



LIBSENSE Impact Report

Impact Evidence and Stakeholders' Testimonials from 2016-2024

November 2024



LIBSENSE
STRENGTHENING OPEN SCIENCE IN AFRICA

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Executive Summary

This report assesses the impact of the LIBSENSE project from October 2016 to September 2024, focusing on participants who have been involved in its activities during this period. LIBSENSE, which stands for "Library Support for Embedding NREN Services and e-Infrastructure," is a continent-wide initiative designed to expand open science in Africa using strategies and solutions tailored to the African context.

Over the last 8 years, LIBSENSE has been instrumental in advancing Open Science across several African countries through the development of infrastructure, policy, and practices. This report highlights 7 key impacts of LIBSENSE across various areas, outlines current barriers and threats, reviews the grassroots idealism that underpins the project and explores future directions, all based on our findings.

7 Key Impacts

- ▶ **Community Building:** LIBSENSE has emphasised the importance of collaboration and interdisciplinary approaches in librarianship and information science.
- ▶ **Empowerment:** LIBSENSE has empowered researchers by building their confidence and enhancing their skills.
- ▶ **Expanding Knowledge:** LIBSENSE has initiated and significantly enhanced the understanding of Open Science among African researchers, especially through workshops.
- ▶ **Mentoring:** LIBSENSE has provided significant mentorship to early career researchers.
- ▶ **Research Practices:** LIBSENSE has influenced researchers' publishing and dissemination decisions as well as its work and research practices.
- ▶ **Exposure/Influence:** LIBSENSE has expanded the exposure and influence of members through networking and financial support.
- ▶ **Laying Foundations:** LIBSENSE has promoted the adoption and implementation of Open Science policies and reshaped the focus and operations of NRENs towards supporting Open Science.

6 Critical Success Factors

- ▶ Building a community of action
- ▶ Sustaining advocacy on open science
- ▶ Creating a focal point for discussions/debates around open science
- ▶ Empowering and mentoring participants in the network
- ▶ Leveraging the power of the network
- ▶ Laying the foundation for ongoing change

5 Recommendations for Future Models

- ▶ Staying within the REN model but looking for best practices within the global context,
- ▶ Developing a framework for action based on what works in the current initiatives undertaken
- ▶ Becoming a standalone entity that has key strategic links to the RENs
- ▶ Retaining the loose networked structure with advisory groups and key stakeholders
- ▶ Working more closely with supra-African entities to attract larger funding opportunities

LIBSENSE has made substantial progress in promoting Open Science in Africa, demonstrating its potential to transform research and work practices and enhance the visibility of African scholarship. By addressing the currently identified challenges and building on its strengths, LIBSENSE can continue to drive significant advancements in Open Science across the continent.

Introduction

LIBSENSE¹, an acronym for “Library Support for Embedding National Research and Education Network (NREN) Services and e-Infrastructure”, is a continent-wide initiative to expand open science in Africa based on strategies and solutions that work in the African context. It is mainly funded by AfricaConnect², a large infrastructural program to enable “last mile” connectivity of African higher education and research institutions to existing research and education networks in Europe. More recently, funding has also been secured from the UK Foreign, Commonwealth & Development Office (FCDO) in Nigeria³ for specific initiatives undertaken at the national level in Nigeria, Ghana and Sierra Leone.

LIBSENSE was officially launched in 2017⁴ by the West and Central African Research and Education Network (WACREN)⁵ in partnership with two NGOs, Electronic Information for Libraries (EIFL)⁶ and Confederation of Open Access Repositories (COAR)⁷, and the University of Sheffield (UoS) Information School⁸. Two rounds of AfricaConnect funding have underpinned the establishment of this project and the network that supports it. With AfricaConnect2⁹ funding, LIBSENSE was able to establish the network with higher education (HE) librarians, key NREN personnel and other stakeholders such as HE academics and researchers, national and regional African associations interested in promoting open science, infrastructure providers, external agencies offering infrastructure solutions for open science and other EU actors active in this space. A major output of this first round of funding was a large-scale, three-region survey of institutional barriers and enablers of information management practices related to provision of green open access as reported by HE librarians¹⁰. Under AfricaConnect3¹¹ funding, LIBSENSE activities were organised into three foundational pillars: infrastructure support, capacity-building and policy development through which many further interventions and initiatives were planned and executed¹².

Table 1: List of activities, interventions and initiatives progressed through LIBSENSE from October 2016 through to September 2024

Activity Ref	Month/Year	Activity/Intervention	Focus of expected impact	Output(s) / Outcome(s)	Funding Source
2016-01	OCT 2016	Libraries in support of effective research in WACREN in collaboration with EIFL	Regional	Proposal to extend TANDEM national focal point scheme with librarian institutional focal points in the rescheduled TANDEM workshop and presented outcomes in the workshop	WACREN
2016-02	NOV 2016	TANDEM NREN Managers and Focal Points workshop	Regional	Librarians identified as Institutional Focal Points	TANDEM
2017-01	MAR 2017	Launch of LIBSENSE at the WACREN 2017	Regional	Formal launch of the project	WACREN

2017-02	AUG 2017	Conference Pilot survey on Institutional Enablers and Barriers Affecting the Evolving Role of Librarians in African Higher Educational Institutions	Continental	Presentation at Ubuntunet Connect 2017	WACREN
2018-01	NOV 2018	LIBSENSE Repository Workshop I	Regional	LIBSENSE Survey on Open Access Repositories & Librarians' Roles - Ubuntunet Alliance Region	AfricaConnect2
2019-01	MAR 2019	LIBSENSE Repository Workshop II		Open Access Repositories & Librarians' Roles - WACREN Region	AfricaConnect2
2019-02	APR 2019	LIBSENSE Repository Workshop III		Advocacy and Engagement Plans; Aggregation of Arabic Research Content - ASREN	AfricaConnect2
2019-03	DEC 2019	UCT-SPARC Africa Open Access Symposium		LIBSENSE AfREN Workshop Slides	
2020-	MAR 2020	WACREN 2020		Barriers and	AfricaConnect3

¹ For more information about the project, see: [LIBSENSE](#)

² For more information about this initiative, see: [AfricaConnect - European Commission](#)

³ For blog posts relevant to FCDO in Nigeria see: [UK in Nigeria | Foreign, Commonwealth & Development Office Blogs](#)

⁴ IFLA. (2021, April 7). [Guest Article: Connectivity and Cooperation: How RENs, Libraries and Universities Are Combining to Accelerate Open Science](#) « Library Policy and Advocacy Blog.

⁵ For more information see: [WACREN](#)

⁶ See: [EIFL |](#)

⁷ See: [COAR](#)

⁸ See: [Information School | The University of Sheffield](#)

⁹ See: <https://www.africaconnect2.net/Pages/Networks/Networks.html>

¹⁰ Abbott, P., Appiah, K., & Oaiya, O. (2020, June 8). Barriers and Enablers to Open Access Repository (OAR) Development and Management in African HLIs: Research from the LIBSENSE OAR Workshops in the UA, WACREN and ASREN Regions. Zenodo. <https://doi.org/10.5281/zenodo.3884974>

¹¹ See: <https://africaconnect3.net/>

¹² Abbott, P., Oaiya, O., & Kuchma, I. (2021, September 7). *LIBSENSE: Pan-African Library/NREN Collaborations around Open Science at the Institutional, National and Regional Levels*. <https://doi.org/10.5281/zenodo.5480295>

01				Enablers to Open Access Repository (OAR) Development and Management in African HLIs: Research from the LIBSENSE OAR Workshops in the UA, WACREN and ASREN Regions	
2020-02	JUN 2020	LIBSENSE Virtual workshop : Co-designing policies, repository infrastructures and services and strengthening open science communities in Africa		Introduction to LIBSENSE and Open Access and RDM in Benin, Burkina Faso, Cameroon, Côte d'Ivoire, Ethiopia, Ghana, Kenya, Malawi, Morocco, Mozambique, Nigeria, South Africa, Tanzania, Tunisia and Uganda	AfricaConnect3
2020-03	AUG 2020	Skills Profiles Development Workshop 1 (EN)		Co-produced workshop development process. 8 roles descriptors with relevant skills profiles.	AfricaConnect3
2020-04	SEPT 2020	UNESCO Global Consultation on Open Science Collaboration	Continental	LIBSENSE Statement on Open Science in Africa	
2020-05	NOV 2020	Skills Profiles Development Workshop (FR)		Journée francophone LIBSENSE	AfricaConnect3
2021-01	MAR 2021	Co-designing Open Access publishing infrastructures	Continental	Identifying the needs of African Open Access	

2021-02	MAR 2021	WACREN 2021	Regional	publishing communities LIBSENSE National Open Science Roadmaps Launched The LIBSENSE Research Agenda - Reporting on Past Activities and Plans for AC3	AfricaConnect3
2021-03	SEP 2021	LIBSENSE - RUFORUM Collaboration on OA in Agriculture	Continental	MOU	AfricaConnect3
2021-04	NOV 2021	Regional policy Workshop 1 - Ubuntunet Connect 2021 Collaboration with UNESCO and initiation of program on research assessment	Regional	A Compendium of Open Access/Open Science Policy Case Studies from African Higher Education Institutions	
2022-01	MAR 2022	LIBSENSE and DORA webinar on research assessment in Africa	Continental	Stakeholders agreed on the importance of research assessment in framing open science policies	
2022-02	MAR 2022	National Open Science Symposium - Côte d'Ivoire	National	National Open Science Policy Task Force UVCi Institutional Open Science Policy derived from LIBSENSE template	
2022-03	MAR 2022	Regional policy Workshop II - WACREN 2022	Regional	Update from the 2nd LIBSENSE Regional Policy Development Workshop.	AfricaConnect3
2022-04	APR 2022	LIBSENSE Open Science Symposium - Cote d'Ivoire	National	The importance of institutional open science policies and	AfricaConnect3

2022-05	JUN 2022	Collaboration with Public Health Africa on OA in Public Health	Continental	national roadmap were emphasised and agreed on Building capacity for open access publishing in public health: An Open Science webinar from LIBSENSE & Public Health Africa	
2022-06	AUG 2022			Open access publication of public health research in African journals	
2022-07	AUG 2022	LIBSENSE National Symposium - Ghana	National	OS input into national STI policy revision	FCDO
2022-08	NOV 2022	LIBSENSE National Symposium -Tunisia	National	Plans to review national policies, action plans, and roadmaps to support Open Science principles.	AfricaConnect3
2022-09	NOV 2022	LIBSENSE National Symposium - Botswana	National	Draft Open Science and Open Data policies	AfricaConnect3
2022-10	NOV 2022	Collaborative activities with UNESCO	Continental	Checklist for universities on implementing the UNESCO Recommendation on Open Science	
2022-11	DEC 2022	LIBSENSE - RUFORUM Workshop @ RUFORUM AGM - Harare, Zimbabwe	Continental	Validation of the Needs Assessment for Open Data and Knowledge Repository	AfricaConnect3
2023-01	FEB 2023	LIBSENSE-RUFORUM Webinar on Open Science and RDM	Continental	Needs Assessment Survey	AfricaConnect3
2023-02	JUN 2023	Collaboration with Public Health Africa	Continental	Open publishing of public health research in Africa: an	

				exploratory investigation of the barriers and solutions	
2023-03	AUG 2023	Sierra Leone Open Science Symposium	National	Open Science Policy Task Force	FCDO
2023-04	SEP 2023	LIBSENSE Open Science Symposium - Nigeria	National	Model Open Science Policy of Nigeria	FCDO
				Common Metadata Schema for Nigerian Repositories v1	
				Advocacy report - Shaping Quality Assessment and Open Science Practices in African Research	
2023-05	NOV 2023	LIBSENSE-CONNECT 2023	Regional	Infrastructure development capacity building	AfricaConnect3
2023-06	NOV 2023	LIBSENSE - RUFORUM Workshop @ RUFORUM AGM - Yaoundé, Cameroon	Continental	WUN Blog on LIBSENSE-RUFORUM Collaboration	AfricaConnect3
2024-01	JAN 2024	LIBSENSE Open Access Book Project	National	Triggered a pilot program for converting printed books to digital formats in Nigeria,	FCDO
2024-02	JAN 2024	LIBSENSE - RDM Workshop - Nigeria	National	National coordination work plans, ECR network chapters established in Nigeria and Ghana	FCDO
2024-03	MAR 2024	Workshop on National Guidelines and Implementation Plans - Nigeria	National	Implementation plans	FCDO
2024-04	MAR	Research,	National	Fostered collaboration and	FCDO

	2024	Development & Innovation Summit		streamlined RDI with highlights on the need for a cohesive national strategy.	
2024-05	AUG 2024	LIBSENSE Leadership Engagement Meeting	Regional	Highlighted leadership role in advancing research excellence and enhanced understanding of DOIs and PIDs.	AfricaConnect3
2024-06	AUG 2024	Regional policy Workshop III	Regional	National PID Strategy Task Force	AfricaConnect3
2024-07	AUG 2024	LIBSENSE-CONNECT 2024	Regional	National Metadata Profile Template for Repositories	AfricaConnect3
2024-08	SEP 2024	Coalition for Open Access Publishing of Public Health in Africa (COPPHA)	Continental	Capacity building for sustainable and accessible publishing of public health research.	AfricaConnect3

The outputs from these activities demonstrate significant gaps in the achievement of open science objectives as set out by the UNESCO recommendation on open science . For example, a compendium of case studies collated to inform one regional policy development workshop indicated that most institutions active in this area had not yet conceived viable open science policies, even though some work had been done on open access policy development, e.g. Covenant University’s open access initiative and University of Cape Town libraries’ open publishing platform . LIBSENSE’s work on national open science roadmaps is also still at a nascent level, however work is progressing on national policies in Botswana, Sierra Leone, Côte d’Ivoire and Nigeria. The impact of all of these activities and initiatives has been difficult to assess since there have been a number of different theories of change (ToCs) that have underpinned it over time , thus it is difficult to trace the outputs, the outcomes and inevitably, the impacts over time. Additionally, LIBSENSE activities and interventions were also taking place at different levels - continental, national, regional and institutional with both bottom-up (grassroots mobilisation) and top-down (executive-level influencing) foci on action. This report is the first attempt to gauge the impact of this work from the time of its inception until the end of the AfricaConnect3 funding cycle. In the following section, we discuss the methods used to provide evidence of the impact of the project.

Methodology

Over the period from October 2016 to August 2024, LIBSENSE has demonstrated potential impacts through its network of stakeholders. However, to date, no comprehensive impact assessment has systematically documented these achievements. This assessment report represents the first step in evaluating these impacts and helping to shape future theories of change (ToCs) for the initiative. Successive initiatives and actions undertaken by stakeholders in the LIBSENSE network were underpinned by separate goals and objectives without an overarching ToC. Some of these activities resulted in tangible outputs and/or measures of engagement, e.g., number of workshop attendees or feedback from participants or a focus group. However, the outcomes have not been systematically documented except in documentation fed back to the project funders. Tracing the impact of ICT4D projects can be difficult since it is not always obvious that a particular outcome was the result of an intervention nor is it easy to understand how that outcome may have led to a particular impact. Therefore, in this study, it was decided to focus on key stakeholders involved in the LIBSENSE project over the chosen time period and to extract their 'stories' of impact through narrative interviews. Following are the details of the approach used in this impact study.

Main Objectives

Two main objectives were established for the study:

1. To gather evidence of impact through qualitative narrative interviews with key stakeholders in the LIBSENSE community who have actively participated over the past seven years;
2. To analyse and evaluate key lessons learned, critical success factors, outcomes, and existing barriers/enablers that emerge from the interviews.

Data Collection

The data for this research was collected through 13 narrative-type interviews, which are unstructured, in-depth qualitative interviews employing a storytelling and listening communicative style. This interviewing style was chosen to encourage reflective responses to exploratory questions about the ways in which the interviewees' involvement in the LIBSENSE initiative has influenced them at a personal and/or professional level and to reflect on how LIBSENSE activities may have affected the wider research context of which they are a part. Participants were asked to identify specific episodes, occurrences, or events demonstrating these effects and to reflect on any lessons learned or changes in their or other colleagues' ways of working or engaging with open science.

The researchers collaborated with the partner organisation WACREN to identify suitable participants for this study. Participants were selected from stakeholder groups involved in potential areas of impact, including associations of vice chancellors and rectors of higher education institutions, university librarians, directors of research, policymakers, institutional open science champions, and members of the LIBSENSE network of experts. Additionally, early-career postdoctoral fellows, NREN focal points, and infrastructure providers were included to identify the impacts of their experiences with LIBSENSE activities. The final set of 13 participants included 3 REN representatives, 4 ECR experts in research data management (RDM), 3 international collaborators and 3 senior academics all connected in some way with open science initiatives in Africa through the LIBSENSE project.

All interviews were conducted online using video conferencing software (Google Meet or Zoom, depending on the interviewee's preference). The interviews were automatically transcribed using Tactiq, with manual revisions performed by the project's research assistant.

Data Analysis

The transcriptions were analysed using thematic analysis to identify key lessons learned, critical success factors, outcomes, and existing barriers/enablers related to the interviewees' experiences with LIBSENSE. The results of this analysis are documented in this report.

Key Areas of Impact

This section provides a detailed exposition of the main areas of impact realised by the LIBSENSE project throughout the study period as expressed by the key stakeholder participants. From community building to advocacy and infrastructural development, each area of impact is supported by testimonials from members directly involved in the project. These stories illustrate how LIBSENSE has not only facilitated awareness, collaboration and knowledge-sharing but also empowered participants to advance Open Science in Africa.

Community Building

LIBSENSE has played a crucial role in fostering a sense of community and collaboration among librarians, researchers, and NREN service providers across Africa. By bringing together diverse stakeholders, especially in its workshops, LIBSENSE has promoted interdisciplinary approaches and strengthened the impact of their activities.

LIBSENSE bringing librarians to Open Science discussions.

One of the most notable impacts of the LIBSENSE project has been its success in bringing HEI librarians into the forefront of open science discussions. By embedding librarians in these conversations, LIBSENSE has leveraged their influential position on university campuses to promote open science practices more effectively.

Testimonials:

So I think to me what was most valuable which remains until today is the fact that we managed to bring librarians into this space. [...] And when LIBSENSE brought librarians into the NREN space that was a big move because librarians do have a lot of influence on university campuses for many reasons. Mainly because libraries are like the centre place where everybody has and so often the needs of librarians are advanced and so, if you get librarians on your side, I think it's easy to push the rest of the discussions.

Daniel, NREN

You know, libraries or librarians are catalysts for promoting open science.

Hannah, Librarian

I got more than I expected. Actually, I love the name LIBSENSE. I didn't know, I didn't really know the full meaning initially, but when I saw LIBSENSE, I just [thought] 'look, okay, make sense out of libraries'. Now there's an organisation that will help us to make sense out of the Library. So it's LIBSENSE.

Emma, Lecturer and Librarian

An example of one such initiative from HEI librarians was the forging of a collaborative agreement between the librarian association, Consortium of Academic and Research Libraries in Ghana (CARLIGH) and the NREN organisation in that country, the Ghanaian Academic and Research Network (GARNET). According to their signed memorandum of understanding (MOU), “they would cooperate towards the delivery of relevant infrastructure and interoperable open scholarly services to enhance the delivery of research, teaching and learning in higher education institutions in Ghana”¹³. This was envisioned to be a LIBSENSE-supported activity that would develop research infrastructure to deliver library services in the university communities served by CARLIGH.

Another library association, this time based in Uganda, the Consortium of Uganda University Libraries (CUUL), also provides a good example of increasing HEI librarian involvement in LIBSENSE-brokered collaborations. First, they increased their association with the Ugandan NREN Research and Education

Network for Uganda (RENU) and leveraged the LIBSENSE network to host an e-resources portal in 2020. More recently, they formalised their relationship with the NREN following the Ghanaian example¹⁴.

In Côte D'Ivoire, HEI librarians at the Université Virtuelle de Côte d'Ivoire (UVCI) have been driving the agenda on Open Science through annual Open Access Week events¹⁵ and other initiatives, for example their National Open Science symposium held in 2022¹⁶, which have led to the institution of the only open science policy in the country¹⁷. UVCI have collaborated with the LIBSENSE community, WACREN and their national NREN, le Réseau de Télécommunication pour l'Enseignement et la Recherche (RITER), in progressing these outcomes.

Through these efforts, LIBSENSE has not only brought librarians into open science discussions but has also empowered them to be key drivers of change within their institutions, thereby fostering a stronger, more collaborative open science community.

LIBSENSE highlighting the importance of collaboration and interdisciplinary approaches in librarianship and Information Science

One of LIBSENSE's primary goals has been to facilitate collaboration between NREN (National Research and Education Network) service providers and librarians. In other words, to enhance the work of librarians and researchers by providing support through NREN services and infrastructure, thereby promoting a more interconnected and interdisciplinary approach within the field of librarianship and information science in Africa. Participants highlighted how LIBSENSE facilitated meaningful engagements between these different groups throughout the years.

Testimonials:

In terms of the value that it brought to my own practice, I was able to find additional meaning-making in my own practice as a librarian. But also, what I felt was more important is that interdisciplinarity is crucial for... Or rather, collaboration is crucial for interdisciplinarity. The very nature of librarianship, the very nature of information science is embedded in interdisciplinarity. And so this interdisciplinarity can only flourish if we have more collaborations. And that collaboration must only be within particular geographic areas, but rather it must be intra-geographic, if there's such an expression. But across borders, across continents.

Hannah, Librarian

But the primary goal of LIBSENSE at the time was to basically bring NREN service providers in touch with librarians. To be able to provide NREN services or infrastructure that could improve or enhance the work of librarians and researchers. So we found that very interesting because up until then we hadn't really been engaging with that cadre of the tertiary education community. So pretty much from the onset when we understood what the LIBSENSE initiative was all about and that they were actually relying on NREN service providers to be actively engaged in this, really a meeting of NRENs and librarians. So we were pretty much on board from the very beginning.

Andrew, NREN

¹³ See LIBSENSE news item "GARNET and CARLIGH agree to cooperate to enhance Open Scholarly Infrastructure" at: <https://libsense.ren.africa/en/ghanaian-research-and-education-network-garnet-and-the-consortium-of-academic-and-research-libraries-in-ghana-carligh-agree-to-cooperate-to-enhance-open-scholarly-infrastructure/>.

¹⁴ See RENU news item "RENU Signs MoU with CUUL" at: <https://renu.ac.ug/renu-signs-mou-with-cuul/>.

¹⁵ For more information see this news item at the UVCI website: <https://openaccessweek.uvci.edu.ci/main/>.

¹⁶ UVCI webpages about the National Open Science symposium on the theme "la Science ouverte, une opportunité pour booster la recherche, l'innovation et le développement de la Côte d'Ivoire" - Open Science, an Opportunity to Boost Research, Innovation and Development of Côte d'Ivoire: https://colloque.uvci.edu.ci/symposium/Main/contexte_et_objectifs.

¹⁷ For more information on the Côte D'Ivoire national open science policy development see: <https://libsense.ren.africa/en/cote-divoire-braces-up-to-implement-unesco-recommendations-on-open-science/>.

One of the key catalysts towards instituting LIBSENSE was a commitment to pursue tangible actions towards sustaining the advocacy work of a precursor project, TANDEM. [TANDEM](#) was an e-infrastructure project sponsored by the European Commission, some of whose key actors also became involved in LIBSENSE. A key commitment on the conclusion of TANDEM was to build an NREN grassroots community that would include librarians so as to build sustainable pathways of influence with policymakers, researchers, educators and other key stakeholders. A workshop intending to kickstart this community was held in Abuja, in November 2016 (item 2016-02 in Table 1) at which point HEI librarians indicated the necessity to improve their information management capabilities in the light of the technological changes that green open access would bring. Another influential input was the identification of a need for repository infrastructure in the Final e-Infrastructure Success and Uptake Monitoring Report with recommendations¹⁸ of a complementary e-Infrastructure EU-sponsored project, [Sci-GAIA](#). These issues became the backbone of initial LIBSENSE workshops and key drivers of the project. The first pilot survey (item 2017-02 in Table 1) was run in order to gain more insight into this specific problem. Based on the findings of that pilot, the broader large-scale 3-region survey and workshop initiative was instantiated (items 2018-01, 2019-01 and 2019-02 in Table 1). These workshops were instrumental in bringing the NREN communities into conversation with HEI librarians. Through other LIBSENSE-themed workshops, HEI librarians constituted a regular presence at WACREN Conferences, and all the National Open Science Symposia that have been NREN-Library consortia collaborations. Additionally, subsequent REN workshops, independent of LIBSENSE, have sought to incorporate HEI librarians' inputs, for example, Ubuntunet Alliance Conferences and workshops¹⁹, Eko-Konnect user conferences²⁰, the GARNET Conference and RENU & CUUL collaborations.



Figure 1: ASREN representatives in conversation with librarians in Tunis LIBSENSE workshop in 2019.

¹⁸ The report can be viewed at:

<https://ec.europa.eu/research/participants/documents/downloadPublic?documentIds=080166e5b21838bf&appId=PPGMS>

¹⁹ An example of a call for proposals for one of these workshops can be found here: <https://ubuntunet.net/projects/africaconnect/call-for-proposals-from-librarians-to-participate-in-open-science-training/>.

²⁰ For examples, please see the Eko-Konnect website: <https://2024.eko-konnect.org.ng/>.



Figure 2: LIBSENSE Open Science Symposium Nigeria in 2023

By fostering an interdisciplinary and collaborative approach, LIBSENSE has strengthened the capacity of librarians and NRENs to work together and to contribute to the broader goals of Open Science in Africa.

LIBSENSE workshops as a space for facilitating networking among participants.

LIBSENSE workshops have significantly impacted members by providing a valuable platform for networking, enabling participants to connect, share experiences, and collaborate with peers from diverse regions and backgrounds. Participants highlighted the transformative effect of these workshops on their professional networks and personal growth, emphasising the value of cross-border collaboration facilitated by LIBSENSE activities.

Testimonials:

Professionally, it's allowed me to collaborate with the countries that were not partner countries [with my organisation] at that moment. For example Nigeria, Sierra Leone, some French speaking African countries. So it was useful to know what's going on and get connected to those people [...] especially when LIBSENSE started, there was a lot of engagement and it was a network of 300 plus people. What was also valuable was that we could have conversations going on in three languages: English, French, Arabic.

Claire, Open Access Manager

I didn't really know that there was a community, you know, you have a community of practices that people are actually net deep in these issues. These are people I could connect with and I think this is what LIBSENSE has provided for me, that platform to be able to interact with other people. So we have colleagues in Ghana that came over in March, you know, [and we] see that we are also having similar issues and how to discuss very similar issues and challenges, discussing with them about how to overcome them.

Rebecca, Researcher

Professional experience in the sense that I've been able to build a professional network of RDM Advocate people that also think like me that I never even knew they existed. And I met them through LIBSENSE, you know, [...] and then at the end of the day, I was able to build a professional network of RDM advocates

LIBSENSE has illustrated practically the power of networks. Opportunities for networking and bringing together different communities of practice with stakeholders were mostly achieved through LIBSENSE workshops collocated with Regional REN conferences, most often the UbuntuNet Alliance UbuntuNet Connect and WACREN annual conferences. For example, the first regional workshop in Zanzibar (item 2018-01 in Table 1) brought together HEI librarians and NREN representatives from Eastern, Southern and West and Central Africa and pan-African organisations such as the Association of African Universities (AAU) and African Library and Information Associations and Institutions (AfLIA). The workshop was an opportunity for all the varied voices in this diverse community to have their say. The follow-up in Accra, Ghana (item 2019-01 in Table 1) included focus groups involving HEI librarians and academics from different parts of Africa discussing the challenges of green open access.

Some of these workshops covered specific key objectives of LIBSENSE especially in the AfricaConnect 2 phase of the project. In this phase, LIBSENSE developed a focus around policy development to support the advocacy work being done. In 2022, in Abidjan, Côte d'Ivoire, a [regional policy development workshop](#) themed "Open Science and Research Assessment Reform," took place in Abidjan during the WACREN 2022 Conference week. The event attracted officials from the European Commission, the African and Malagasy Council for Higher Education (CAMES), the Conférence des recteurs des Universités Francophones d'Afrique et de l'Océan Indien (CRUFAOCI), the Committee of Vice Chancellors of Nigerian Universities (CVCNU), the Association of West African Universities (AWAU), and national RENs, along with vice-chancellors, deputy vice-chancellors, rectors, deans, and senior librarians from Francophone and Anglophone countries in the WACREN region. The event allowed senior executives representing different university communities in West Africa to convene and discuss open access/open science policy implementation issues in their respective institutions (item 2022-03 in Table 1). The day concluded with an [updated compendium](#) of case studies showcasing initiatives and activities by institutions and countries to advance open science through policy development and implementation. Librarians and key policymakers were able to engage with international experts on research assessment reform, e.g. the (San Francisco) Declaration on Research Assessment (DORA) (item 2022-01 in Table 1), and international open science specialists working on the UNESCO recommendation on open science.

In association with the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) network, which includes membership from 163 African institutions of higher education specialising in Agricultural studies in 40 countries, LIBSENSE held workshops on Research Data Management in Harare, Zimbabwe (item 2022-11 in Table 1) and Yaoundé, Cameroon (item 2023-06 in Table 1), connecting issues around open science/open data with this academic community of practice.

LIBSENSE in collaboration with EIFL and COAR held a repository workshop that took place in November 2018 in Zanzibar at the UbuntuNet Alliance Conference. The workshop aimed to build a community of practice for repositories in Africa and to establish a collaborative agenda between libraries and research and education networks (RENs) focused on repositories and value-added services.

Through these networking opportunities, LIBSENSE workshops have enabled participants to share diverse experiences and approaches, learn from one another, and collaboratively address common challenges. This has led to a more connected and empowered community of professionals dedicated to advancing open science across Africa.

Empowerment

LIBSENSE empowering researchers

LIBSENSE has significantly contributed to the personal and professional empowerment of researchers and librarians. By providing opportunities for collaboration, knowledge sharing, and skill development,

LIBSENSE has enabled participants to confidently engage in discussions, advocate for open science, and implement best practices in research data management (RDM).

Testimonials:

And then at a personal level [LIBSENSE] has built my confidence, as an expert in RDM. Because now I have a better understanding, I've been able to collaborate, especially working with Dr. Pam. [...] So when I talk about RDM now I'm able to bring in, my experience as in Nigeria and the perspectives from international views, shared by Dr. Pamela and other literature that she's been able to share with us, you know, so it's kind of balance, kind of view and then perspective on research generally and it's I think it's it's a big thing for me personally.

Emma, Lecturer and Librarian


so what LIBSENSE have done for me is to, like I said, enrich me and enrich my capacity to be able to carry out this activity. [...] LIBSENSE activities, like I said, [they have] built my capacity so I can engage at the capacity level or even engage with these major stakeholders in the institution from a place of evidence and being informed, [improving] my capacity building for the workshops I'm doing; and also my engagement with them and the activities that I'm currently on with the knowledge I've [gained] from LIBSENSE actually.

Rebecca, Researcher

The ability of LIBSENSE to empower members is occurring mostly through the activities and involvement of early career researchers (ECRs) in the project. This is most evident in the recent research data management (RDM) workshops in Ghana and Nigeria (item 2024-02 in Table 1) from which two ECR networks were launched advocating action to support grassroots RDM initiatives in the ECRs' respective institutions²¹. One of these activities resulted in the publication of a white paper on research assessment reform. This was an output that evolved from the FCDO-sponsored Open Science Symposium in Nigeria in 2023 (item 2023-04 in Table 1). An initial draft was created with assistance from experts from the Directory of Open Access Journals (DOAJ), which was a comparative analysis report on quality assessment systems and a proposal for transitioning to Not-for-Profit indexing services. An ECR from the Nigerian ECR network, working as a post-doctoral researcher attached to WACREN, developed the paper into the published output on "Shaping Quality Assessment and Open Science Practices in African Research"²².

²¹ Information about the Nigeria ECR RDM network and the Ghana ECR RDM network can be found at: <https://libsense.ren.africa/en/nigeria-ecr/> and <https://libsense.ren.africa/en/ghana-ecr/> respectively

²² White paper on "Shaping Quality Assessment and Open Science Practices in African Research" available at: <https://doi.org/10.5281/zenodo.10710010>.




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Figure 3: RDM activities initiated by ECR networks spawned by LIBSENSE.



Figure 4: ECRs taking on leadership and advocacy roles.



Figure 5: LIBSENSE RDM workshop in Lagos, Nigeria, January 2024



Figure 6: LIBSENSE RDM workshop in Accra, Ghana, January 2024

Through these experiences, LIBSENSE has not only enhanced the ECRs' confidence and skills but also enabled them to become more effective advocates for open science. This empowerment has led to more informed, capable, and confident researchers and librarians who can make significant contributions to their environments.

Expanding Knowledge

LIBSENSE has enabled opportunities for blending the global with the local, introducing international perspectives and solutions to address national/regional issues about Open Science in Africa, but doing so not with a view to impose external practices, but rather to allow for local adaptations. The involvement of EIFL and COAR as founding partners of the project helped to mobilise action by African-based HEI librarian consortia and sharpen the focus on repository development to support green open

access²³. Infrastructural innovations were introduced through strategic partnering with La Referencia (a Latin American network of open access repositories), the National Institute of Informatics (NII) in Japan (a research institute dedicated to the study of creating solutions to make scholarly communications publicly available) and OpenAIRE (an EU-based non-profit organisation promoting open science through its public services)²⁴. On reforming research assessment, LIBSENSE also subscribed to the principles behind movements like DORA, the Coalition for Advancing Research Assessment (CoARA) and the Barcelona Declaration on Open Research Information. These were all a measure of this "think global, act local" mentality.

LIBSENSE shaping and enhancing understandings of Open Science in Africa

Through its activities over the years, LIBSENSE has played a crucial role in deepening the knowledge and understanding of Open Science across Africa. This has not only broadened participants' perspectives but also helped establish Open Science as a national priority in some African countries, most notably where National Open Science Symposia have been held (e.g. items 2022-02, 2022-07, 2022-08 and 2022-09 in Table 1). As a result of these activities, National Open Science Roadmaps²⁵ have been developed that align with the UNESCO recommendation on Open Science²⁶, for which the LIBSENSE community prepared its own statement on African open science values and principles (item 2020-04 in Table 1).

Testimonials:

It's shaped my understanding about open science. I knew about open science, I was involved in a number of initiatives before but I think it just helped shape my understanding of the concepts and principles.

Carl, Senior Librarian

In enhancing I'd say, enhancing, I knew about open science or open access, that we have to make everything open, make everything accessible. And so LIBSENSE, I would say, this knowledge or understanding got enhanced because you get to go to these workshops, you get to meet people that are directly involved in doing things like this.

Daniel, PhD and NREN

I think LIBSENSE really advocated for the need for Open Science and made the case that it's something that should be practised on the national level. So before it was really like a bottom up initiative of libraries or institutions. At least it became a really, almost, like a national priority. I think that's useful. And the pool of experts. So if there is a need to find an expert nearby, I think there are many people knowledgeable about Open Access and Open Science now.

Claire, Open Access Manager

By fostering a deeper and more comprehensive understanding of Open Science, LIBSENSE has empowered participants to integrate these principles into their work, advocate for their adoption, and drive meaningful change at both the institutional and national levels. This has not only improved their research and work practices but also contributed to the collective advancement of Open Science across Africa. One of the vehicles for translating the global to local was through structuring LIBSENSE around

²³ Founding member contributions to LIBSENSE can be found in this article: IFLA. (2021, July 4). LIBSENSE: Building Library/NREN Collaborations around Open Science. <https://www.ifla.org/publications/libsense-building-library-nren-collaborations-around-open-science/>

²⁴ More information on LIBSENSE international alignments to progress the open science movement in Africa can be found at: https://libsense.ren.africa/wp-content/uploads/2021/09/LIBSENSE_OpenAIRE.pptx.pdf.

²⁵ Policy templates can be found at: <https://libsense.ren.africa/en/open-science/national/>.

²⁶ Full access to the recommendation is available at: <https://www.unesco.org/en/open-science/about>.

three pillars, Infrastructure, Policy Development and Capacity Building and supporting these with working groups during the AfricaConnect 3 funding phase. The Policies working group, for example, comprised both international and African expertise and worked together as a powerful force to influence policy and shape the evolution of Open Science in Africa. The work of synthesising global and local perspectives on open science in Africa continues with the network of experts (NOE)²⁷ constituted after the discontinuation of the specific working groups. The local/global dynamic was also seen very much as a knowledge exchange opportunity, rather than a transfer of knowledge as evidenced by these testimonials:

Testimonials:

It gave me a much better understanding of the African context... it really allowed me to have a much better understanding of the real... open science landscape, the issues that African institutions, in particular, and researchers are dealing with which tend to be a little bit different, certainly than the global North, but could potentially be similar to other Global South regions. That was for me the biggest impact... a much better understanding and knowledge and grasp of the African situation around open science, it's been an opportunity to bring that into [my organisation's] discussions.

Florence, International Association Executive

I was able to appreciate on a deeper level the challenges facing Africa when it comes to open access, when it comes to the sharing of knowledge, when it comes to collaborating with researchers in the developed world. And I felt that if we need to realise the 2030 UN SDGs, the Sustainable Development Goals, then more needs to be done to promote open science, open research, open education, right?

Hannah, Librarian (International)

Professionally, it's allowed me to collaborate with the countries that were not [my organisation's] partner countries at that moment. For example Nigeria, Sierra Leone, some French speaking African countries. So it was useful to know what's going on and get connected to those people. And personally, I think it was also a rewarding experience because this was a successful collaboration, we achieved the goals we set up at those times.

Claire, Open Access Manager (International)

LIBSENSE initiating dialogues around Open Science

LIBSENSE has successfully facilitated discussions on various aspects of Open Science, promoting collaboration and understanding among different stakeholders. These dialogues have been essential in raising awareness and advocating for the integration of Open Science practices across institutions.

Testimonials:

I think LIBSENSE has played a very big role in initiating dialogues around open science and all issues around it. And it has managed to bring together librarians and people from the decision education networks to get to talk about things that matter to both of them.

Daniel, PhD and NREN

And in fact even for us the whole idea of open science was very new to us even as NRENS. We didn't really know much about Open science and making research outputs visible globally through infrastructure that could be fair compliance. So again, we're not researchers, we're not librarians, but we understood the importance of being able to provide the infrastructure that could enhance the work of librarians in these areas of Open Science and making research outputs fair. But then again we found that with our community of practitioners, there was a lot of awareness that they didn't have about

²⁷ For further information see: <https://libsense.ren.africa/en/network-of-experts/>.

open science and about properly utilising infrastructure in a way that their scholarly and research outputs could be visible globally.

Andrew, NREN

We're all trying to move RDM forward, Open Science, and the issue of research assessments reform, research infrastructure, and policy issues, governance structure, and all these conversations are so ongoing in various campuses as a result of LIBSENSE effort and that gave us that platform to bring like minded [people] together.

Emma, Lecturer and Librarian

By initiating and sustaining these dialogues, LIBSENSE has played a fundamental role in enhancing the collective understanding of Open Science. These conversations have not only increased awareness but have also promoted the adoption of best practices and fostered a collaborative environment. These dialogues and discussions continue to be promoted through LIBSENSE-DISCUSS, a WACREN-hosted Listserv mailing list dedicated to general discussion topics relevant to the whole network. Sample topics include notifications of capacity-building workshops, release of important reports/white papers, calls for grant proposals, requests for research participation and so forth.

LIBSENSE workshops as a space for sharing knowledge.

The workshops organised by LIBSENSE have enabled participants to learn from each other's experiences and mistakes, thus enhancing their understanding of how to utilise open infrastructure effectively. These interactions have opened up, for example, new research opportunities and helped shape participants' perspectives on Open Science.

Testimonials:

Obviously being an NREN, we were more involved with the infrastructure working group. So we became part of that working group and what we tried to do within that working group was to have a series of workshops and activities that would make people more aware of how they could best utilise infrastructure that they had, or work with open infrastructure to enhance practice. And in doing that [...] [we looked] at areas such as persistent identifiers and all of that infrastructure because they were also very key bits of infrastructure that could make visibility of African research outputs more visible globally.

Andrew, NREN

And it was an opportunity for us as early career researchers to learn from each other's experiences and mistakes. And I think it was a good platform that LIBSENSE created for me as a person.

Ryan, Librarian

So all of my knowledge has been built since that time from my interactions with people and organisations. So I'm very grateful to the core members, you know, EIFL, Iryna, Kathleen, Pam, you know, I'm confident they in many ways shaped my understanding of this. And then of course, I brought the NREN perspective and the fact that we also had appeared in Europe.

Robert, NREN

Through these workshops, LIBSENSE has effectively provided a space for sharing knowledge, enhancing participants' understanding of Open Science, and fostering a collaborative environment that encourages exploring new research areas, establishing cross-border collaboration and making African research outputs more visible.

Mentoring

LIBSENSE has embraced the idea of investing in early career researchers (ECRs) as potential future influential scholars and research leaders. This coincides with a continent-wide emphasis on building African research capabilities²⁸. There is thus an emphasis on increasing capacity building and leadership opportunities for ECRs. Through postdoctoral research contracts, LIBSENSE has been forging opportunities to help ECRs build research trajectories.

LIBSENSE offering mentorship to early careers researchers.

Through participation in LIBSENSE projects and interactions with experienced mentors, early career researchers have gained valuable insights into research ethics, data management, and open science practices. This mentorship has helped them improve their research skills, gain confidence, and contribute more effectively to their academic communities.

Testimonials:

Apart from the fact that I need to publish my own research and all that, I also need to be able to help other researchers and all that. So sometimes participating in research in LIBSENSE projects, in webinars and other things have been very helpful. For instance, you come across a topic that is quite novel to you or quite new to you and you pick it.

Ryan, Librarian

And so the first challenge I had that actually helped shift my experience and understanding was [with] Dr. Pam. [...] I should do the analysis of the responses and then write a report. Okay, so victory for me, because the closest I've had it analysing or writing a report was during my PhD. And then, when I learned a lot from her, because she was able to patiently, you know, guide me on how to do analysis better, you know, then improve all my report writing and then even the presentation, you know, something as new as a PowerPoint presentation, and how to make it really engaging and then you tell the story from your data and everything. So I was able to learn that in collaboration with Dr. Pam working on the LIBSENSE project. So I enjoyed all that and I had to like sometimes go back to study so that will be able to like do it well, and then the patience I mean, so I think one big thing I've been able to take out of LIBSENSE project is mentoring, you know, I was able to get a mentor, I was able to come away a professional and associating to a group, RDM group and then the exposure, the platform for me to speak on RDM.

Emma, Lecturer and Librarian

Through its mentorship initiatives, LIBSENSE has effectively supported the professional growth of early career researchers both directly, by mentoring its participants, and indirectly, as these participants mentor their students and other researchers using the knowledge gained through LIBSENSE.

²⁸ See, e.g., this Vitae report on the topic: <https://www.vitae.ac.uk/vitae-publications/report-path-to-research-leadership-in-africa-final-feb-20.pdf/@@download/file/Report%20-%20Path%20to%20Research%20Leadership%20in%20Africa%20-%20FINAL%20-%20Feb%20'20.pdf>.



Figure 7: One of the LIBSENSE postdoc researchers giving a presentation at the Nigeria Library Authority Association Conference 2024

Research Practices

The original vision of LIBSENSE was to work synergistically with three ‘communities of practice’, the HEI librarians, NREN representatives and researchers. During the AfricaConnect2 funding period, the key emphasis was on the first of these communities of practice through advocacy work targeted towards HEI librarians (e.g. items 2016-01, 2016-02, 2018-01, 2019-01, 2019-02, 2020-03 and 2020-05 in Table 1). In the AfricaConnect3 funding phase, the emphasis shifted to policymakers, which became more relevant to achieving the goals of the initiative given the findings from the large-scale three-region survey of barriers and enablers of HEI librarians’ open science capabilities (item 2020-01 in Table 1). Recently, there has been more activity geared towards ECRs as explained in the previous section. Some impacts in this latter area as perceived by the interviewees are presented below.

LIBSENSE influencing publishing/dissemination decisions.

Through its initiatives and workshops, LIBSENSE has empowered researchers to make informed decisions about how and where to publish their work. This includes understanding the benefits of Open Access, recognising credible journals, and utilising institutional repositories to increase the visibility of their research outputs. One very useful artefact created by network members was the Compendium of Open Access/Open Science Policy Case Studies from African Higher Education Institutions designed to highlight successful examples of open access/open science initiatives within the continent in both Anglophone and Francophone countries²⁹.

Testimonials:

I did a publication, I think about a year ago around this time, and I came across things that we talked about... [that] I knew maybe because from LIBSENSE and similar initiatives. So we were asked questions like, 'do you want this paper to be published as Open Access or not?' These are questions that I did not encounter on a personal level before [...] so if you look at the whole research cycle, not looking at it from my point of view of conducting research, but from the dissemination point of view, I would say these are things that I discussed in LIBSENSE and in similar initiatives and I have encountered on a personal level now.

[...]

People are more aware and people do understand the various options that are there for them to publish. So from the research practice point of view, I can't say much, but from the dissemination point of view, I think there is a lot that has happened. That's why there's been a huge proliferation of institutional repositories... Now they all have digital digital identifiers and I think that space has been a lot that has happened.

Daniel, PhD and NREN

Yes, building capacity in certain areas like identifying credible journals as against predatory journals. Through LIBSENSE, I have also built capacity in publishing in diamond open access journals. I mean that I'm able to publish in good credible Open Access journals without paying anything. So that's some of the impact.

Ryan, Librarian

Through its efforts on educating and mentoring librarians and researchers, LIBSENSE has successfully influenced how they approach publishing and dissemination. This has resulted in a more informed and strategic approach to scholarly communication, ensuring that African research outputs are more accessible, visible, and impactful worldwide.

LIBSENSE impacting participants' work/research practices.

The activities conducted by LIBSENSE throughout the years have not only enhanced the dissemination practices of researchers but have also impacted their research practices as well as work practices of other members, such as librarians and lecturers.

Testimonials:

And I also think that at the professional level, it influenced a number of librarians to build capacity, to enhance their knowledge and skills in their professional practice.

Ryan, Librarian

When we started the issue of research ethics which is actually part of LIBSENSE project component, what we assumed to be research ethics is actually way beyond that. We were thinking it's just getting a letter of introduction and then telling my participants of confidentiality and anonymisation and all that, which we actually never get to be. We don't really use it. We don't take it as something very serious and important. So Pam started sharing how this thing is being done, especially the governance structure, you know, the policy issues, you know documents that clearly state how ethics should be and how, what you should do and what you should not do.

Emma, Lecturer and Librarian

So a lot of the policies we are trying to develop in our countries, a lot of them, we base ourselves on the templates that were produced by LIBSENSE, so this is an unquestionable result that we can [say].

²⁹ The full case study compendium is accessible at: <https://doi.org/10.5281/zenodo.5637961>.

So in a way, it helped the countries with some ease to reach a place, a policy that can be adopted and approved to be used, both institutional, as well as to use at the level of the national public policy.

William, Professor

LIBSENSE has often encouraged researchers, librarians and NREN managers to think about the broader implications of their work. It has not only facilitated better dissemination practices but has also promoted a deeper understanding of the research process, ethics, and policy development among researchers and librarians. One key example of promoting more ethical approaches to research were the two national forums on research data management (RDM) and research ethics in Nigeria and Ghana (item 2024-02 in Table 1).

Exposure/Influence

To become involved in LIBSENSE meant being able to bring an idea, innovation, thought process, solution or just an enquiring mind to the variety of tasks and undertakings happening across the network. It also provided at a personal level some key benefits as outlined below.

LIBSENSE's role in providing its partners and network members with exposure/influence through its diverse activities and network of stakeholders.

LIBSENSE's diverse range of activities and stakeholders has empowered researchers to engage more effectively with their peers, decision-makers, and their institutions, enhancing their professional visibility and influence key projects along the years.

Testimonials:

There's one colleague [that] I came up with them a community of librarians that is supposed to be advocating for RDM across some institutions and be like the anchor persons for LIBSENSE activities in these institutions. [...] Yes, I would say the LIBSENSE policy workshop. That's the name. I'm not sure but the one that was [inaudible], it was part of the side activity for the WACREN Conference in March 2024, where I met the presentation on Research reform, research assessment reform to a group of librarians and some key decision makers in the University. We had librarians there, we had some Deputy Vice chancellors and vice chancellors and very senior researchers.

Rebecca, Researcher

And [what] the platform is creating for us [is] to our voices to be heard. And the second reason is the fact that they are supporting us financially. That's a big thing. [...] So that you get this kind of financial support and then the platform to be heard, the exposure, you know the way and then you come back to your home institution and then your University management is willing to listen to you. It's a big thing. [...] You learn something [and then] when you come back to your institution and you're able to share [that knowledge] and then you [see] that the university management is listening to you and they are willing to do that simply because they know you've gone out and then you're back with something new.

Emma, Lecturer and Librarian

I have appreciated the LIBSENSE environment for what it brings on board. The different people I have met and their opinions... more about how I can advance my interactions, network and other engagements. So, I think the extension of my network is one thing that I think I have taken out of LIBSENSE.

Luke, Senior Researcher

Through these activities, LIBSENSE has not only enhanced the professional capacities of individual researchers but has also facilitated significant institutional and national advancements, demonstrating the importance of having an initiative that connects and supports Africa's research community.

Laying Foundations

The impact interviews have revealed significant engagements of stakeholders at institutional, national, regional and continental levels that have been translated into tangible outcomes. These outcomes may have specific local implications (e.g. at one particular institution) or may provide the groundwork for future impacts on a wider scale. Altogether these outcomes can be seen as foundational work, whether it is developing templates for national open science policies, creating strategic roadmaps for RDM advocacy, delivering capacity-building courses or designing infrastructural interventions. Infrastructure development becomes less about providing broadband capability or Internet access and more about deploying services to support strategic objectives around the way research is done. We highlight areas below where these foundational efforts have been creating initial impacts.

LIBSENSE laying the foundation for policy change at the national level.

LIBSENSE's efforts have led to tangible changes in policy formulation, which is mostly being effected at the national level.

Testimonials:

And so as a result of that symposium, awareness was created among government and research organisations that are closely affiliated with the government to incorporate open science into that National Research Foundation. So that's been a highlight, and the policy strangely enough is still going through a series of procedures in the National Assembly to become actually a proper Bill and act, so my understanding is that that bill will become an Act of parliament some time this year, with open science being a key adherence to and promotion of open science policy being a fundamental part of international Research Foundation.

Andrew, NREN

In Botswana, for example, [...] the LIBSENSE activity, you know, using our... We have this sort of templated process that we use, [and] what we call the open... National Open Science roadmap events that we did in different countries. So because of the openness and inclusivity now itself that you drive with it, it was easy to invite everybody. And from that, they have basically come up with a national policy and [...] so that for me was one good outcome that I like to refer to.

Robert, NREN

Even a minister [of government] attended at least one of them (LIBSENSE/WACREN activities). And so we rarely have contact with that kind of level of a person in Europe or Canada, for example, or the United States but in Africa, it's possible to be able to have that level of stakeholder at the table with you. So it's very exciting... we actually were able through those discussions and him attending the event and having ongoing discussions afterwards, we were actually able to impact the Science and Technology policy that was being developed in that country.

Florence, International Association Executive

LIBSENSE laying the foundation for changes at the local (institutional) level.

Through the networking and advocacy work made possible by LIBSENSE, repository development and institutional practices related to them are demonstrating the initiative's substantial influence on their establishment and visibility.

Testimonials:

We have developed at the University a platform for the whole continent to publish on. It's called the African platform for Open Scholarship. It has opened roads for me in terms of engaging with alternative service providers. And it's also linked me to colleagues in Latin America. Some of the learnings that we've had by LIBSENSE allowed us to bring other countries on board like Namibia, Zimbabwe, Ghana, Botswana. All of them are now publishing on that particular platform.

Carl, Senior Librarian

Then lastly, my colleague from [another] University. She, after the LIBSENSE workshop in Lagos, she went back to her institution and met with the management. They don't even have an Institutional repository to start with. So she was able to start that conversation with what she has, you know, [from what] she learned from that workshop and how people are using and repurposing national repositories and the importance of having the repository for managing lecture content and all that. And at the end of that discussion, they were able to start their institutional repository, form a committee around the compliance to uploading content on the repository and the importance of contributing to open science and they made her a member of that.

Emma, Lecturer and Librarian

LIBSENSE shaping the strategic work/focus of NRENS.

LIBSENSE has influenced NRENS to expand their service provisions beyond traditional network-centric roles, integrating infrastructure support that aligns with the principles of open science. This transformation has empowered NRENS to enhance their strategic planning, incorporate community-driven governance models, and prioritise the development of infrastructure that supports open science initiatives.

Testimonials:

In fact a lot of our business strategy has been oriented around the goals of LIBSENSE. So whereas in the past, prior to our involvement with LIBSENSE, we had a very network-centric focus. What LIBSENSE did for us, it actually exposed us to the wider challenges of how research needs to be conducted and how scholarly outputs on publishing were done. It actually kind of exposed us to a whole area of research practice that we hitherto hadn't really been addressing. And we try to incorporate services that we were providing to address a lot of the wider goals that researchers have rather than just the specific focus on more of the networking connectivity stuff.

Andrew, NREN

So by the time before LIBSENSE, we just had a general [understanding], we'll get more servers, people might want cloud... [we] will offer cloud services, hosting services for this, for that but there wasn't a coherent strategy. Now, we know what we want to really do in terms of infrastructure rollouts, we want to support NRENS to create infrastructure for the communities to be able to run open science, to be able to support open science. [...] We now understand the importance of the persistent identifiers and we can actually plan based on that. We start to think about alternatives to the mainstream that are most suitable, you know, so that that in itself has given purpose to the NREN strategy and that's really important, you know.

Robert, NREN

By bridging gaps between technical infrastructure and open science objectives, LIBSENSE has positioned NRENS to effectively support research communities in accessing, sharing, and advancing scientific knowledge.

Through its varied efforts, LIBSENSE has effectively helped to transform Open Science from a concept into a tangible reality across different African countries. This impact is demonstrated through advancements in policy advocacy, development and adoption, institutional changes, implementation of repositories, and strategic deployment of infrastructural interventions.

Barriers/Threats

Despite the areas of positive impact narrated by the interviewees, LIBSENSE is still attempting to navigate various issues impeding progress of open science policies, processes and practices at the various institutional, national, regional and continental levels where the initiative has been having an influence. Some of these issues are being attributed to cultural, political and professional elements that are beyond the control of members of the network either individually or collectively. For example, professionally, there is a perceived difficulty in persuading more established librarians and academics institutionally to embrace change through open science/open access. National established curricula in library studies are also seen to be potentially outdated, not covering enough training around information, communication and technologies (ICTs). Politically, the power differentials between university senior executives and the librarians in African universities are thought to be working against their active engagement in institutional change associated with ICTs. Librarians need to exert significant pressure to gain the same influence as ICT directors appear to have in that space. LIBSENSE has to some extent been influenced by European models such as working within the REN structure and with significant funding for the advocacy work through EU institutions. However, a European model of the structural positions that librarians should hold institutionally cannot be easily transferred to an African environment. There needs to be more work to develop the profession in such a way that it can be seen to take the lead in open science advocacy at the institutional and higher levels. Some of these difficult cultural, political and professional issues are discussed below.

LIBSENSE navigating different political/management landscapes to advocate for Open Science

LIBSENSE faces some barriers and threats while advocating for open science, particularly navigating complex political and management landscapes. These challenges include resistance to change, lack of digital readiness among senior stakeholders, political influences, and financial constraints among researchers.

Testimonials:

But it still needs a lot of work to be done because like I said changing practices and patterns, particularly when management dictates certain things is difficult. [...] [some] librarians are almost... They're working like they're government, almost like government officials. What I mean by that is that senior librarians, you know, they call me with university librarians, quite a high majority of them are a bit older, and as such sometimes don't have the necessary digital skills or digital mindsets to sort of take librarianship to areas or levels that it should be. And because of that, they do impact the younger librarians because the younger librarians want to take the vision and focus from on top.

Andrew, NREN

There is another dimension to this also, and that's as far as the politics of open research goes. And I say the politics of open research because in one country, for instance, you have the person who is a librarian who actually reports to the president of that country. Now, that becomes a compromising situation because, you know, here we are at a political body, you know, we have no political interests. We have no, you know, business interests, no, you know, nothing in terms of, you know, gaining anything on a personal level, you know, that kind of interest. How does one work with such a person who is key to the process in this one country, for example? And I do not know about how the other countries are going in terms of their own librarians and the freedom that they have to promote open access. And then this begs the question of, well, you know, does this actually compromise the whole process of advocacy for open access? You know, how do you advocate in such a climate?

Hannah, Librarian

I think one of the problems LIBSENSE didn't appreciate is the power dynamics in universities in Africa. [LIBSENSE key people] had to join me to say let's get to the VC's. The power dynamic is such that if the chief executive is not buying into it, you're not getting anything out. So... taking the European model and trying to string us through won't work.

Luke, Senior Researcher

Despite these barriers, LIBSENSE continues to advocate for open science by promoting awareness, fostering collaboration, and advocating for supportive policies to enhance research visibility and impact across diverse academic and political landscapes.

Lack of funding/incentives to publish in OA journals (researchers fund for their own research most of the time)

The lack of funding and incentives to publish in Open Access (OA) journals presents a significant barrier for researchers, particularly in resource-limited settings like Africa. This challenge hinders researchers' ability to access and contribute to OA literature, impacting their research visibility, for example.

Testimonials:

Our government is not really funding research, you use your own money to conduct research and you go research, you gather data, you stress, you struggle, you do your analysis and at the end of the day you are saying I should actually leave it open? How do I get paid? So the focus is usually on the monetary value; who gets... how do I get money? How do I get my money back? So when you start talking about open science, what comes to their minds? How do I make it open when I put in a lot of effort? How do I get back? Right?

Emma, Lecturer and Librarian

And also, you know, in terms of publishing and the publishing fees associated with publishing, you know, this again proves the point of why open access is important for Africa. They're busy trying to pay off large debts. And so, you know, where they're going to find the money to pay for supporting researchers for accessing open access journals, which dominate or rather I should say the developed world dominates more. I mean, you hardly find open access journals in the developing world. They're mostly in the developed world and some of those journals, even though it says open access, have, you know, an article processing charge associated with them.

Hannah, Librarian

As a librarian over the years, one of the challenges that people from resource-limited settings like ours are facing has to do with general subscription fees. This has been a bigger issue that we are battling with to the extent that we are unable to subscribe to some of the more useful subjects related to universities.

Ryan, Librarian

Despite these barriers, LIBSENSE and similar initiatives continue to advocate for changes, promote cross-country collaboration, and propose sustainable solutions to ensure equitable access to academic production and enhance the global impact of research from developing regions like Africa. Increasingly LIBSENSE is also working with WACREN and country-based NRENs to drive infrastructure demonstrators and models of no-fee publishing that are globally interoperable to address local needs.

Future Directions for LIBSENSE

Over the past 8 years LIBSENSE has experimented with different approaches to organising its activities. The first was to articulate a Pan-African strategy around the three regional RENs, each of which had oversight of research infrastructuring activity in one of three main regions: West and Central Africa, East

and Southern Africa and North Africa. This was the organising logic used to run the three-region survey that kick-started LIBSENSE. Many pan-African stakeholders were invited to participate at this point. Even at this early stage, it was noted that the different regional RENs had different priorities and were at different stages of development of their own regional research infrastructures. Hence this structure could not sustain the network and project in the long run as there were too many disparities and misalignments in overall strategies.

The second organising logic was around the three pillars that were thought to underpin the vision and mission of the project, and which were organically emerging from the project in practice. These three organising pillars were capacity building, policy development and infrastructure provision, each of which were represented by a working group. The working groups had different levels of success. It was found that while the groups could initiate conversations around best practices, guidelines, policy direction etc., implementation of these ideas and action to carry them out would always lie with focal actors. Identifying and mobilising those focal actors then became the challenge.

LIBSENSE started as a grassroots movement and the grassroots idealism still remains a means of mobilising action, but it is too dependent on the 'heroic' actions of a few advocates. Such action has not been found to be successful unless some top-down support is also secured. LIBSENSE oscillates between mobilising the grassroots action, demonstrating its power and agility, and engaging with key policymakers, university executive management and other decision-makers to educate and advocate for change.

In this section we explore the project's successes with its initial grassroots activism and also some of the strategies suggested by the stakeholders that could underpin future action.

Critical Success Factors

The key areas of impact identified in this report translate into critical success factors for the approach to LIBSENSE thus far:

- ▶ ***Building a community of action:*** which consists of being inclusive, making linkages, crossing knowledge boundaries, crossing professional boundaries, bridging communities or practice and creating networks of action;
- ▶ ***Sustaining advocacy on open science:*** which translates into making this topic a recurring theme at REN conferences, building conversations around it, engaging in capacity building workshops;
- ▶ ***Creating a focal point for discussions/debates around open science:*** which includes creating spaces both physical and virtual for this ongoing discussion, e.g. mailing lists, doing the agenda-setting work of promoting the progressive ideas around doing research, e.g. research assessment reform;
- ▶ ***Empowering and mentoring participants in the network:*** which includes linking participation in the network with people's own priorities and professional growth and providing tools and platforms for individual researchers/librarians to initiate change;
- ▶ ***Leveraging the power of the network:*** through, e.g., spawning grassroots initiatives, making local to global and global to local linkages;
- ▶ ***Laying the foundation for ongoing change:*** through, e.g., developing working policy frameworks and models for collaboration, infrastructure demonstrators, strategic roadmaps for change

Past Action - Grassroots Idealism

Much of the above work has been accomplished through grassroots action, starting at the bottom of the power hierarchies and progressing initiatives with a bottom-up logic, which is more or less for individuals to do what is possible at their level of the organisation and hope for a "trickle-up" effect.

The importance of grassroots initiatives like LIBSENSE in advocating for Open Science

LIBSENSE operates on the premise of community empowerment and collaboration, fostering a sense of ownership among participants. This grassroots approach has led to significant moments of policy evolution and community engagement, highlighting its effectiveness in promoting Open Science ideas at the grassroots level.

Testimonials:

Sometimes we cannot rely on top level players to see through or see to the interest of grassroots initiatives. And so the way I view open access, open science and so on, they are grassroots initiatives. And so this is how I see LIBSENSE, you know. And so it was highly collaborative.

Hannah, Librarian

I've had a couple of moments, for instance, but one just seeing the approach on a situation that has led to the evolution of a policy and so it's because LIBSENSE was always on the premise that it was, it was about the community and the communities enabling itself and, you know, and that sense of community sometimes, it manifests in ways that, you know... It just shows promise and those moments are found quite memorable.

[...]

So we've been able to engage leadership to move things on campus and have more of a campus, you know connected to all of this. So that's a different message entirely. Yeah, we're talking to that community. And for that Community is about ownership, is about ownership, is about new ways of producing, new ways of assessment tracking and these are the issues that even transcend scholarly communications.

Robert, NREN

Through these grassroots initiatives, LIBSENSE effectively advocates for open science by empowering communities, fostering collaboration, and influencing policy at the local level. This approach ensures that open science becomes a community-driven endeavour, enhancing its relevance and impact within different institutions across Africa.

Future Action - Strategies and Frameworks

The interviewees noted that while there was some progress made with the grassroots approach, these ad hoc bottom-up, top-down approaches and structures contingent on funding and opportunity were barriers to sustainably influencing policy and executive positions in research and education. LIBSENSE seemed to be going in many directions, not necessarily concentrating on one arm of activity. While that is workable for a grassroots network that has not established a formal link with universities and research institutions, some strategy/framework for future action may be needed going forward. The following suggestions were given by the stakeholders as to how they see LIBSENSE developing in the future.

LIBSENSE continues its advocacy role and becomes a centre for capacity building and training to develop and maintain research infrastructures.

The more we start to build infrastructure that is open science-based infrastructure that can offer shared services to the research community, I think more exposure to the technologies and platforms is going to need more training, more you know more capacity building, you know, so we're only at the point where we've started to expose certain researchers to you know, research data management practice. The more that that becomes prevalent within the country, it's just going to bring up more need for consultancy, for training, for workshops. And so I see LIBSENSE being very very useful, instrumental, and influential in years to come, just because there's still a lot of work to be done. Even just the development of the communities were geared towards open science, you know, we need LIBSENSE

to help to be able to drive the development of you know, campus communities, national communities of researchers that are geared towards open science-based scholarly developments.

Andrew, NREN

LIBSENSE invests in early career researchers (ECRs) to initiate change and advocate for open science.

So when LIBSENSE is coming with a lot of the initiatives and activities and change to make research practice and library practice more relevant, you find that there is some maybe not intransigence to just that many of our librarians are not able to take it on board and implement because of their own insecurities and skills challenges. So I think what LIBSENSE does need to do is create platforms and engagements where we are able to get at some of the younger practitioners, more of the early career researchers, so that change can sort of, there's a kind of bottoms up approach to changing how research and information practice is undertaken, rather than trying to do it maybe from top down.

Andrew, NREN

So you are already trying one (a new strategy), which I think is good, early career engagement, so that they become better advocates, they learn better. And as they rise, they take that with them and actually position things very well. I don't know how long the LIBSENSE is going to last for. However, that's what I think. There needs to be a re-strategizing in how to push this message through.

Luke, Senior Researcher

LIBSENSE continues as a platform for networking and bringing different communities of practice around open science together.

Oh, it would be good to have it as it was in 2020, when there were hundreds of people from all over Africa interested in working together and learning from each other.

Claire, Open Access Manager

And so I see LIBSENSE being very very useful, instrumental, and influential in years to come, just because there's still a lot of work to be done. Even just the development of the communities were geared towards open science, you know, we need LIBSENSE to help to be able to drive the development of you know, campus communities, national communities of researchers that are geared towards open science-based scholarly developments.

Andrew, NREN

LIBSENSE continues as an indigenous, Africa-centric grassroots open science advocacy organisation but increases formal linkages with university executives and/or other African-based entities.

There is an opportunity for LIBSENSE to continue to advocate for open access, open research in Africa. It's needed. We need a mechanism. I mean, without LIBSENSE, what other mechanism is there? I mean, we cannot rely on the UN or the UNESCO open access policy alone. We need something on the ground. And LIBSENSE is that kind of mechanism. It's grassroots. People will identify with it more. And through grassroots initiatives, you know, you can lobby governments to institute instruments of support for open science, open access and open education. That was something that was the last thing I think Omo had mentioned that we needed to work on. But yes, we need LIBSENSE. LIBSENSE is actually not even important but critical to the process. It's already there. It has all the right ingredients already. It's indigenous to Africa. It's not something that's coming from a first world country, you know, that's being planted on the continent. No, this is something that grew out of Africa. And so it needs to continue. But it needs to be broadened to include university players, you know, especially university players and librarians.

Hannah, Librarian

And we were talking about a number of issues and some researchers, lecturers, who were very frank and said that these are deep conversations that I am ignorant of. And I think if we can trickle it down to our various universities, it will go a long way to help. So the thing I got was that people should know because they are researchers and all that but there are some important concepts that you may think are too common, but it is never common out there. So LIBSENSE is still needed in advocating, in training, and in teaching some of these things.

Ryan, Librarian

And I said one of the things I would like to see is for LIBSENSE to be a lot more inclusive, to work much closer with bigger entities like the AAU because that is your ticket to the continent as a whole.

Carl, Librarian

So you will have to string three groups. Chief executives, director of ICTs and librarians. That's when you're going to get something tangible out. So that our meetings, our engagements, don't just end up in speeches and talks and nothing comes out of it.

Luke, Senior Researcher

LIBSENSE develops a funding model and strategic focus.

I think Grassroots was good for getting started, but then Grassroots needs to be met with sustainable, strategic thinking and support and so it's very good to start at the Grassroots with these kinds of projects because then they're built on the realistic needs of the community, but I think we know now, in a sense, what needs to be done. And the question is how we can ramp up to be able to do it. So, the question of sustainable funding is a really difficult one ... three/four-year grants that could be a possibility? If we had... a very, well-articulated plan for what we're going to do, what we want to do in the future. and then submitting that to some funders.

Florence, International Association Executive

If there is a dedicated person to actually run LIBSENSE and if there was a strategy and an action plan, a work plan and someone to really follow that strategy and work plan and activities.

Claire, Open Access Manager

Conclusion & Recommendations

In conclusion, the impact study has demonstrated key impacts, barriers and threats, critical success factors and future orientations for LIBSENSE to continue its advocacy role on open science Africa. The main recommendation is that some change in focus/structure of the initiative is needed to sustain its positive influence. Below are some recommendations highlighted by the report which may need to be addressed in any new framework of action for the initiative.

Recommendations for Future Models Frameworks

- ▶ Staying within the REN model but looking for best practices within the global context, e.g. best practices from Brazil/South America's RedCLARA, UK's JISC as models for structuring LIBSENSE
- ▶ Developing a framework for action based on what works in the current initiatives undertaken and using this framework to guide relationships with funders, with universities and research institutions and to engage with further open research initiatives
- ▶ Becoming a standalone entity that has key strategic links to the RENs but operates more like an NGO or private entity with links to telecommunications players
- ▶ Retaining the loose networked structure with advisory groups, key stakeholders leading the thinking behind open science initiatives in Africa
- ▶ Working more closely with supra-African entities to attract larger funding opportunities and have greater economies of scale