Appendix 1: Research Methods

1. Phase 1 – Mapping health science research performance

The most widely available indicator of health research capacity and productivity is arguably the production of scientific research outputs represented by scientific journal publications. Bibliometric studies have mapped the numbers of publications coming out of African countries on a wide range of topics, including cardiovascular diseases (1,2), genomics (3), health economic evaluations (4), health policies and systems (5,6), human immunodeficiency virus (7), neglected tropical diseases (8), and public health (9). Four studies have examined the total number of African publications on any health-related topic indexed in major bibliographic databases.(10–13)

Other studies, however, have used alternative metrics as well. Papers have collected data on investments in research and development (R&D) (10), clinical trial infrastructure (10,14), healthcare workforces (15), and numbers of universities and so-called centres of excellence (15,16) in African countries to estimate HSR capacity. These past studies informed our broad approach which looked for multiple data sources that could be used to inform conclusions about HSR capacity across the African continent. Only a few indicators could be found with comprehensive coverage of all included nations (discussed in limitations below), but we still included relevant indicators even if some countries were missing data.

Geographic scope

Our study included the 54 internationally recognized sovereign states in Africa. This excluded any foreign departments (e.g., Mayotte), regions (e.g., Réunion), or territories (e.g., Saint Helena) located in Africa, as well as the disputed territory of Western Sahara. We collected population and gross domestic product (GDP) data from the World Bank.(17)

Indicator selection

The indicator selection was developed through discussions between the authors and members of an international oversight committee coordinated by the Wellcome Trust. We sought to find a range of proxy indicators which could show us what current level of capacity there is for health sciences research in each country, using indicators from the WHO Global Observatory on Health R&D as a starting point. These included: Gross domestic R&D expenditure on health (health GERD) as a percent of GDP; health researchers per million inhabitants; number of institutions and official development assistance for medical research; and basic health sectors as a percentage of gross national income.(18) We then supplemented this with benchmarking activities, including data on the number of clinical trials regulatory environment data, intellectual property controls and research output data, and bibliometric and citation data. Finally, we included research funding values. All data were acquired between June and September 2018.

To classify and conceptualise the various indicators available, we followed the Donabedian model of health care quality measurement to categories our indicators into one of three types: structural, process, and output measures related to HSR. Structural measures capture inputs into the system and thus comprised metrics such as workforce numbers, budget allocation to R&D, and numbers of organizations, regulations, and guidelines on human subject protections. Process

measures are indicators of on-going HSR activities, including numbers of clinical trials registered and patent applications. Finally, output measures capture the outputs of research activities including numbers of peer-reviewed publications and citations for these publications.

Publications

To systematically collect publication data, we searched Scopus, the world's largest abstract and citation database of peer-reviewed literature.(19) Scopus has full coverage of articles indexed in Embase and MEDLINE, and it includes a larger volume of non-English language journals than many other major bibliographic databases, such as Web of Science. (19)

All searches were conducted in June and July 2018. We searched for any articles published in the following Scopus subject areas: health sciences (medicine, nursing, veterinary, dentistry, health professions) and life sciences (agricultural and biological sciences, biochemistry, genetics and molecular biology, immunology and microbiology, neuroscience, and pharmacology, toxicology and pharmaceutics). We included the following types of publications: articles, in press, books, chapters, and conference papers.

We searched for articles published with at least one author based at an institution in each of the 54 countries, using the "Affiliation country" field in Scopus. We searched the names of each country in English, French, and Portuguese, as well as variant spellings of country names. We restricted the searches to publications published between 2008 and 2017. The search strategy, including the country names, can be found in **Appendix 1. Box 1** below.

Appendix 1. Box 1. Search terms for phase 1

1. SUBJAREA(medi OR nurs OR vete OR dent OR heal OR mult OR agri OR bioc OR immu OR neur OR phar)
2. DOCTYPE(ar OR ip OR bk OR ch OR cp)
3. PUBYEAR AFT 2007
4. PUBYEAR BEF 2018
5. AFFILCOUNTRY([insert the country lists below individually])
6. 1 AND 2 AND 3 AND 4 AND 5

For the Republic of Congo and Democratic Republic of Congo, we included an additional filter based on city, as shown below. This was to differentiate between the two Congos. We used the five most populous cities in each country, based on recent estimates.

For South Sudan, we also included an additional filter based on affiliation city. This was because many of the South Sudanese publications were incorrectly classified as Sudanese. We also only included publications published from 2011 onwards (year of independence).

In the searches, we enclosed the names of countries consisting of more than one word with curly brackets, rather than quotation marks, to improve the accuracy of the searches. The names are shown below with quotation marks for ease of reading.

* These entries show the exact Scopus code for line 5 in the search. In the South Sudan search, the PUBYEAR was changed to after 2010 in line 3 of the search, since the country gained independence from Sudan in 2011.

Number	Country terms
1	(Algeria OR Algérie OR Argélia)
2	(Angola)
3	((Benin OR Bénin OR Benim) AND NOT (Nigeria OR Nigéria))
4	(Botswana)
5	(“Burkina Faso”)
6	(Burundi)
7	(Cameroon OR Cameroun OR Camarões)
8	(“Cape Verde” OR “Cap-Vert” OR “Cabo Verde”)
9	(“Central African Republic” OR “République centrafricaine” OR “República Centro-Africana”)
10	(Chad OR Tchad OR Chade)
11	(Comoros OR Comores)
12*	(AFFILCOUNTRY((Brazzaville OR “Congo Brazzaville” or “Congo-Brazzaville” OR “República do Congo” OR “République du Congo” OR “Congo Republic”) AND NOT (Zaire OR “Democratic Republic of the Congo” OR “DR Congo” OR “République démocratique du Congo” OR “República Democrática do Congo” OR “Congo-Kinshasa” OR “Congo Kinshasa” OR “DRC” OR “Democratic Republic Congo” OR “Democratic Republic of Congo”)) OR (AFFILCOUNTRY(“Congo” OR “The Congo”) AND AFFILCITY(“Brazzaville” OR “Pointe-Noire” OR “Dolisie” OR “Nkayi” OR “Kindamba”)))
13	(“Côte d'Ivoire” OR “Ivory Coast” OR “Costa do Marfim”)
14*	(AFFILCOUNTRY((Zaire OR “Democratic Republic of the Congo” OR “DR Congo” OR “République démocratique du Congo” OR “República Democrática do Congo” OR “Congo-Kinshasa” OR “Congo Kinshasa” OR “DRC” OR “Democratic Republic Congo” OR “Democratic Republic of Congo”) AND NOT (Brazzaville OR “Congo Brazzaville” or “Congo-Brazzaville” OR “República do Congo” OR “République du Congo” OR “Congo Republic”)) OR (AFFILCOUNTRY(“Congo” OR “The Congo”) AND AFFILCITY(“Kinshasa” or “Lubumbashi” OR “Mbuji-Mayi” OR “Bukavu” OR “Kananga”)))
15	(Djibouti)
16	(Egypt OR Égypte OR Egito)
17	(Eritrea OR Érythrée OR Eritreia)
18	(Ethiopia OR Éthiopie or Etiópia)
19	(“Equatorial Guinea” OR “Guinée équatoriale” OR “Guiné Equatorial”)
20	(Gabon or Gabão)
21	(Gambia OR Gambie OR Gâmbia)
22	(Ghana OR Gana)
23	((Guinea OR Guinée OR Guiné) AND NOT (“Guinea-Bissau” OR “Guiné-Bissau” OR “Guinea Bissau” OR “Guinée-Bissau” OR “Equatorial Guinea” OR “Guinée équatoriale” OR “Guiné Equatorial”))
24	(“Guinea-Bissau” OR “Guinée-Bissau” OR “Guiné-Bissau”)
25	(Kenya OR Quénia)
26	(Lesotho OR Lesoto)
27	(Liberia OR Libéria)
28	(Libya OR Libye OR Líbia OR “Libyan Arab Jamahiriya”)
29	(Madagascar OR Madagáscar)
30	(Malawi)
31	(Mali)
32	(Mauritania OR Mauritanie OR Mauritânia)
33	(Mauritius OR Maurice OR Maurícia)
34	(Morocco OR Maroc)
35	(Mozambique OR Moçambique)
36	(Namibia OR Namibie OR Namíbia)
37	((Niger OR Níger) AND NOT (Nigeria OR Nigéria))
38	(Nigeria OR Nigéria)
39	(Rwanda OR Ruanda)
40	(“Sao Tome and Principe” OR “São Tomé and Príncipe” OR “São Tomé-et-Principe” OR “São Tomé e Príncipe”)
41	(Senegal OR Sénégal)

42	(Seychelles)
43	(“Sierra Leone” OR “Serra Leoa”)
44	(Somalia OR Somalie OR “Somália”)
45	(“South Africa” OR “Afrique du Sud” OR “África do Sul”)
46*	AFFILCOUNTRY(“South Sudan” OR “Soudan du Sud” OR “Sudão do Sul”) OR (AFFILCITY(Juba)
47*	(AFFILCOUNTRY(Sudan OR Soudan OR Sudão) AND NOT AFFILCOUNTRY(“South Sudan” OR “Soudan du Sud” OR “Sudão do Sul”)) AND NOT (AFFILCITY(Juba) AND PUBYEAR > 2010)
48	(Swaziland OR Swasiland OR Suazilândia)
49	(Tanzania OR Tanzanie OR Tanzânia)
50	(Togo)
51	(Tunisia OR Tunisie OR Tunísia)
52	(Uganda OR Ouganda)
53	(Zambia OR Zambie OR Zâmbia)
54	(Zimbabwe)

For each country, we extracted data on the number of publications with at least one author based in the country, as well as the number of publications first authored by a local researcher. We also collected citation data for all articles.

For publications published in the five-year period from 2013 to 2017, we collected data on the proportion of publications with international, institutional, and national collaborators. These data were obtained in SciVal, a research information tool developed by Elsevier to synthesize bibliometric data from Scopus.

R&D expenditures and personnel

Data on R&D expenditure and personnel were obtained from the United Nations Educational, Scientific, and Cultural Organization (from 2016, or the most recent available year) (20). We collected data on the number of full-time equivalent staff in the following categories: (i) R&D personnel (per million inhabitants), (ii) researchers (per million inhabitants), and (iii) researchers with doctoral or equivalent degrees (as a proportion of total number of researchers).

From the same database, we also collected data on gross domestic expenditure on R&D in ‘000 current PPP$; these figures were also shown as a proportion of GDP and per capita. Whenever possible, we collected expenditure and personnel data specific to medical and health sciences.

Clinical trial infrastructures, intellectual property rights, and regulatory capacities

Data on the numbers of clinical trials and records, as of 4 August 2018, were extracted from the WHO International Clinical Trials Registry Platform (ICTRP) (21) and US National Institutes of Health database (ClinicalTrials.gov).(22).

ClinicalTrials.gov indexes trials of new investigational drugs, whereas the ICTRP indexes data from several sources, including the European Union Clinical Trials Register, ClinicalTrials.gov, International Standard Randomised Controlled Trial Number register, and Pan African Clinical Trial Registry. A full list of data providers can be found on the ICTRP website (21). The ICTRP registry accepts all types of clinical research studies (e.g., trials of public health interventions).

We also collected information on the number of organisations, regulations, and guidelines on human subjects protections in each country. These data, which are collected annually by the U.S. Department of Health and Human Services, reflect protections in each of the following categories:

"general (i.e., applicable to most or all types of human subjects research)", "drugs and devices", "clinical trial registries", "research injury", "social-behavioural research", "privacy/data protection", "human biological materials", "genetic", and "embryos, stem cells, and cloning". We used the 2018 edition of the compilation of protections.

Finally, we collected data from the World Intellectual Property Organization on the numbers of patents issued to residents in each country (from 2016, or most recent available year). (17)

Research institutions

We collected data on the number of universities in each country based on a list compiled by a researcher at the University of Innsbruck in Austria, using information from the International Association of Universities (23). We also identified the number of African universities listed on the most recent global university rankings of three influential publishers: Quacquarelli Symonds Limited (QS World University Rankings) (24), Times Higher Education (THE World University Rankings) (25), Shanghai Ranking Consultancy (Academic Ranking of World Universities).(26)

We collected data on the number of institutional review boards (27) and WHO Collaborating Centres (28) in each country, and noted whether or not there exists a national ethics committee (29) and national public health institute.(30).

Research funding

We collected data on funding awarded to researchers in each country (2008-2017) from the ten largest public and philanthropic funders of health research globally (listed in order) (31): (1) U.S. National Institutes of Health, (2) European Commission, (3) U.K. Medical Research Council, (4) French National Institute of Health and Medical Research, (5) U.S. Department of Defense (including the Congressionally Directed Medical Research Program), (6) Wellcome Trust, (7) Canadian Institutes of Health Research, (8) Australian National Health and Medical Research Council, (9) Howard Hughes Medical Institute, and (10) German Research Foundation.

The data were collected from each funder's website. We only counted funding allocated to researchers based at institutions in African countries. We excluded funding for research projects in which the principal investigators were based at non-African institutions, even if these projects included collaborators, field sites, or locations of research in Africa.

All amounts were reported in 2017 U.S. dollars based on consumer price index adjustments to account for inflation. Foreign currencies were converted to dollars based on the yearly average exchange rates published by the World Bank.(17)

Limitations

There are some inherent limitations with a study of this nature. First, there is of course no single indicator for health sciences research, so we have had to use metrics that serve as proxy indicators using only those data which are actually available. Thus there is a risk that these proxies do not capture the full landscape we sought to map.

Further, a key issue we encountered was the lack of data for several indicators, as well as issues of reliability and comparability between sources for the data we did collect. The most

comprehensive data sources were for publications and clinical trials, but many other categories of data had numerous countries missing results. Furthermore, whilst we aimed to collect data from 2008-2017 across indicators, some data points come from before this time frame—such as the patent data and the UNESCO data we used for human resource information. These additional data points were necessary to provide a more comprehensive and accurate picture of the health sciences research landscape.

Research is not always published in peer-reviewed journals, and therefore limiting our research output data to bibliometrics from SciVal could also pose limitations. First, Scopus does not index all journals published in African states. Further, for some countries, including Democratic Republic of Congo, Republic of Congo, South Sudan and Sudan, the indexing of affiliation countries on journal articles is incomplete. Finally, this method would not include research published outside of peer-reviewed journals, including government or non-governmental literature such as policy reports, open data sets, software, other grey literature.

We were also unable to find a consistent data source across the African continent to measure government budget allocation to health sciences research. Our proxy for this was GERD (i.e. for research and development as a whole, rather than disaggregated by health sciences). Similarly, when measuring the number of universities in each state, we were not able to ascertain whether these universities undertake research or offer degrees or training in health sciences.

These issues can ultimately make development of a single ranking or scoring of country capacity for health research challenging. Moreover, these crude descriptive metrics offer limited understanding for the intersecting factors which drive a functioning and efficient HSR landscape, such as history, colonial developments, political will and international engagement. However, they provide an important mapping exercise as a starting point for analysis. These offer a snapshot of current capacity and offer a point of departure to understand how HSR enabling environments are built, through further research on how these systems, processes and indicators are developed contextually.

2. Phase 2 – In-depth qualitative case studies

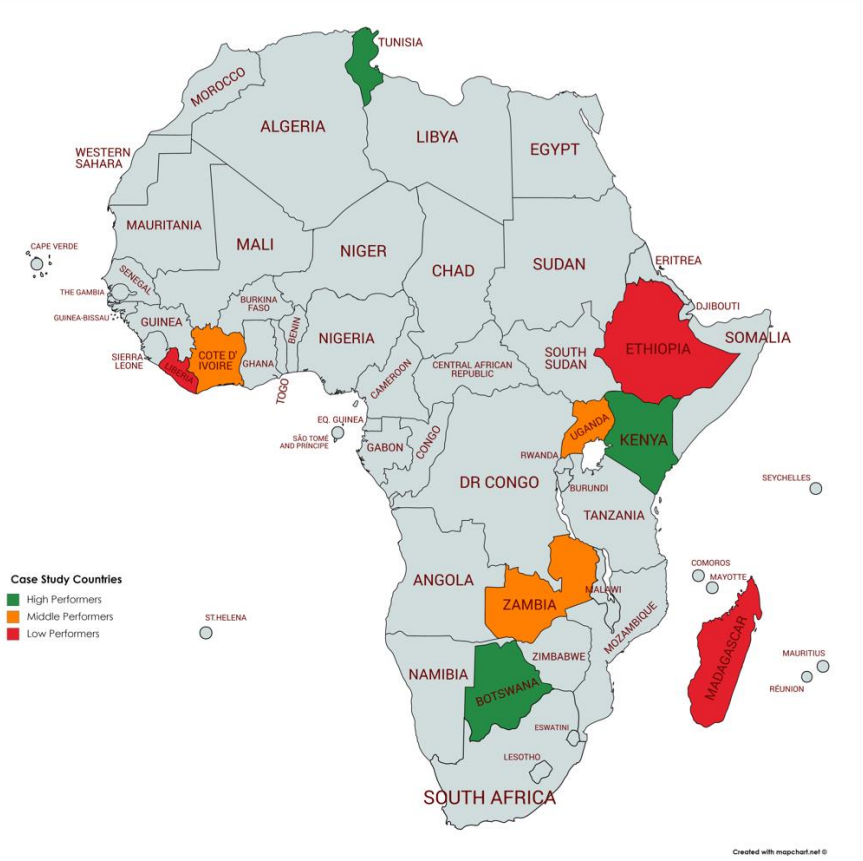
We conducted a multiple case study of health sciences research in Africa. For this, we adopt a broad definition of health sciences research (HSR) as basic, clinical, and applied science on human health and well-being and the determinants, prevention, detection, treatment, and management of disease.(32,33) HSR is carried out in public or private institutions (such as universities, national institutes, centres of excellence, ministries and government agencies, NGOs, and private enterprise / industry). We define a case of HSR as the system of combined structures, activities, processes, groups and individuals that operate in a national jurisdiction wherein health research policies, governance, and funding support training, producing, and utilising health sciences research in that context.

Research design

We used a holistic, multiple-case, replication design to carry out qualitative case studies in nine African countries: Botswana, Côte d'Ivoire, Ethiopia, Kenya, Liberia, Madagascar, Tunisia, Uganda, and Zambia.(34) The in-depth qualitative cases were part of a multi-component project to investigate how to increase and improve investment in health sciences research in Africa. We

selected cases based on preliminary results from the first phase of the wider project, which mapped available data on indicators of standard domains of HSR performance for all 54 sovereign African states. The nine case studies were chosen as a representative sample (see **Appendix 1. Figure 1**) against three criteria: level of health sciences research activity and performance (high, medium, low), language (French and English-speaking countries), and geographical sub-regions of the African continent (Northern, Eastern, Southern, and Western Africa).

Appendix 1. Figure 1. Map of cases selected for qualitative research component



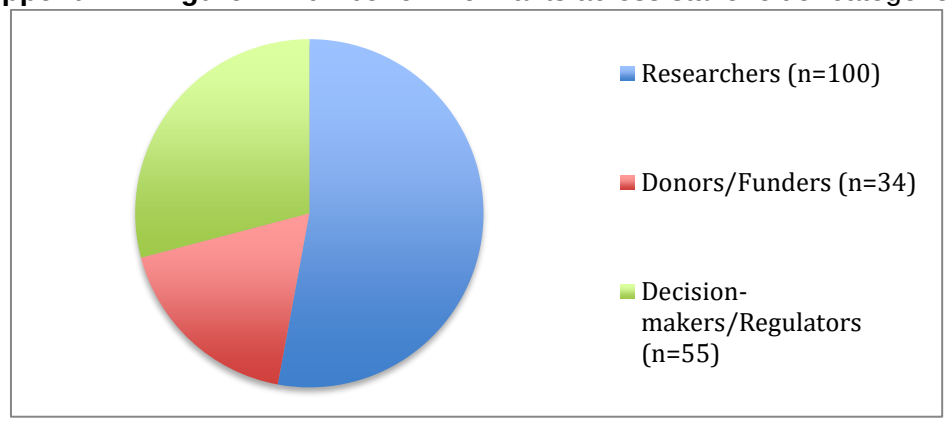
Data collection

Data was collected between September 2018 and October 2019. Firstly, we undertook a documentary review of scientific and grey literature (e.g. policy & strategy documents, evaluations, working papers) to establish a baseline understanding of the context and history of health sciences research in the countries, including the policy and governance framework, research institutions, and financing. Secondly, we carried out semi-structured interviews either in person, by telephone, or online with 189 key informants who fund, undertake, or regulate HSR in the nine case countries. We identified key informants in consultation with local collaborators through stakeholder mapping to inventory government and public bodies, regulatory agencies, public and private research institutions, funders, and regional and global organisations involved in HSR in case countries. Our sampling strategy included three types of actors (funders, researchers, and decision-makers) across multiple stakeholder categories because a range of perspectives within NHRS is vital to answering our research question. Snowball sampling supplemented this strategy in the field with recommendations from participants.

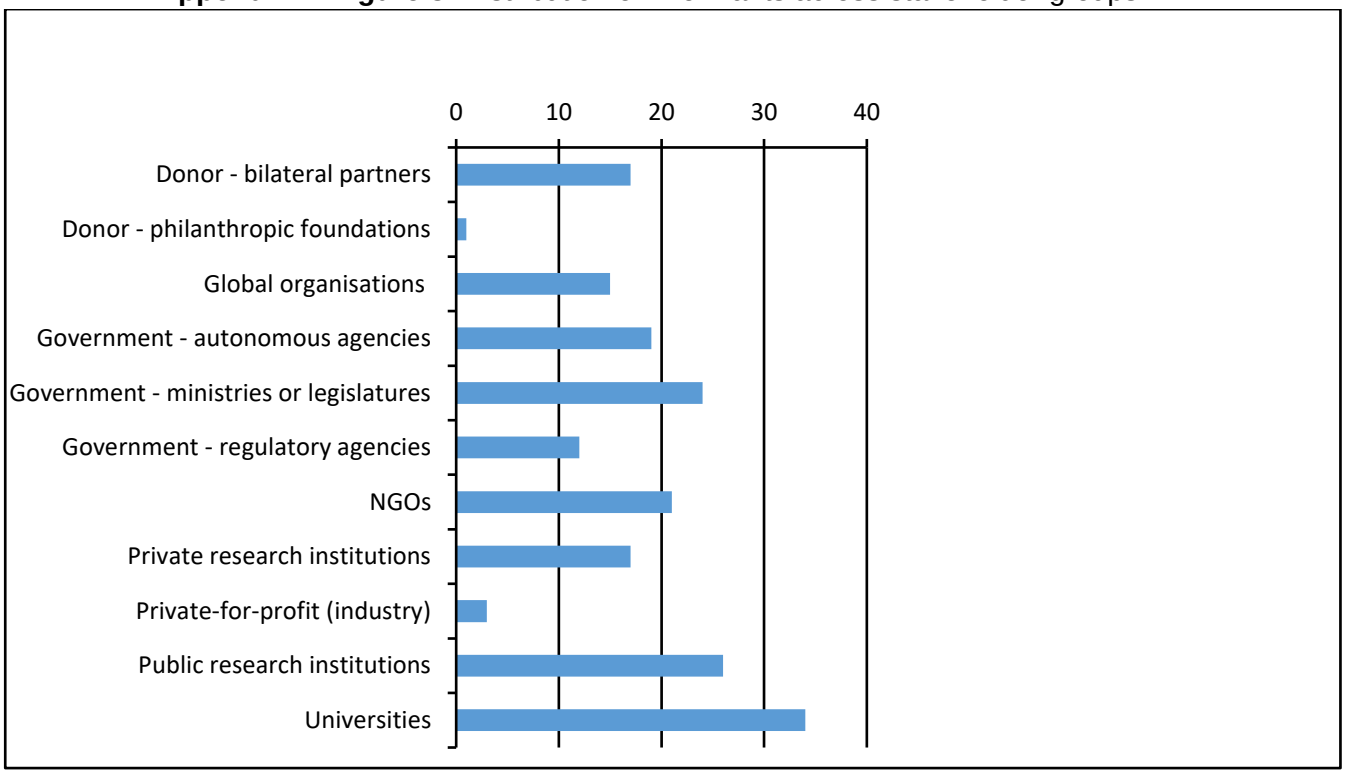
We asked participants about their individual and institutional experience in health sciences research in the respective case country as well as the barriers, facilitators, and challenges to their

work. We tailored the interview guide to ask specific questions to each type of actor depending on their function as funders, researchers, or decision-makers (see **Appendix Insert 1 and Appendix Insert 2** at the end of this appendix for interview guides in English and French languages). Of the 189 key informants, 18% were funders, 53% were researchers, and 29% were decision-makers (see **Appendix 1. Figure 2**); 36% of our data is in French and 64% is in English language. **Appendix 1. Figure 3** shows the distribution of informants interviewed across stakeholder groups.

Appendix 1. Figure 2. Number of informants across stakeholder categories



Appendix 1. Figure 3. Distribution of informants across stakeholder groups



Interviews lasted 30-60 minutes. They were recorded with permission of participants and transcribed in the original language. We obtained informed consent from all participants in accordance with ethical guidelines. The project received ethical approval from the Research Ethics Committee at the London School of Economics and Political Science [REC 000757]. Each case study also received ethical approval from the local institutional review boards (IRBs) or national ethics committee (**Appendix 1. Table 1**).

Appendix 1. Table 1. National research ethics approvals for case studies

Case Country	Research ethics approval bodies and certificates
Botswana	University of Botswana IRB, Office of Research and Development Ethics certificate: Ref: UBR/RES/IRB/BIO/130 Ministry of Health and Wellness, Health Research and Development Division Research permit Reference No: HPDME: 13/18/1
Côte d'Ivoire	Ministère de la Santé et de l'Hygiène Publique Comité National d'Ethique des Sciences de la Vie et de la Santé (CNESVS) Ethics certificate: N/REF 160-18/MSHP/CNESVS-km) N/REF 160-18/MSHP/CNESVS-km)
Ethiopia	Ethiopian Public Health Institute Institutional Review Board (EPHI-IRB) Ethics certificate: EPHI-IRB-166-2019
Kenya	Kenya Medical Research Institute (KEMRI), Scientific and Ethics Review Unit (SERU) Ethics certificate: Ref: KEMRI/RES/7/3/1 National commission for Science, Technology and Innovation (NACOSTI) Research permit: Reference No. NACOSTI/P/19/49577/28306
Liberia	University of Liberia, UL-PIRE AFRICA Africa Center Ethics certificate: protocol 18-11-144
Madagascar	Authorisation for the study by the Comité d'Ethique de la Recherche Biomédicale de Madagascar (CERBM)
Tunisia	Comité d'Ethique Bio-Médicale de l'Institut Pasteur de Tunis Ethics certificate: Dossier référence 2018/30/E/LSEPS/V2 Letters of authorisation for the study from: - le Ministère de l'Enseignement Supérieur et de la Recherche Scientifique, Direction générale de la recherche scientifique - le Ministère de la Santé, Direction générale de la santé et Direction générale de la recherche médicale - L'instance nationale de la protection des données personnelles
Uganda	Makerere University, College of health sciences, School of Medicine Research Ethics Committee Ethics certificate: REC REF 2018-153
Zambia	ERES CONVERGE IRB, University of Zambia Ethics certificate: Ref. No. 2018-Nov-014 Authorisation for the study to be conducted received by the National Health Research Authority

Data analysis

All interview data was imported into *Dedoose* software for collaborative coding. We co-produced a thematic framework to include the researcher-generated codes based on experiences and data from 60% of the fieldwork completed. We provisionally coded samples of data from all cases, and moderated one another's coding to identify differences in understanding and applying the codes in order to categorise and interpret the data.(35) Collectively, we inductively further refined and modified them through multiple discussions informed by emerging themes. The final framework consisted of 13 codes including advocacy, alignment, collaboration, community participation/engagement, funding, health crisis, ownership, political will/leadership, private sector involvement, and research use with sub-codes developed for the three largest categories of capacity, context, and governance (see **Appendix 1. Table 2** for analysis codebook).

We wrote an analysis story about each case of HSR capacity by focusing on what supports the development and functioning of a NHRS, including the challenges faced by these systems. Each story was produced by creating a narrative for individual NHRS based on the intra-case thematic analysis, whilst adopting a whole system perspective to look at the system elements and processes which support (or challenge) the development, establishment, and functioning of the core NHRS pillars and whether they are mutually reinforcing.(36–39) We recognise the pillars of health research systems included in the African Barometer national health research system framework (Strengthening research governance; Creating & sustaining resources; Producing and using health research; Financing health research) as essential building blocks. These pillars are essential to the system, but our analysis focused on how an NHRS functions beyond these pillars, including identifying the elements and processes that lead to, support, and explain the development of NHRS in Africa.

To compile a story of NHRS' development by country, we used the following analysis questions:

- What allowed the pillars of a system to be built up in cases where there have been successes? How did countries arrive at this, or why they are not there yet?
- What are the elements that tie the NHRS components together?
- What systems elements mattered and how?
- How are these elements mutually reinforcing?
- How do they work to improve/strengthen NHRS as a whole?
- What is the role of history of NHRS in countries?
- How does the NHRS interact with other systems (higher education, health, innovation, others?)
- What is the role/s of key individuals in change? How were they able to do it in that context?
- What enabled these changes to happen? Why did these changes happen at a particular time?
- How did timing influence the evolution of the NHRS? i.e.: Placement of key people, International attention, Change in government, Focusing events (summit, crisis, etc.)

These stories sought to go beyond the recognition of important parts of NHRS (e.g. building blocks), instead exploring how they come about, why they do so in a given context, and what enables or hinders change.

The research team held nine virtual meetings to check data analysis quality, review analysis progress, and sustain collective reflection and a critical approach to our analysis while discussing and questioning the stories as they developed iteratively for all cases. In line with the recommended methodology for a holistic, multiple-case, replication design, each case was analysed separately.(34) Replication in analysis, which is a considerable challenge in collaborative qualitative research, is recommended to support the trustworthiness of claims issued from this research design.(34) We did not pool findings across cases, but rather used individual case analysis stories to look at insights across the cases.(40) For the inter-case analysis, the case stories were comparatively analysed in two waves. First, we analysed each story to look for the prominent elements that were found in the development of each NHRS (e.g. research leadership, research culture, political will) building on a list that had been compiled in earlier analyses. We then looked at all the elements and processes on the list mapped across all cases to see where there were similarities and differences in what factors matter for the development of NHRS. Second, we conducted pattern matching to assess patterns in the data and to identify those elements and processes that were most influential in building up the NHRS.(34) Then we examined how and why those mattered within each case, as well as how they were interrelated in supporting the NHRS – while acknowledging that their significance and influence on the development of NHRS differ across contexts.

Appendix 1. Table 2. Interview analysis codebook

Category - groups of related concepts	Code - descriptive or conceptual label	Definitions and examples of data covered by this code
	1. Advocacy	Ability and arguments to communicate with and convince senior policy-makers and politicians for HSR support and HSR use (about relevance/significance of health research and for financing)
	2. Alignment/harmonisation	Alignment of health research with the context, Re linking the strategic visions to empirical realities on the ground, linking research to population needs / health priorities, linking research to improving health programmes and health system, need for local data and researchers with programmatic view and understanding of implications of their research.
		Alignment of health research with other policies, programmes (health, development, etc.) at local, national, regional and/or international levels
HSR Capacity	**3.1 Capacity - Institutional**	research management systems (including coordination of)
		research institutions – national research centres, universities, laboratories, and private research institutions
		infrastructure, equipment, labs, technology, and tools
		curricula (standardised curriculum to ensure HE institutions are giving HSR due attention)
		training (quality, mentorship/supervision, competency-based, curriculum, research methods, mentorship/supervision)
	3.2 Capacity - Research leadership	Leadership within research institutions (e.g. universities, etc.) support research priorities and provide vision, leadership, and mentoring to develop and institutionalize a research culture. While research leadership is important to grow capacity or manage existing capacity and resources, it may not be from an institution as a whole, and rather linked to individuals.
	3.3 Capacity - Human	Individual technical capacity for grant writing, research methods
		human resources: training, retention/attractiveness, ethics, next gen, right mix/missing skills sets,
	3.3.a Capacity - Human - Motivation	The reasons why individual researchers remain dedicated and driven to pursue a career in research in their given country/institution. Some examples of these include specific interests, commitment to country/community/research area, passion, sense of purpose, sense of duty to develop health research in country, students, family, etc.
	3.4 Capacity - other	culture of scientific research (perception of research and its value, understanding the research process, reflection, publication, strong research community, confidence, institutionalisation of research practices)
		interdisciplinary/multidisciplinary research for health
		competitive environment / competitive according to international standards
		availability (how much capacity is available in the given jurisdiction at any given point in time)
		building (efforts to build the capacity to meet the particular country's needs)
	4. Collaboration / Partnership / Networking	(between stakeholders and partners: national / international, NGOs, international agencies, funders, local and international universities, private sector)
		skills/competencies transfer
		agenda-setting/influence on agenda of health research in Africa
		financing
		networks/networking - learning, exchange, training, support, mobility
		North-South, South-South, Anglophone-Francophone, African region, sub-regional (e.g. Indian Ocean Commission)
		transversal approaches – breaking silos (disciplinary, sectoral, but also disease-specific/vertical programmes)
		conferences, seminars, or other partner meetings, and stakeholder platforms in the country and internationally
		institutional or individual arrangements

	5. Community participation/engagement	relevance, understanding, and acceptability of research by community
		community involvement in problematising, developing, conducting, analysing, translating, or using research
Context	**6.1 Sociocultural**	social status; language; cultural beliefs, values, and traditions
	6.2 Political	politics, political change, political crisis
	6.3 Economic	economic status, change
	6.4 Epidemiological	health/disease status and distribution, emerging and re-emerging diseases (NTDs)
	6.5 Geographical	physical environment, roads/transport, climate/weather
	6.6 Technological	electricity, phone/internet, also new technologies for research
		Additional cost of research related to the context: access to advanced equipment / inputs (purchase, tariffs, transport, maintenance) / field work needs in challenging contexts
	7. Crises - health	HIV, Ebola, etc.
		outbreaks of measles, pneumonic plague, cholera, etc.
		severe undernourishment
		climate change and heath
		major public health crises
	8. Funding	resource mobilization, management and sustainability
		financing / funding mechanisms (domestic and international)
		e.g. budgets, grants, calls for proposals, scholarships, aid/cooperation instruments, etc.
HSR Governance	**9.1 Governance - Policy**	policies, plans, and other strategic guidance (presence of national and institutional policies)
		priority/agenda setting, policy change, policy gaps, policy implementation/evaluation
	9.2 Governance - Legislation	laws, decrees
	9.3 Governance - Regulation	regulatory capacity
		coordination mechanisms
		ethical regulation and governance
	9.4 Governance - Institutions	structures and institutional change
		coordination structures
	9.5 Governance - other	
	10. Ownership	The sense of ownership over any aspect of research or the research process or outcomes (agenda, ideas, results, resources, etc.).
	11. Political will/Leadership	prioritisation given to health research
	12. Private sector involvement	private-for-profit industry sector
	13. Research use / knowledge translation	packaging
		use / application / adoption
		visibility and dissemination (including scientific publications and conferences, multi-stakeholder platforms, and community health workers, district health centres, and the public)
		access, availability to research - including coordination of research and knowledge – i.e. database/inventory clearing houses for all research in the country
		impact
		documentation of KT and examples of research use
	14.Other	

Strengths and limitations

We assess the strengths and limitations of this work against D'Souza and Sadana's recommendations for strengthening case studies on health research systems: provide methods, incorporate quantitative data, view health research from a broad perspective, give details, and present recommendations.(41) The comprehensive approach to the multiple case replication design is one of the strengths of the second phase of this research conducted by an interdisciplinary team. The preliminary stakeholder, policy, and context mapping prior to the key informant interviews prepared a shared understanding of the cases across the research team, which was also richly informed by the quantitative data from the first phase of the research. Working with local collaborators supported the understanding of the local contexts for each case and ensured that the key national stakeholders were invited to participate in the study. The multilingual inclusion of English-speaking and French-speaking countries and the geographic diversity of the cases ensured a strong representation across the sub-regions, and we think provides a basis for strengthening the potential for application of the findings and recommendations in countries across the African continent. Taking a broad view of HSR, as we defined it for the purpose of this study, offered a wide range of possibilities for the types of informants targeted in different areas or specialisations of HSR. The results benefited from having included perspectives from those who fund, govern, and conduct HSR. Although, researcher's perspectives outnumbered those of the other two groups in the data, we accounted for this in the analysis approach to ensure that we included views on key themes from the perspectives of all types of key actors. However, there is a potential for a selection bias in the sample of our participants, being those who are most interested and engaged in improving HSR in Africa. The research-based recommendations from the comparative work in this phase target key stakeholders who have already decided to work towards improving HSR in African settings as a key priority. We are also engaging more closely with stakeholders in a few countries to assess the relevance of the findings specific to their respective case studies and work together to see how this research may be useful to advance their goals and objectives for NHRS strengthening.

3. Phase 3 – Peer-to-peer learning among decision-makers

The third component of the project involved facilitation of peer-to-peer learning and exchange for bureaucratic officials who had some official mandate or responsibility for planning health sciences research. This phase comprised two workshops with policymakers from the countries of the nine case studies involved in the second phase of the project. We invited two participants involved in HSR from each country to participate in the workshops – one from ministries of health, and one from ministries of higher education (or equivalent). The aim was to help these officials identify ways to improve HSR and strengthen the NHRS in their country; this was achieved through group identification of goals and strategies, and collective brainstorming of challenges or possible solutions from peers in other settings. The agendas for both workshops can be found at the end of this Appendix.

3.1 Workshop 1 – Nairobi

The first workshop took place in Nairobi, Kenya, from 28th February to 1st March 1019. It was facilitated by team members from the London School of Economics and Political Science (LSE) in collaboration with the African Academy of Sciences (AAS) and co-facilitated by Rose Oronje of the African Institute of Development Policy (AFIDEP).

Specific objectives of the first workshop were to:

- Introduce stakeholders to the Health Science Research in Africa project;
- Identify the roles and goals of different stakeholders in relation to health sciences research in Africa;
- Discuss what it means to improve health sciences research capacity;
- Collectively discuss what is important to programme officials in achieving national goals of health science research;
- Participate in a conjoint analysis exercise to help gauge relative importance of different components of national research capacity;
- Share experiences – including good practices, success and challenges in HSR development at country levels;
- Reflect on challenges faced, with collective discussion;
- Develop action plans of next steps to take within the mandate of individuals' agencies that might help to work towards their agency goals.

Workshop 1 (Nairobi) – Programme

***Day 1 – February 28, 2019* - in Tulipa A Meeting Room – Eka Hotel – Nairobi**

Health sciences research in Africa: state of the environment and experiences

8.30-9.00	Arrivals, Registration & Networking	
9.00-10.00	Welcome and Introductions Workshop Objectives	Co-chairs: Rose Oronje Justin Parkhurst
10.00-10.45	State of the Health Sciences Research environment in each country: context, policies, investments *Format: lightning presentations 5 min./each in plenary*	Chair: Samson Kinyanjui Presenters: country representatives
10.45-11.00	***Break***	
11.00-11.45	Previous session continued	
11.45-12.15	Health Sciences Research on the continent: current data and indicator development *Format: presentation in plenary, questions*	Presenters: Clare Wenham Justin Parkhurst
12.45-1.45	***Lunch***	
1.45-2.30	The Vision and Goals of Health Sciences Research Development in the Region *Format: facilitated brainstorming in plenary*	Facilitators: Rose Oronje Justin Parkhurst
2.30-3.30	Discuss what works well, challenges and lessons from different settings *Format: small group breakouts (3)* Group 1: Cote d'Ivoire, Madagascar, Tunisia Group 2: Ethiopia, Liberia, Uganda Group 3: Botswana, Kenya, Zambia	Brief intro: Justin Parkhurst Group 1: JS+CJ Group 2: RM+JP Group 3: PA+CW

3.30-4.20	Groups report back	Facilitator: Rose Oronje
	Format: facilitated discussion in plenary	
4.20-4.35	***Break***	
4.35-5.15	Country teams pair up to discuss their challenges	Country team activity
	Format: country team discussion groups (9)	
5.15-5.30	Wrap up of Day 1 in Plenary	Justin Parkhurst
	End of Day 1	

***Day 2 - March 1, 2019* - in Tulipa A Meeting Room – Eka Hotel – Nairobi**

Strengthening health sciences research in the region: challenges, strategies, and actions

9.00-9.30	Reflections from Day 1	Co-chairs: Pamela Juma
	Format: feedback in plenary	Clare Wenham
9.30-9.45	Online Survey Exercise	Justin Parkhurst
	Format: participants complete questionnaire online	
9.45-11.15	Brainstorming solutions to country's challenges	Brief intro: Justin Parkhurst
	Format: small group breakouts (3)	
	Group 1: Cote d'Ivoire, Liberia, Kenya	Group 1: RM+CJ
	Group 2: Botswana, Madagascar, Uganda	Group 2: JS+CW
	Group 3: Ethiopia, Tunisia, Zambia	Group 3: PA+JP
11.15-11.30	***Break***	
11.30-12.00	Reflections on challenges – issues and novel ideas from session above	Co-facilitators: Rose Oronje Justin Parkhurst
	Format: facilitated brainstorming in plenary	
12.00-1.15	Identifying country-specific recommendations for improving health sciences research; define country action plans	Country team activity
	Format: country team discussion groups (9)	
1.15-2.15	***Lunch***	
2.15-3.30	Country presentations on action plan exercise (5)	Co-facilitators: Rose Oronje Justin Parkhurst
	Format: each country team has 15 minutes - 10 min. to present plan and 5 min. discussion in plenary	Presenters: Country teams
3.30-3.45	***Break***	
3.45-4.45	Country presentations (continued) (4)	Co-facilitators: Rose Oronje Justin Parkhurst
	Format: each country team has 15 minutes - 10 min. to present plan and 5 min. discussion in plenary	Presenters: Country teams
4.45-5.00	Next steps	Co-chairs: Tom Kariuki Clare Wenham

5.00-5.15	Wrap-Up	Co-chairs: Rose Oronje Justin Parkhurst

3.2 Workshop 2 – Addis Ababa

The second workshop was held from 7-8th October 2019 in Addis Ababa, Ethiopia. The goal was to return to themes from the first workshop, discuss progress or challenges in meeting the action plan goals, and continue peer-to-peer learning. A goal was to have as many of the same participants from the first workshop participate as possible. In the end, due to staffing changes and other issues, 10 participants were returning and 7 were new. The workshop was facilitated by LSE team members but co-hosted with AAS, with Allen Mukhwana, AAS Research Systems Manager, participating in the full workshop agenda.

Workshop 2 (Addis Ababa) - Programme

***Day 1 – October 7, 2019* - in Jacaranda Meeting Room – Hilton Hotel – Addis Ababa**

Health sciences research in Africa: feedback on plans and preliminary insights from the field

8.30-9.00	Arrivals, Registration & Networking	
9.00-9.45	Welcome and Introductions Workshop Objectives and Programme	Chair: Justin Parkhurst
9.45-10.00	Overview of African Academy of Sciences programs and activities to promote and build health science research capacity in Africa	Presenter: Allen Mukhwana
10.00-11.00	Update on state of the Health Sciences Research context in each country and feedback on action plans *Format: lightning presentations 10 min./country in plenary with 5 min. for questions*	Chair: Pamela Juma Presenters: country participants
11.00-11.15	***Break***	
11.15-12.30	Previous session continued	Chair: Pamela Juma (TBC) Presenters: country participants
12.30-1.30	***Lunch***	
1.30-2.45	Updates on the other components of the project 1) Feedback on paper on mapping indicators of health science research performance (10 min) 2)	Presenters: Justin Parkhurst

	2) Highlighting insights and stories of success of HSR capacity strengthening from cases (45 min.) 3) Bringing out surprising findings to discuss and debate (5 min.) *Format: presentation in plenary, questions for 15 min.*	Research team members
2.45-4.00	Semi-structured discussion groups on today's presentations from participants and researchers - Which themes are the most interesting or relevant for your context? - Do you think this research found something new or surprising? - What is missing from initial findings that would be helpful for your work?	Brief intro: Justin Parkhurst
	Format: small group breakouts (3) Group 1: Cote d'Ivoire, Madagascar, Tunisia Group 2: Ethiopia, Liberia, Uganda Group 3: Botswana, Kenya, Zambia	Facilitators: Group 1: JST Group 2: RM-D+CJ Group 3: PJ
4.00-4.15	***Break***	
4.15-4.45	Groups share highlights and discussions *Format: facilitated discussion in plenary*	Facilitator: Cat Jones
4.45-5.15	Country teams pair up to discuss issues with progress and barriers on their action plans and decide which two themed sub-plenary groups they will participate in tomorrow *Format: country team discussion groups (9)*	Country team activity
5.15-5.30	Wrap up of Day 1 in Plenary	Chair: Justin Parkhurst
5.30	***End of Day 1***	

***Day 2 – October 8, 2019* - in Jacaranda Meeting Room – Hilton Hotel – Addis Ababa**

Strengthening health sciences research in the region: reflections and brainstorming

9.00-9.30	Reflections from Day 1 Introduction to the sub-plenary breakout groups themes and objectives *Format: feedback in plenary*	Chair: Joëlle Sobngwi
9.30-10.45	Reflecting and brainstorming on barriers to achieving goals in action plans (1/2) *Format: sub-plenary breakouts (2)* Group 1 theme: TBD collectively from Day 1 discussion Group 2 theme: TBD collectively from Day 1 discussion	Facilitators: Group 1: TBC Group 2: TBC
10.45-11.00	***Break***	
11.00-12.15	Reflecting and brainstorming on barriers to achieving goals in action plans (2/2) *Format: sub-plenary breakouts (2)* Group 1 theme: TBD collectively from Day 1 discussion Group 2 theme: TBD collectively from Day 1 discussion	Facilitators: Group 1: TBC Group 2: TBC
12.15-12.30	Recap session Sharing highlights of progress and barriers from sub-plenaries Introduce questionnaire for the afternoon individual activity	Chair: Pamela Juma
12.30-1.30	***Lunch***	
1.30-2.15	Reflections on opportunities – issues and novel ideas from session above *Format: facilitated brainstorming in plenary*	Facilitator: Rhona Mijumbi-Deve Discussant: Allen Mukhwana
2.15-2.45	More in-depth presentation of African Academy of Sciences programs and activities to promote and build health science research capacity in Africa, and links to workshop discussion *Format: presentation in plenary, discussion and questions*	Presenter: Allen Mukhwana
3.30-3.45	***Break***	

3.45-4.15	Evaluation to assess whether and how this process has facilitated learning and change *Format: questionnaire*	Individual participant activity
4.15-4.45	Future wishes of participants (ongoing work, network building, cross-border collaboration, funding opportunities)	Co-facilitators: TBC
4.45-5.15	Wrap-Up	Chair: Justin Parkhurst
5.15	***End of meeting***	

Appendix 1. Insert 1. Semi-structured interview guide (English)

Semi-structured guide for interviews with informants about Health Science Research in Africa

This project investigates how health sciences research (HSR) capacity can be improved and increased on the African continent. HSR refers to basic, clinical, and applied science on human health and well-being and the determinants, prevention, detection, treatment, and management of disease. The objective of the project is to identify what promotes an enabling environment for HSR to thrive - exploring several key areas such as (but not limited to) the policy environment, funding mobilization, and the regulatory and coordinating systems for HSR conducted in the public and private sectors. For each of our case studies, we the research team will be speaking with the key "funders, doers and regulators" of research across the continent.

In the semi-structured in-depth interviews for each case, we will ask a set of seven general questions to all informants about their individual and institutional experiences with HSR system in the respective case country to gain insight, through their own work and perspective, into the issues and capacities involved in developing HSR whether in terms of policy, funding, or regulation. We will ask more specific questions to each type of actor depending on their function (funder, researcher, regulator) and their sectoral sphere (governmental, non-governmental, public, private for profit, international organisation/agency).

Through the analysis of the data collected from these interviews, we aim to learn lessons about what drives and supports HSR, where are the gaps, and what are the challenges and barriers, and the strategies being used in different case settings to improve and increase HSR.

Guide for interviews with researchers and academics
(in public or private institutions)

General questions

1. Who are you? What do you do? Where do you work? What is your role?

2. What is your experience (doing, funding, regulating/governing) HSR in [country]?

3. What have been the main facilitators and barriers to your work?

4. What has supported investment in HSR or capacity for HSR in [country]? Why has this/ have these been successful?

5. What are the biggest challenges to establishing a vibrant HSR environment in [country]? How are you addressing these?

6. Have any external factors had a particular impact on the HSR environment in [country]? If so, how?

7. Who do you think is doing well in HSR?

Specific questions
Why have you chosen to work in HSR here (in this country, field of HSR, institution)?

How do you access funding?

What has working in HSR here (in this country, field of HSR, institution) allowed you to achieve?

What can be done to improve / increase HSR?

What are the long terms plans or concerns regarding sustainability of HSR?

Guide for interviews with funders, international donors, and philanthropists

(in public, public-private, foundations, or private not-for-profit institutions)

General questions

1. Who are you? What do you do? Where do you work? What is your role?

2. What is your experience (doing, funding, regulating/governing) HSR in [country]?

3. What have been the main facilitators and barriers to your work?

4. What has supported investment in HSR or capacity for HSR in [country]? Why has this/ have these been successful?

5. What are the biggest challenges to establishing a vibrant HSR environment in [country]? How are you addressing these?

6. Have any external factors had a particular impact on the HSR environment in [country]? If so, how?

7. Who do you think is doing well in HSR?

Specific questions

What mechanisms do you use to fund research /or/ invest in HSR in [country]?

Who or what do you fund or invest in?

Why do you fund research /or/ invest in HSR (or why not) in [country]?

What would make you increase /or/ begin funding HSR in [country] (push/pull mechanisms)?

What challenges do you face?

What has kept you here?

What sustainability plans do you have with government to strengthen HSR?

Do you support HSR in other countries?

What makes a country attractive environment to invest in HSR?

Guide for interviews with government policy-makers
(in public institutions)

General questions

1. Who are you? What do you do? Where do you work? What is your role?

2. What is your experience (doing, funding, regulating/governing) HSR in [country]?

3. What have been the main facilitators and barriers to your work?

4. What has supported investment in HSR or capacity for HSR in [country]? Why has this/ have these been successful?

5. What are the biggest challenges to establishing a vibrant HSR environment in [country]? How are you addressing these?

6. Have any external factors had a particular impact on the HSR environment in [country]? If so, how?

7. Who do you think is doing well in HSR?

Specific questions

To policy-makers about technical matters (i.e. Ministries of Health and/or Education):

What policies and practices are in place to support HSR?

What are the funding mechanisms for HSR?

What challenges have you faced?

What are you doing to make HSR investment attractive for private or international donors / to researchers?

And what would you hope / or / like to do to improve or increase HSR in your country?

To policy-makers about financing matters/budgets (i.e. Ministries of Finance, parliamentary (health/research) committees, health permanent secretary):

Do you co-finance HSR?

- If yes, what funding mechanisms do you use to fund research /or/ invest in HSR? Who or what do you fund or invest in?
- If no, what would increase your financing?

How do you decide what to spend /or/ invest in HSR?

Guide for interviews with private industry

(e.g. pharmaceutical companies, private health care organisations)

General questions

1. Who are you? What do you do? Where do you work? What is your role?

2. What is your experience (doing, funding, regulating/governing) HSR in [country]?

3. What have been the main facilitators and barriers to your work?

4. What has supported investment in HSR or capacity for HSR in [country]? Why has this/ have these been successful?

5. What are the biggest challenges to establishing a vibrant HSR environment in [country]? How are you addressing these?

6. Have any external factors had a particular impact on the HSR environment in [country]? If so, how?

7. Who do you think is doing well in HSR?

Specific questions

Do you invest in HSR in country x and how much? Why?

What funding mechanisms do you use to fund research /or/ invest in HSR in [country]?

Who or what do you invest in?

What has kept you here?

What would make you increase your investment?

How does this compare with your experience with other countries?

Do you invest in HSR elsewhere / regionally?

Do you have a long-term strategy for investing in HSR? Is it country-specific?

Appendix 1. Insert 2: Semi-structured interview guide (French)

Guide d'entretien semi-structuré avec des informateurs-clé sur la recherche en sciences de la santé en Afrique

Ce projet vise à apprendre comment améliorer et accroître les capacités de recherche en sciences de la santé (RSS) sur le continent africain. Nous définissons la RSS comme les sciences fondamentales, cliniques, et appliquées sur la santé et le bien-être humains et sur les déterminants, la prévention, la détection, le traitement, et la gestion de la maladie. L'objectif du projet est d'identifier ce qui favorise un environnement favorable à la RSS à travers l'exploration de plusieurs domaines clés, tels que l'environnement politique, la mobilisation de fonds, et les systèmes de réglementation et de coordination de la RSS dans les secteurs public et privé. Pour chacune de nos études de cas, l'équipe de recherche s'adressera aux principaux bailleurs de fonds, chercheurs, et régulateurs dans les systèmes de la RSS sur le continent.

En ce qui concerne les entretiens approfondis semi-structurés de chaque cas, nous poserons à tous les informateurs une série de sept questions générales sur leurs expériences individuelles et institutionnelles avec le système de RSS dans le pays du cas concerné afin de mieux comprendre, à travers leur travail et leur point de vue, les enjeux et les ressources impliquées dans le développement de la RSS, que ce soit en termes de politique, de financement ou de réglementation. Nous poserons des questions plus spécifiques à chaque type d'acteur en fonction de leur statut (bailleur de fonds, chercheur, régulateur) et de leur domaine sectoriel (gouvernemental, non gouvernemental, public, privé à but lucratif, organisation internationale).

En analysant les données recueillies lors de ces entretiens, nous visons à tirer des leçons sur ce qui motive et soutient la RSS, où se trouvent les lacunes, quels sont les défis et les obstacles, et sur les stratégies utilisées dans différents contextes pour améliorer et augmenter l'investissement dans la RSS.

Guide d'entretien :
Discussions avec des chercheurs et des universitaires

Questions générales

1. Qui êtes-vous? Qu'est ce que vous faites? Où travaillez vous? Quel est votre rôle?

2. Quelle est votre expérience dans la recherche en science de la santé (sa mise en œuvre, son financement, sa régulation, sa gouvernance) dans votre pays?

3. Quels ont été (ou quels sont) les principaux facilitateurs et obstacles à votre travail?

4. Qu'est-ce qui soutient l'investissement dans la RSS ou la capacité de RSS dans votre pays? Pourquoi cela a-t-il réussi?

5. Quels sont les principaux défis à relever pour créer un environnement dynamique de RSS dans votre pays? Comment abordez-vous ces problèmes?

6. Des facteurs externes ont-ils eu un impact particulier sur l'environnement de la recherche dans votre pays? Si c'est le cas, comment?

7. Quelles sont les systèmes en place pour l'utilisation des résultats de la recherche pour améliorer les politiques ou le système de santé et développement ? Qu'est-ce qui pourrait être mis en place en ce sens (e.g. pour combler ces besoins) ?

8. Quelles sont des collaborations de la recherche auxquelles vous ou votre institution participez ?

9. Quels sont les exemples de succès dans la RSS que vous pouvez citer ?

Questions spécifiques
Pourquoi avez-vous choisi de travailler dans la RSS ici (dans ce pays, dans ce domaine de RSS, dans cette institution)?

Comment accédez-vous à des financements ?

Qu'est-ce qui rend facile / difficile de travailler dans le domaine de la RSS ici?

Qu'est-ce que le travail dans la RSS ici (dans ce pays, dans ce domaine de RSS, dans cette institution) vous a permis de réaliser?

Que peut-on faire pour améliorer / augmenter la RSS ici?

Quels sont les projets à long terme ou les préoccupations concernant la durabilité/pérennité de la RSS?

Guide d'entretien :
Discussions avec des bailleurs internationaux et des philanthropes

Questions générales
1. Qui êtes-vous? Qu'est ce que vous faites? Où travaillez vous? Quel est votre rôle?

2. Quelle est votre expérience dans votre pays avec la recherche en science de la santé (sa mise en œuvre, son financement, sa régulation, sa gouvernance)?

3. Quels ont été (ou quels sont) les principaux facilitateurs et obstacles à votre travail?

4. Qu'est-ce qui soutient l'investissement dans la RSS ou la capacité de RSS ici?

5. Quels sont les principaux défis à relever pour créer un environnement dynamique de RSS dans votre pays? Comment abordez-vous ces problèmes?

6. Des facteurs externes ont-ils eu un impact particulier sur l'environnement de la recherche dans votre pays? Si c'est le cas, comment?

7. Quelles sont les systèmes en place pour l'utilisation des résultats de la recherche pour améliorer les politiques ou le système de santé et développement ? Qu'est-ce qui pourrait être mis en place en ce sens (e.g. pour combler ces besoins) ?

8. Quelles sont des collaborations de la recherche auxquelles vous ou votre institution participez ?

9. Quels sont les exemples de succès dans la RSS que vous pouvez citer ?

Questions spécifiques
Quels mécanismes de financement utilisez-vous pour financer la recherche / ou pour investir dans la RSS dans ce pays?

Qui ou quoi financez-vous ? ou Dans qui ou dans quoi investissez-vous?
Pourquoi financez-vous la recherche ou investissez-vous dans la RSS (ou pourquoi pas) dans ce pays?

Qu'est-ce qui vous ferait augmenter votre financement ou commencer à financer la RSS dans ce pays (mécanismes push / pull)?

Quels défis rencontrez-vous?

Qu'est-ce qui vous fait que rester ici et maintenir vos financements/investissements?

Quels plans de pérennisation avez-vous avec le gouvernement pour renforcer la RSS?

Soutenez-vous la RSS dans d'autres pays?

A votre avis, qu'est-ce qui rend un pays attrayant pour investir dans la RSS?

Guide d'entretien :
Discussions avec des décideurs politiques du gouvernement

Questions générales

1. Qui êtes-vous? Qu'est ce que vous faites? Où travaillez vous? Quel est votre rôle?
2. Quelle est votre expérience dans la recherche en science de la santé (sa mise en œuvre, son financement, sa régulation, sa gouvernance) dans votre pays ?
3. Quels ont été (ou quels sont) les principaux facilitateurs et obstacles à votre travail?
4. Qu'est-ce qui soutient l'investissement dans la RSS ou la capacité de RSS ici?
5. Quels sont les principaux défis à relever pour créer un environnement dynamique de RSS dans votre pays? Comment abordez-vous ces problèmes?
6. Des facteurs externes ont-ils eu un impact particulier sur l'environnement de la recherche dans votre pays? Si c'est le cas, comment?
7. Quelles sont les systèmes en place pour l'utilisation des résultats de la recherche pour améliorer les politiques ou le système de santé et développement ? Qu'est-ce qui pourrait être mis en place en ce sens (e.g. pour combler ces besoins) ?
8. Quelles sont des collaborations de la recherche auxquelles vous ou votre institution participez ?
9. Quels sont les exemples de succès dans la RSS que vous pouvez citer ?

Questions spécifiques

<u>Pour les décideurs politiques sur des questions techniques</u> (i.e. aux ministères de la santé et / ou de l'enseignement supérieur):

Quelles politiques et pratiques sont en place pour soutenir la RSS?

Quels sont les mécanismes de financement de la RSS?

Quels défis rencontrez vous? Quels sont des défis liés à la mise en œuvre des plans/stratégies/politiques que vous élaborez ?

Que faites-vous pour rendre les investissements en RSS attractifs aux bailleurs privés ou internationaux / aux chercheurs?

Et qu'espérez-vous ou aimeriez-vous faire pour améliorer ou augmenter la RSS dans votre pays?

Comment fait vous du plaidoyer au près du gouvernement pour sécuriser le financement en faveur de la recherche ?

<u>Pour les décideurs politiques en matière de financement / budgets</u> (i.e. aux ministères des finances, comités parlementaires (santé / recherche), secrétaire permanent à la santé):

Co-financez-vous la RSS?

Si oui :

- Quels mécanismes de financement utilisez-vous pour financer la recherche ou investir dans la RSS?
- Quels sont les domaines/acteurs de la RSS que vous financez ? dans lesquels vous investissez ?

Si non :

- Qu'est-ce qui augmenterait votre financement?
- Comment décidez-vous quoi dépenser ou investir dans la RSS ?
- Comment fait vous du plaidoyer au près du gouvernement pour sécuriser le financement en faveur de la recherche ?

Guide d'entretien :
Discussions avec le secteur privé (industrie)

Questions générales
1. Qui êtes-vous? Qu'est ce que vous faites? Où travaillez-vous? Quel est votre rôle?

2. Quelle est votre expérience dans la recherche en science de la santé (sa mise en œuvre, son financement, sa régulation, sa gouvernance) dans votre pays?

3. Quels ont été (ou quels sont) les principaux facilitateurs et obstacles à votre travail?

4. Qu'est-ce qui soutient l'investissement dans la RSS ou la capacité de RSS ici?

5. Quels sont les principaux défis à relever pour créer un environnement dynamique de RSS dans votre pays? Comment abordez-vous ces problèmes?

6. Des facteurs externes ont-ils eu un impact particulier sur l'environnement de la recherche dans votre pays? Si c'est le cas, comment?

7. Quelles sont les systèmes en place pour l'utilisation des résultats de la recherche pour améliorer les politiques ou le système de santé et développement ? Qu'est-ce qui pourrait être mis en place en ce sens (e.g. pour combler ces besoins) ?

8. Quelles sont des collaborations de la recherche auxquelles vous ou votre institution participez ?

9. Quels sont les exemples de succès dans la RSS que vous pouvez citer ?

Questions spécifiques
Investissez-vous dans la RSS dans ce pays et combien? Pourquoi?

Quels mécanismes de financement utilisez-vous pour financer la recherche ou investir dans la RSS dans ce pays?

Quels sont les domaines/acteurs de la RSS que vous financez ? dans lesquels vous investissez ?

Qu'est-ce qui vous ferait augmenter votre investissement?

Qu'est-ce qui vous fait rester ici et maintenir vos investissements?

Comment comparez-vous votre expérience avec celle d'autres pays?

Est-ce que vous investissez dans la RSS ailleurs / dans autres régions d'Afrique?

Avez-vous une stratégie à long terme pour investir dans la RSS? Est-ce spécifique au pays?

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