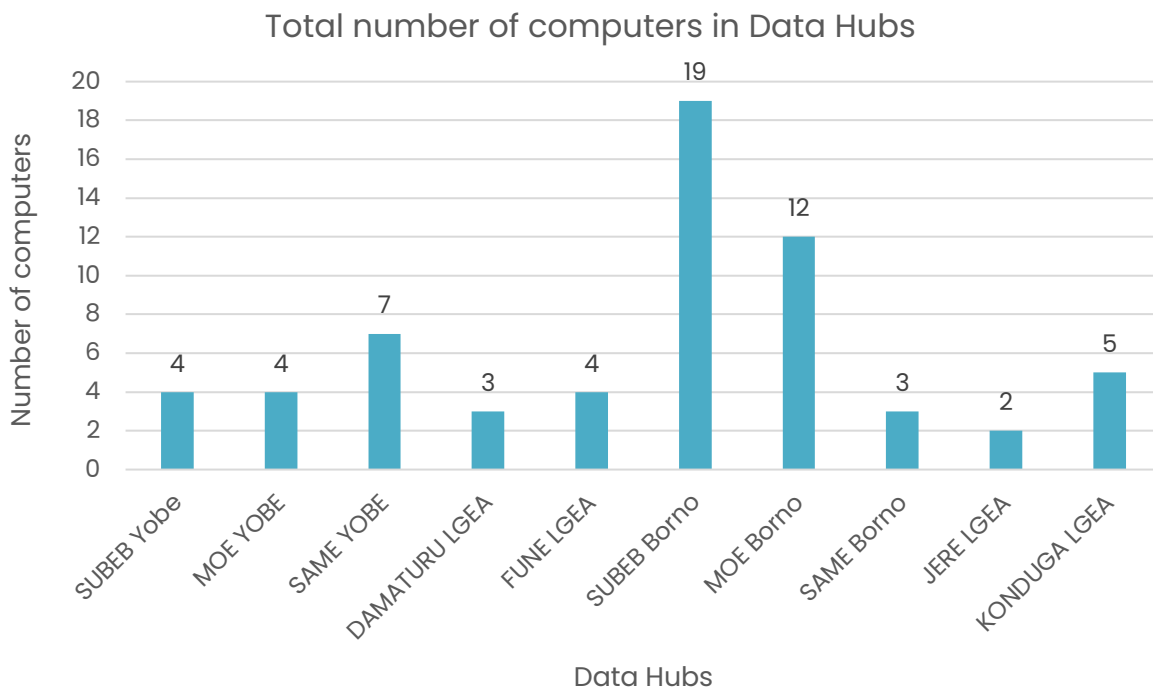


Fig 3: Total number of desktops and laptops in visited Data Hubs

Four (80%) of the Data Hubs in Borno and Yobe have all desktops provided by partners (Fig 4)

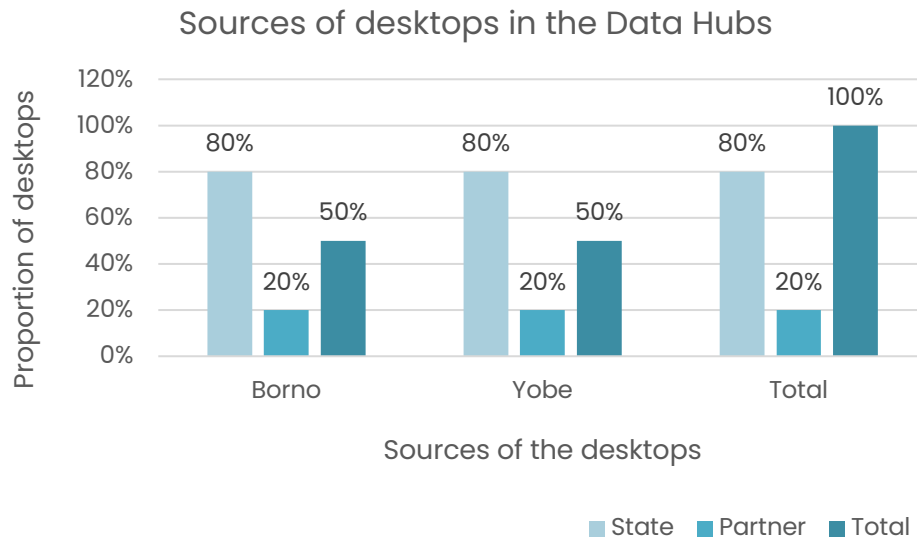


Fig 4: Sources of desktops in the Data Hubs

All 5 Data Hubs in Borno have at least one functional desktop at the time of visit however, one (20%) of the hubs in Yobe has no non-functional desktop

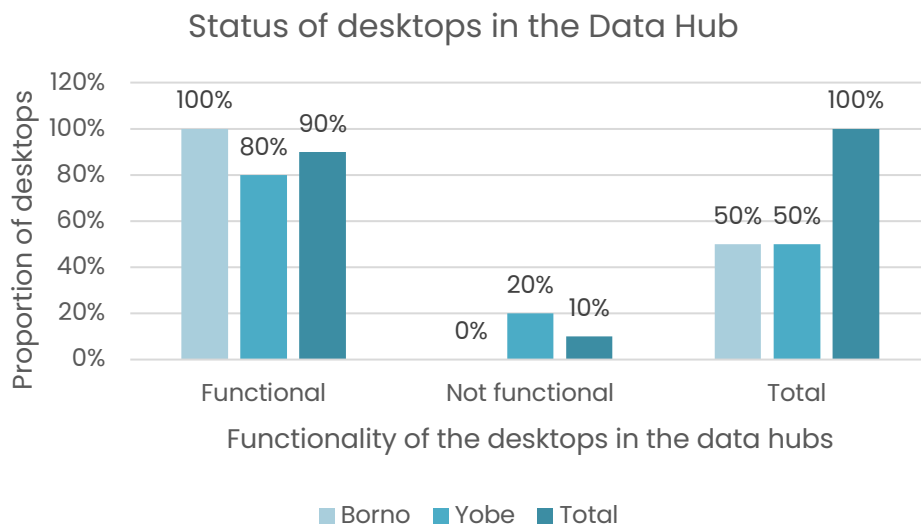


Fig 5: Functionality of desktops in the Data Hubs

The desktops are used for various purposes as shown in Fig 6. Four (80%) of the Data Hubs in Yobe use their desktops for data entry and analysis while most Data Hubs in Borno (3 of 5) use their desktops for data collection, entry and analysis.

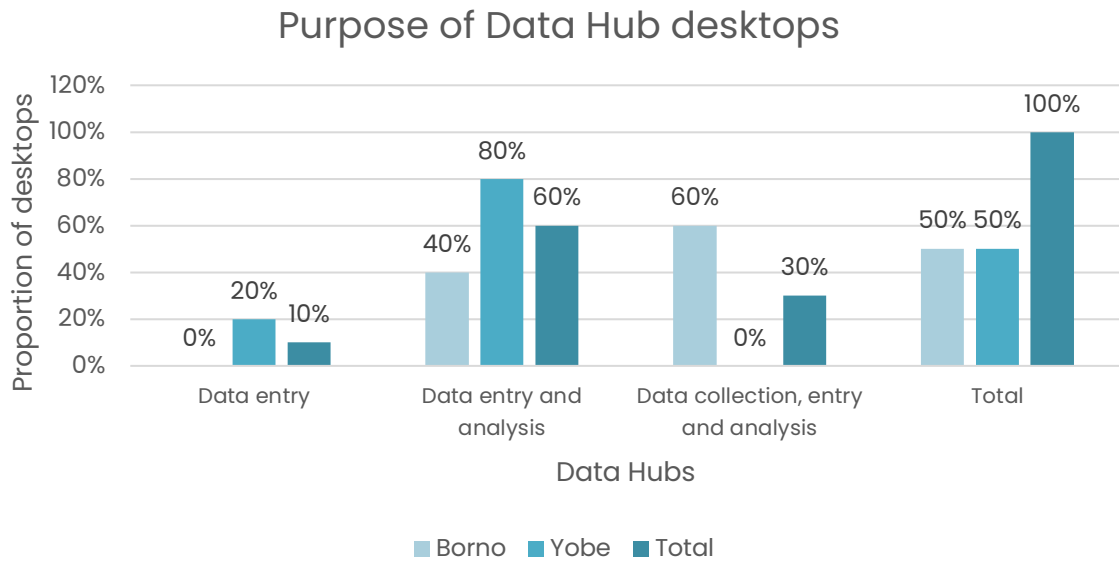


Fig 6: Purpose of the desktops in the Data Hubs

Five of the ten Data Hubs visited have a modem for internet connectivity.

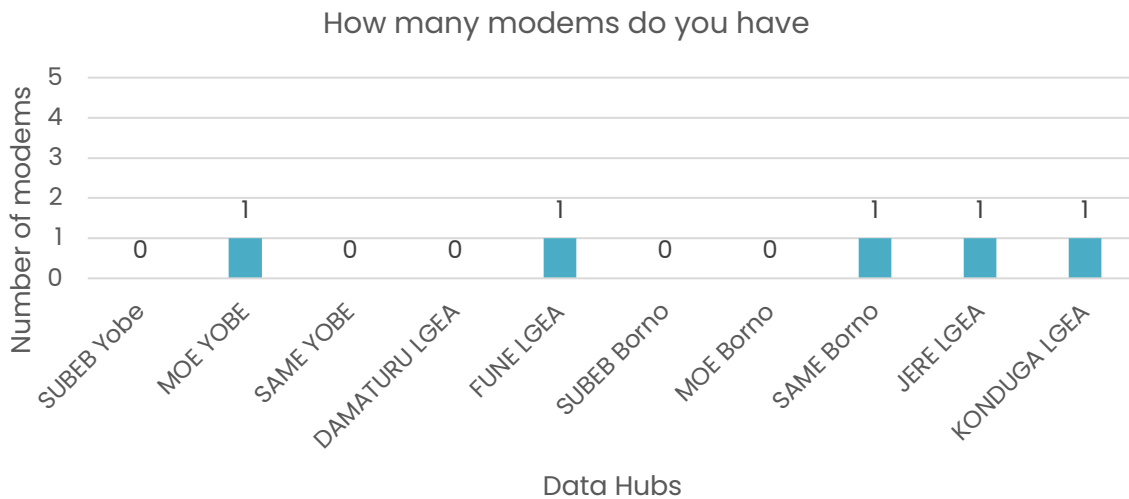


Fig 7: Number of modems in the Data Hubs.

Only one (20%) the Data Hubs in Borno and Yobe has functional modem

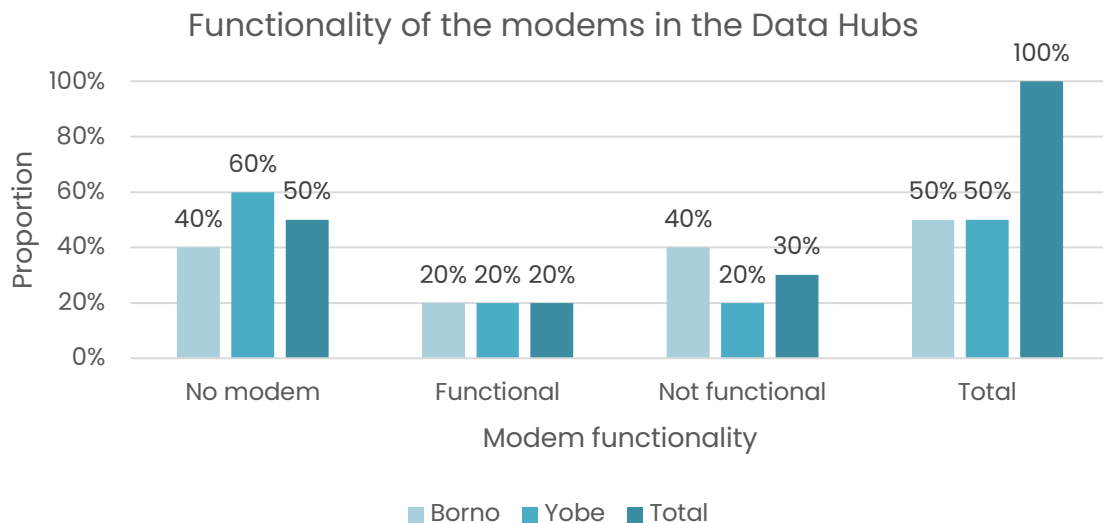


Fig 8: Functionality of the modems in the Data Hubs

Figure 9 shows the number of personnel in each data hub and their training status. All personnel in the Ministry of Education, Yobe and Konduga LGEA in Borno have all their personnel trained.

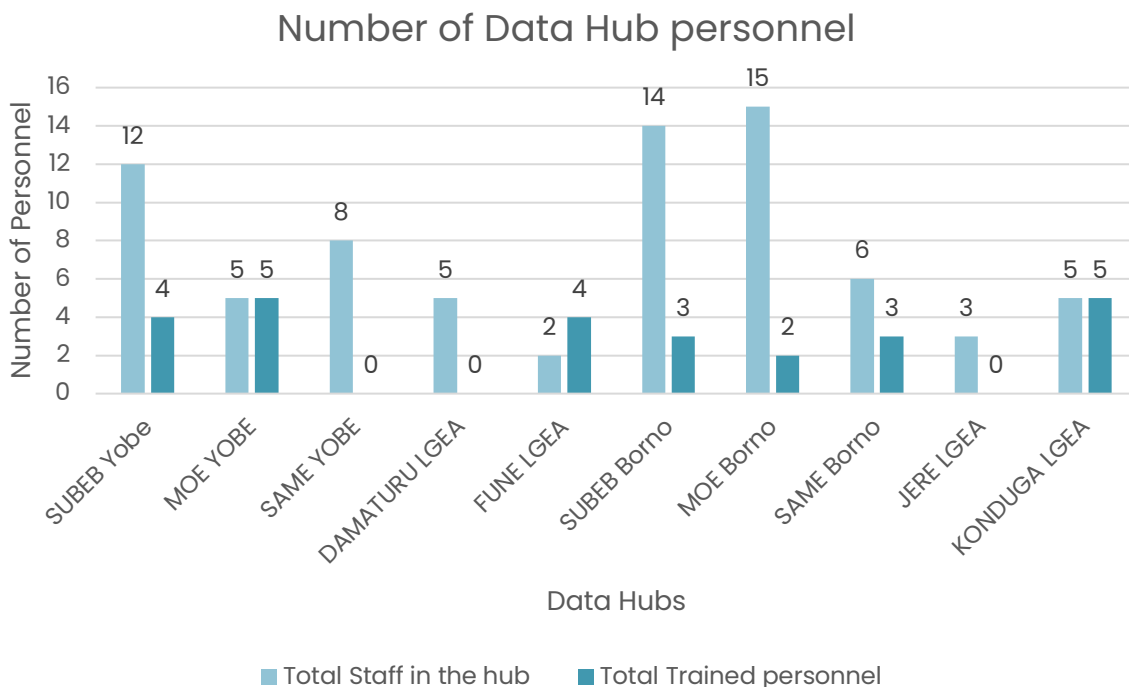


Fig 9: Number of personnel in the Data Hubs.

Fig 10: AENN Data Hub Roles

Role	Description	Recommended Background
Data Collection Manager	The Data Collection Manager ensures that data is collected from all sites according to the agreed-upon schedule. This requires maintaining a list of all schools, along with the name of the individual assigned to collect data from that school. The data collection manager then works with each data collector to create a schedule for school visits, and an agreed-upon time frame for each round of data to be submitted. It is the responsibility of the data collection manager to track the progress of data submitted and follow up with data collectors when there is missing or suspicious data.	<ul style="list-style-type: none"> • Supervisor status to hold data collectors accountable (this is the most important) • Excel skills to maintain lists of data collectors and assigned schools • Phone and communication skills to follow up on data collector progress • Basic comfort using a computer and mouse to access the dashboard • Ability to interpret basic graphs and tables
Data Manager	The Data Manager will support the Data Collection Manager to maintain an up-to-date list of schools and data collector assignments. The Data Manager will update the data collection instruments any time a school or assignment is changed. They will also maintain an up-to-date copy of the raw data files on a computer within the data hub. This requires using ODK Briefcase software (which AENN will provide) and a web browser to connect to the cloud servers and download data to the data hub computer on a regular basis. The data manager then connects this local copy of the data to the dashboard reporting software.	<ul style="list-style-type: none"> • Experience with Microsoft Excel • Good file management skills • A computer with reliable internet access
Data Use Advisor	The Data Use Advisor will take the lead to ensure that local stakeholders are aware of the newest data and assist in the interpretation of the dashboards. The Advisor will schedule data review meetings and facilitate discussions on the interpretation of	<ul style="list-style-type: none"> • Experience with Excel • Ability to interpret basic graphs and tables • Familiarity with source and calculation of

data presented in the dashboards. The Advisor will assist the Data Collection Manager in using the dashboard to track data coverage.

education indicators

- Comfort with basic statistics
- Access to a newer computer with the ability to run the dashboard software (Microsoft Power BI)

IT Support Lead

Responsibilities include keeping computers in the data hub up to date with appropriate antivirus and dashboard software. This role will also assist in the proper storage, inventory, and maintenance of the tablet computers, and support the Data Collection Manager in the training of data collectors. The IT maintenance role should ultimately make sure the technology used by the data hub stays running and connected to the network.

- IT experience
- Ability to manage software updates across computers
- Familiarity with Android smartphones
- A virus-free computer to connect tablets to for software updates

Fig 11: AENN Data Hub Activities

Month	Activity	Data Collection Manager	Data Manager	Data Use Advisor	IT Support Lead
May 2020	Identification of Data Hub Staff	X	X	X	X
June 2020	Introduction to Data Hub Roles and Process	X	X	X	X
July 2020	OPI Capacity Assessment Baseline	X	X	X	X
Aug 2020	Study tour to Kano	X	X	X	X
Aug 2020	ODK Programming Training	X	X		
Sept 2020	IT System Setup and Maintenance Training				X

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Oct 2020	Digitized Annual School Census Workshop	X	X	X	X
Nov 2020	ASC Data Collection Training	X			X
Dec 2020	ASC Data Collection Monitoring	X	X	X	
Feb 2021	Learning Assessment Administration	X			X
Mar 2021	School Support Visit (SSV) Model Co-Design	X	X	X	X
Apr 2021	SSV Data Collection Training	X			X
May 2021	SSV Data Collection Monitoring	X	X	X	
July 2021	SSV Data Use Training	X	X	X	
July 2021	Data Hub Technology Cost and Server Management		X		X
Aug 2021	Power BI Dashboard Design		X	X	
Aug 2021	Annual School Census Data Management	X	X	X	
Aug 2021	OPI Capacity Assessment Endline	X	X	X	X

Fig 12: Example School Support Visit Dashboard

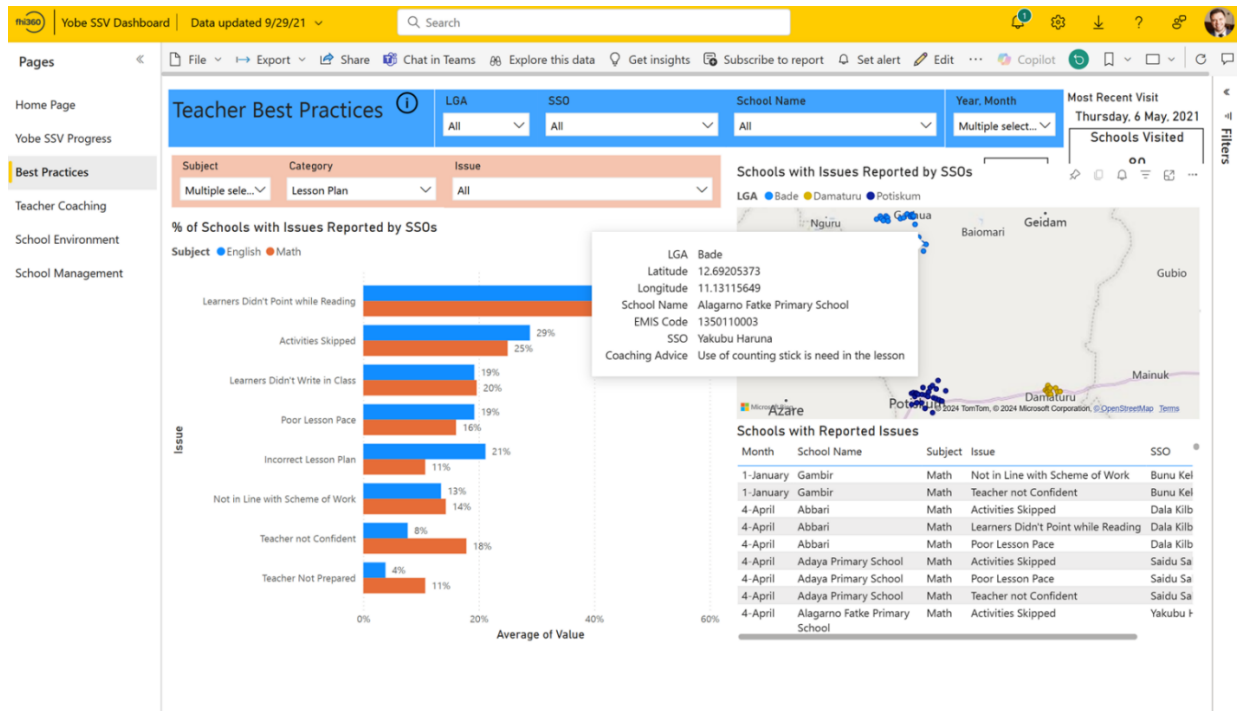


Fig 13: Example Humanitarian Data Dashboard

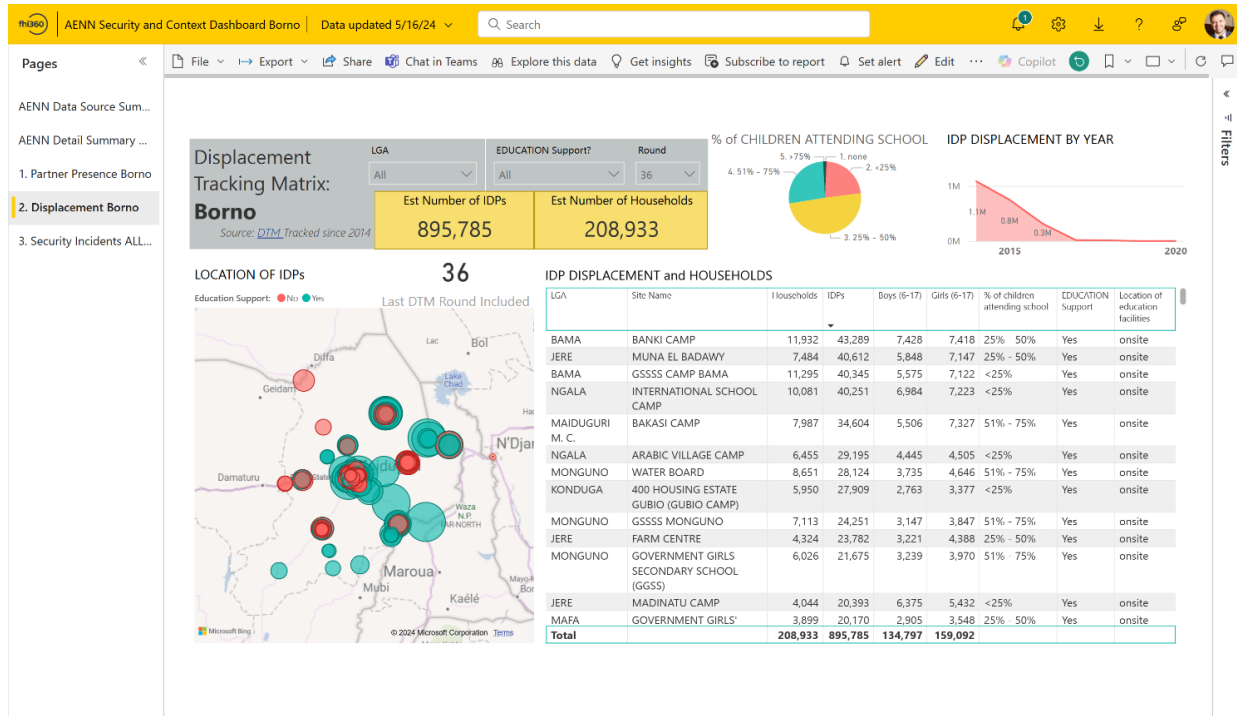


Fig 14: Example EMIS Dashboard

