Primary school girl, Nyeri County, Kenya.
GPE/Kelley Lynch

Mapping early childhood development research outputs in sub-Saharan Africa

Kenya country report

REAL
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Authors

The writing of this report was led by Eunice Mueni Williams, who conducted the searches for research outputs and supported the analysis. Julian Apio led the analysis, while Pauline Rose provided overall oversight of the process, together with guidance and report review.

Acknowledgements

This work on mapping Early Childhood Development (ECD) research outputs is undertaken in partnership with Education Sub Saharan Africa (ESSA) with funding from Conrad N. Hilton Foundation (grant number 28192). The authors are grateful to Daniel Hawkins Iddrisu (REAL Centre), Pauline Essah, and Samuel Asare (ESSA) for their valuable inputs in the research output searches, analysis and development and review of the report. Any errors are the responsibilities of the authors.

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Suggested citation

Williams, E.N., Apio, J., and Rose, P. (2024). *Mapping early childhood development research outputs in sub-Saharan Africa: Kenya country report*. REAL Centre, University of Cambridge and ESSA

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AJOL	African Journals Online
CESA	Continental Education Strategy for Africa
ECD	Early Childhood Development
ECDAN	Early Childhood Development Action Network
ECDE	Early Childhood Development and Education
ECE	Early Childhood Education
ESSA	Education Sub Saharan Africa
IECD	Integrated Early Childhood Development
KNBS	Kenya National Bureau of Statistics
MoE	Ministry of Education
MoH	Ministry of Health
NACOSTI	National Commission for Science, Technology and Innovation
NESSP	National Education Sector Strategic Plan
NGO	Non-governmental Organisation
NIH	National Institutes for Health
SSA	sub-Saharan Africa
UNESCO	United Nations Science Education and Cultural Organization
UNICEF	United Nations Children's Fund
WHO	World Health Organization

Summary

This report summarises the bibliometric analysis of research outputs on Early Childhood Development (ECD) in Kenya, focusing on research outputs from country-level sources for the period 2010-2022. This analysis was compared with publications identified from international databases for the period 2020-2022. The review of research outputs was conducted using various sources including institutional websites, regional databases e.g. African Journals Online (AJOL), online academic and publication profiles of researchers identified via online surveys and in-country engagement, as well as asking experts within the ECD field to recommend publication resources potentially missed. The type of research outputs of interest are journal articles, working paper series, PhD theses, books (chapters), and evaluation and intervention reports.

Although Kenya has an ECD policy and legal structures in place, this has not yet translated into improved outcomes for all children. There are inadequate public resources allocated towards ECD programming, resulting in unequal access to ECD services. The national net attendance ratio of 87.9 percent masks huge sub-national disparities, with less than 30 percent of children aged 4-6 years attending early learning activities in the north-eastern counties.

We identified 576 research outputs between 2010 and 2022, showing a gradual increase up to 2018, followed by a decline in annual number of research outputs from 2019, with 2022 having half the number of research outputs compared with 2018.

International journal articles were found to be the most common form of research output within Kenya. From the international databases, there were 266 publications (primarily journal articles) for the 2020-2022 period, more than double the same period for country-level searches, for which 119 research outputs were identified.

More than half (53 percent) of the research outputs included health, followed by education (47 percent), while play and responsive caregiving components were included in the least number of research outputs. Health was also included in the highest proportion of publications identified from international sources (67 percent). This was followed by nutrition (46 percent), while education was only included in 16

percent of such searches. The larger proportion of education outputs amongst those identified through country searches could in part be due to the team's closer engagement with education researchers, as some were found through contacts with researchers themselves.

Almost two thirds (63 percent) of ECD research identified in Kenya is not funded. Where funded, international organisations are the most prevalent, funding 46 percent of the research outputs, followed by philanthropic organisations at 39 percent. Internal institutions (i.e., universities and research institutions) funded 7 percent of the research, while government accounted for 3 percent of the funded research. Most publications (91 percent) from international databases were identified as receiving funding. Of these, the main funding source was international organisations (67 percent) and external philanthropists (25 percent). Funding varied across the ECD components. International organisations and external philanthropists funded more than three quarters of research outputs identified through country-level searches and international databases. The exception was for play (as identified through country-level searches) which did not receive any funding. Funding from internal organisations identified through country-level searches was more pronounced for research outputs on responsive caregiving and education.

Most of the research identified from country searches does not consider findings by inequality, including gender, social-economic status (poverty), disability, ethnicity or religion. Of the five inequalities assessed in this report, gender was the most common, and was included in 25 percent of the research outputs. Disability however was the least common and included in only 2 percent of research outputs. In publications from international databases, poverty was the most common (40 percent), while ethnicity and disability were the least common (both at 9 percent). Among the research outputs that included the location of the study, 27 percent was conducted in rural areas. This was very similar to those identified from international databases (26 percent of publications).

Publications identified both from country searches and international databases were written by a similar proportion of male and female authors. Only 7 percent of research outputs reported collaboration between researchers across SSA countries, while about one in every five reported collaborations outside SSA for research from

country-level searches. By contrast, from international databases, more than two thirds collaborated with researchers outside SSA. Researchers working on play and education were less likely to collaborate outside the country compared to the rest of the ECD components based on country-level searches. There were no differences in collaboration across ECD components based on searches of international databases.

In conclusion, we show that there is locally published research on ECD that is unlikely to be visible in international spaces and thus may be excluded from policy making. Even so, the main source of publications appears to be those in international journal articles.

Our recommendations include to:

- Encourage research outputs in those ECD components for which there is the least research, notably on play, and responsive caregiving.
- Increase funding, particularly on education and play research.
- Encourage collaboration between African researchers within the continent.
- Intensify efforts to improve capacity and funding for increased research development and production.
- Support research to include analysis by inequality (such as gender, socio-economic status, disability, ethnicity, religion, among others).
- Develop functional online repositories within national and regional institutions to facilitate the accessibility and dissemination of evidence.

1. Introduction

The early childhood period is recognised as a crucial stage to invest in children to help them survive, thrive and achieve their full potential. Evidence shows the importance of early childhood development (ECD) for lifelong health, productivity and wellbeing (Black et al., 2017; Yoshikawa & Kabay, 2015). ECD involves the creation of favourable conditions to facilitate the cognitive, social, emotional, linguistic, and physical development of young children (World Health Organization (WHO) et al., 2018). Commitments by the global and regional community to improve ECD is captured in several global, regional and national policies and development frameworks. For example, the Sustainable Development Goals committed to ensuring equitable access to quality ECD and early learning opportunities by 2030. Target 4.2 aims to ensure that 'by 2030 all nations will provide access to quality early childhood development, care and pre-primary education so that all girls and boys are well prepared when they enter primary education' (United Nations, 2015). Regionally, the Continental Education Strategy for Africa (CESA 2016 – 2025) identifies early childhood education as the pillar on which future learning and training are grounded, and the next frontier if Africa is to realise sustained quality education and training (African Union, 2015).

Despite the recognition from global and national commitments that highlight the importance of ECD for school readiness and future life opportunities, there is a concern about the insufficient efforts aimed to support children to get a good start in life. For example, '250 million children (43 %) younger than five years in low and middle-income countries are at risk of not achieving their developmental potential.' (Black et al. 2017, p.77). ECD has yet to attract the resources needed to expand access and deliver quality services for all young children. A recent report analysing international and domestic sources of ECD funding in low- and middle-income countries showed that ECD is underfinanced relative to need. This is despite global consensus that at least 1 percent of GDP should be invested in ECD to ensure quality services (Putcha et al., 2016).

There is a need to understand the status, challenges and opportunities for improving ECD in African countries, and to systematically analyse evidence on ECD and its

various components. The Nurturing Care Framework for Early Childhood Development (2018), which reframed ECD as an outcome and not a specific intervention or programme, provides a systematic approach to analysing ECD research in Africa (WHO & United Nations Children's Fund (UNICEF), 2023).

Building on the Nurturing Care Framework for Early Childhood Development, for the purposes of our mapping, ECD is categorised into six components, namely education, play, health, nutrition, responsive caregiving and environment, safety and protection. Our searches in international databases show that there are a number of publications on ECD by African scholars indexed in international databases, although most focus on health and nutrition (Iddrisu, Adrupio & Rose, 2024). The limited number of publications on education and play in international databases could imply limited research activity by African scholars in these areas. This means that locally contextualised research which is better placed to inform local investments, policy, and practice is likely to be left out. However, it is possible that further research outputs are available within countries that are not included in the international databases.[i] Making this local evidence, knowledge and expertise more visible will contribute to a shift in global knowledge, with local evidence playing a bigger role in local and global contexts. It will also widen the evidence base, thus influencing the types of evidence funded and generated to better serve decision-makers.

To identify these locally based research outputs, we extended searches related to evidence on ECD by Africa-based authors to incorporate national and regional databases in sub-Saharan Africa (SSA) countries (excluding South Africa[ii]). This entailed searching various institutional websites, regional databases e.g. AJOL, reviewing online academic and publication profiles of researchers identified via online surveys and in-country engagement, and contacting experts within ECD for recommendations for research outputs we may have missed out. Because this is a labour-intensive undertaking, country-level mapping was limited to four countries: Kenya, Tanzania, Uganda, and Ghana.[iii] This report focuses on Kenya.

2. Kenya ECD policy context

For the last two decades, Kenya has developed many policies and laws to guide implementation of ECD. The first comprehensive ECD policy in 2006 was aimed at enhancing access, equity and quality services for all children from conception to 8 years (Republic of Kenya, 2006). The policy sought to bring coordination across sectors, and led to major changes in the understanding of ECD and the role of various stakeholders, with the government recognising its responsibility for establishing a supportive environment to address challenges in quality and access to ECD services.

Since the 2006 policy, several other policies and laws have been developed and revised to align with the 2010 constitution that identified the devolved county-level government as having responsibility for provision and regulation of ECD services in the country. The National Pre-Primary Education Policy, 2017 (Ministry of Education, 2017), the Integrated Early Childhood Development (IECD) Policy Framework, 2017 (Republic of Kenya, 2017) and the National Pre-primary Education Policy Standard Guidelines, 2018 (Ministry of Education, 2018b) were all developed with the aim to increase equitable access to quality ECD services across a variety of sectors. The 2018 early childhood education (ECE) policy guidelines clearly defined the role each stakeholder should play to ensure successful ECD programming. The 2017 IECD framework adopts a life-cycle approach to provide a frame of reference for key stakeholders to meet unique needs of children in each age range and advocates for adequate funding of large-scale ECD interventions (Republic of Kenya, 2017). The Early Childhood Education Act, 2021 (Republic of Kenya, 2021) is the first legislative attempt to harmonise the aims and entitlements of pre-primary education within a single framework. It reiterates the right to early childhood education and development irrespective of ability, gender, and ethnicity (among others). It also recognises the parents and family of the child as the primary caregivers, and provides a framework for the establishment of a comprehensive Early Childhood Development and Education (ECDE) system, infrastructure, delivery of quality and efficient services, and partnership between the relevant stakeholders. The Act also directs county level governments to establish centres to provide free and compulsory ECD in public education centres, which would be eligible for children 4-6 years.

A study analysing policies and stakeholder views noted that while areas of health and nutrition have been considered in policies and county level plans, domains of early learning, responsive caregiving and safety and security face significant policy and implementation gaps, particularly for the 0–3 year age group (Abboah-Offei et al., 2022). The health sector receives the bulk of government and donor funding on ECD, with immunisation, pre-and postnatal care, reproductive health, and management of childhood illnesses being the most common programmes. Budget support and coverage for children with disabilities is minimal (Abboah-Offei et al., 2022).

Despite the favourable policy and legal environment, and the ambitious goals for scaling up provision of quality ECD services, there are inadequate public resources allocated towards ECD programming. This has resulted in low quality and unequal access to ECD services. Analysis of 2021 budget data showed that Kenya invests just 1.8 percent of its education budget on pre-primary (UNICEF, 2021). This is much lower than the recommended international target of 10 percent (UNICEF, 2022). As such, financing of ECD is largely left to households, with the prohibitive cost being a big challenge to access (Piper et al., 2018). Children with disabilities, special needs, and those from poor households, are among the most marginalised and most likely to be left behind (Jeyam et al., 2022; Wickenden et al., 2023).

Low budget allocations are likely to be linked to poor ECD outcomes. The aim of the National Education Sector Strategic Plan (NESSP) (2018-2022) was to increase pre-primary Gross Enrolment Rate to 83 percent by 2022, and to ensure 100 percent transition to primary education. The 2022 Demographic and Health Survey reported an 88 percent net attendance ratio among children aged five years (attending either an early childhood learning programme or primary school). This varied from almost universal attendance in most central region counties to less than 20 percent (16.7) in Mandera county (Kenya National Bureau of Statistics (KNBS) & ICF, 2023). Although there has been recent increase in the supply of ECD services, there is concern that this has been at the expense of quality. Most counties have focused on the construction of ECD facilities, while not prioritising or having sufficient resources for other crucial elements such as training of the ECD workforce, provision of child-friendly learning materials, and quality assurance (UNICEF, 2021). Another

challenge for ECD programming is the limited availability of data and quality research to ensure child development outcomes are adequately collected and tracked to inform future policies and programmes.

By conducting this research mapping, we hope to contribute towards understanding the current research landscape within Kenya to provide empirical evidence to inform ECD policy and programming.

3. Methods

The methodology of mapping of research outputs analysed in this report is detailed in a protocol developed to guide this exercise (Williams, et al., 2024). We searched for research outputs in AJOL, institutional repositories, google scholar, as well as unpublished literature databases, and websites of international charities and organisations implementing ECD interventions. We asked participants in an online survey to share their research outputs, and we also identified additional research outputs by searching academic and online profiles of identified researchers. Most of the participants in the online survey were drawn from ESSA's database, and therefore more likely to be education researchers rather than researching all components of ECD. This means that there could be a greater representation of education research outputs in this report.

Research outputs included in the searches are journal articles, working paper series, PhD theses, books (chapters), and evaluation and intervention reports undertaken by universities, other research institutions and policy think tanks, NGOs, international aid agencies, government departments, and foundations. Appendix 1 provides a list of research output sources and access links. We also compare these outputs with publications on ECD in Kenya identified from international databases.

Research outputs were identified as relevant if the research was:

- conducted by at least one researcher based in Kenya,
- published from January 2010 to 2022,

- addressed at least one of the ECD components: health, nutrition, environment and protection, education/early learning, responsive caregiving, and play,
- focused on children 0–3 years, while also including 4–8 years.

We used the Nurturing Care Framework as the starting point for identifying and categorising sub-groups (components) of ECD. We developed this further based on other related frameworks by international organisations, including a specific category for play and an extension of 'early learning' (0–3 years) as used in the Nurturing Care Framework to 'education,' focusing on the pre-primary age group (0–8), (see Table 1). Figure 1 depicts the six components of ECD adopted for this protocol and to guide the searches.

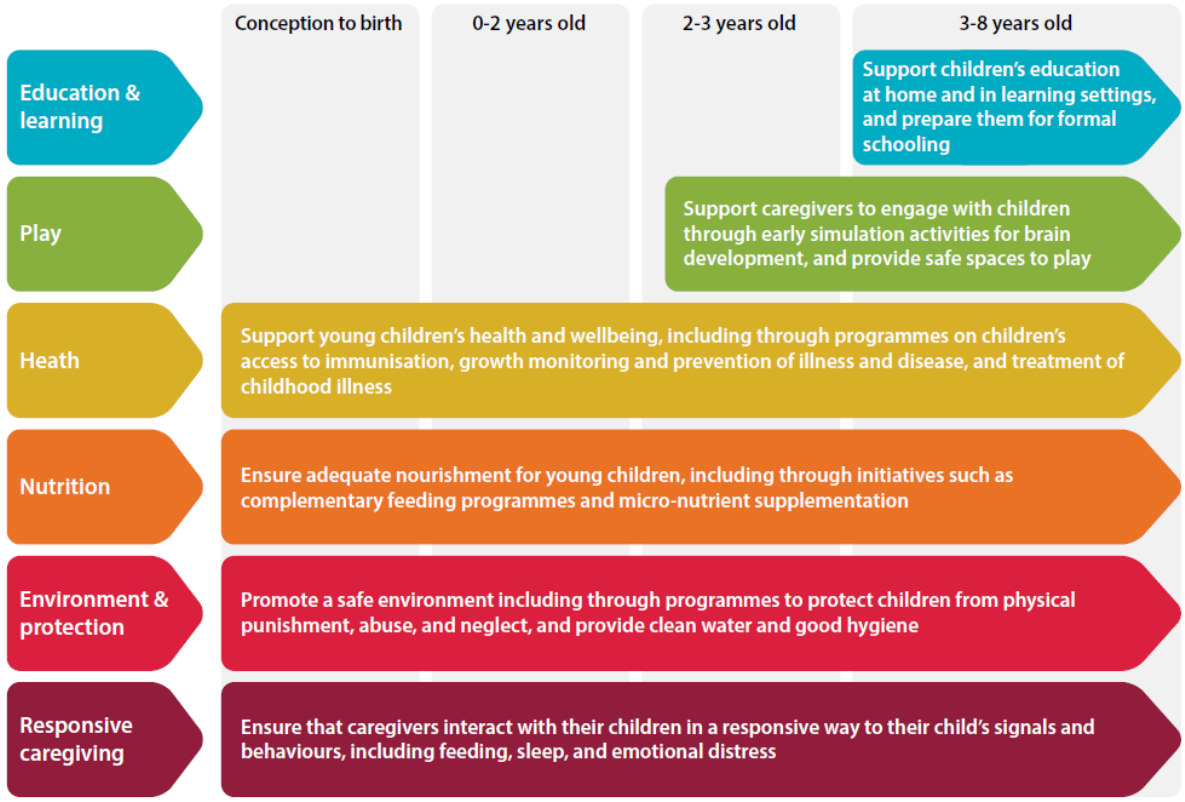
We focused on 0–3 years and extended this to include research outputs focusing on children up to 8 years, provided they were related to early childhood development. This was to ensure we captured early childhood education along with other components of early childhood development. In most countries, the pre-primary education age range is 4-6 years but could extend to age 8 (particularly where children are over age). The cutoff age was also informed by other related frameworks drawn from various institutions, as shown in Table 1.

Table 1: ECD component identified by selected organisations

	UNICEF/WHO	ECDAN	UNESCO	World Bank
Education	Early Learning	Learning	Education/learning	Learning
Nutrition	Nutrition	Nutrition	Nutrition	Nutrition
Health	Health Care	Health	Health	Health
Caregiving	Responsive Caregiving	Responsive Caregiving	Parental/family support	Nurturing care
Play	Play, sing etc	Playful parenting		
Environment/ Protection	Protection from Harm	Safety and Security	Social Protection	Protection from exposure to stress
Age group	0 – 3 years	0 – 3 years	0 – 8 years	0 – 5 years

Source: Compiled from the organisations' websites.

Figure 1: An integrated approach to ECD



Source: Adapted from Zubairi & Rose 2021; WHO, UNICEF & World Bank, 2018.

In line with the ECD protocol (Williams et al., 2024) and the general protocol for the African Education Research Databases (Iddrisu, Williams, & Rose, 2024; Mitchell & Rose, 2018), we used a number of keywords for each ECD component, in combination or individually, depending on the platform. Examples of search strings used included:

"early childhood development" OR "child growth" OR "child development" AND (year)

“early childhood education” OR “Pre-primary” OR “pre-school” OR “early learning” AND (year)

“responsive parenting” OR “responsive care-giving” OR “parenting” OR “caregiving” AND (year)

"early stimulation" OR "play" OR "play space" AND (year)

"child health" OR "child wellbeing" OR "child well-being" OR "child growth" AND (year)

"child nutrition" OR "supplement" OR "child feeding" OR "child food" OR "breastfeeding" AND (year)

"malnutrition" OR "malnourish" OR "stunting" OR "wasting" OR "underweight" AND (year)

"child safety" OR "child protection" OR "water, sanitation and hygiene" OR "WASH" OR "water and sanitation" OR "hygiene" AND (year)

All identified research outputs were collated in a spreadsheet where bibliometric analysis was conducted, listing the topic of research, location of study, sociodemographic characteristics of research participants (gender, disability, wealth/income status, religion, ethnicity), source of funding, collaboration with other researchers, institution of affiliation, gender of researcher, and contact details.

To ensure quality, only research outputs that have undergone some form of peer review, or that include a rigorous method section that we could review, were included in the mapping.

Although our aim for the country-level searches was to identify research outputs not captured in international databases, it is possible that some journal articles indexed in international databases were also captured during the country-level searches. In the cases where we identified this overlap, particularly for 2020-2022 where a similar mapping exercise was conducted in international databases, all identified publications were deleted from the country-level search list to avoid duplication. This was the case for a relatively small number of publications. As our analysis of comparisons in the report between country-level searches and searches of international databases only covers 2020-2022 (see Iddrisu, Adrupio & Rose, 2024), there is not a concern of potential double-counting. For the 2010-2019 period which were covered only by the country-level searches, it is possible that some international journal articles could still be included in the analysis of country searches. However, we expect this to be a relatively small number, and so do not anticipate it would affect the results significantly.

4. Findings

In this section, the analysis of the identified research outputs and the research authors is presented to enable us to understand the landscape of ECD research published by SSA-based researchers. We show the annual trend of research outputs, the type of research output, and whether the research is funded or not. We analysed research outputs based on the ECD component addressed, whether individually or cross-cutting, the research location, and the forms of inequality addressed in the research. Analyses also included the gender of researchers, their institutional affiliations, and whether research outputs reported collaboration with co-authors in Kenya, in SSA and/or outside SSA. Where relevant and possible, we provide comparisons between the country-level searches and those in international databases.

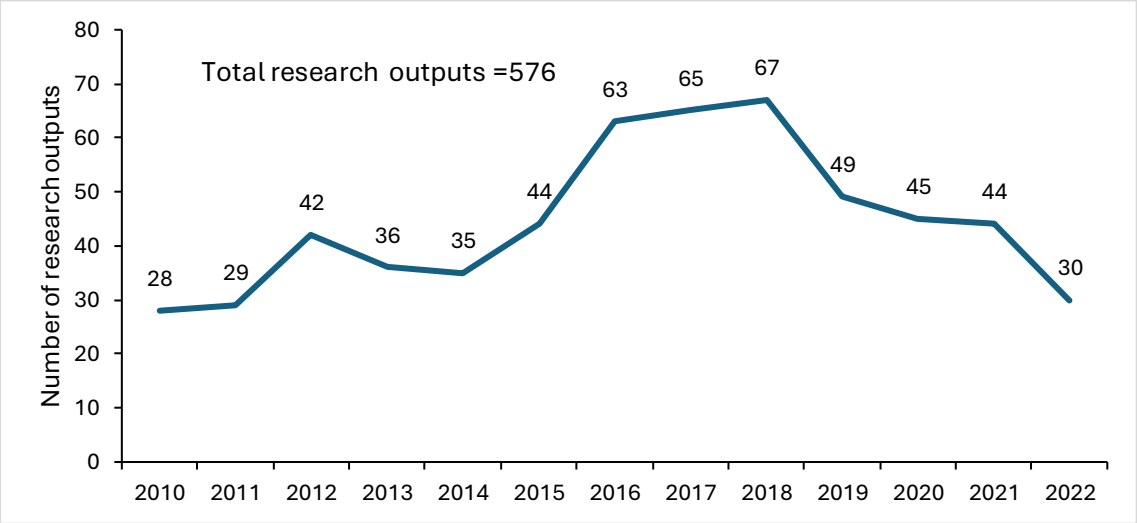
Research outputs trends and types

Reporting on annual research output trends and the distribution by ECD component can help us identify areas that are under researched. It can also uncover patterns of research interests over time, and therefore inform recommendations on addressing research gaps. In addition, exploring research funding can highlight research output patterns related to funding availability, and provide evidence for policy recommendations.

Research on ECD in Kenya increased since 2010, rising from 28 research outputs, peaking at 67 research outputs in 2018, before dropping to 30 in 2022 (Figure 2). The relatively high number of research outputs in 2016-2018 could be associated with the increased interest in ECD during this period that led to several policies and acts in 2018. These included the National Pre-primary Education Policy (Ministry of Education, 2017), National Pre-primary Education Policy Standard Guidelines (Ministry of Education, 2018b), and the Integrated Early Childhood Development (IECD) Policy Framework (Republic of Kenya, 2017). It is not clear why there was a decline in research outputs in 2019, but it is possible that COVID-19 adversely affected research productivity since 2020.

Over the period 2020-2022, more than double the number of publications were identified from the international databases (266) compared to country-level searches (119). Like the pattern for research outputs from country searches, publications identified in international databases dropped from 117 in 2020 to just 68 in 2021. While they increased slightly in 2022 (to 78), they did not reach the level seen in 2020.

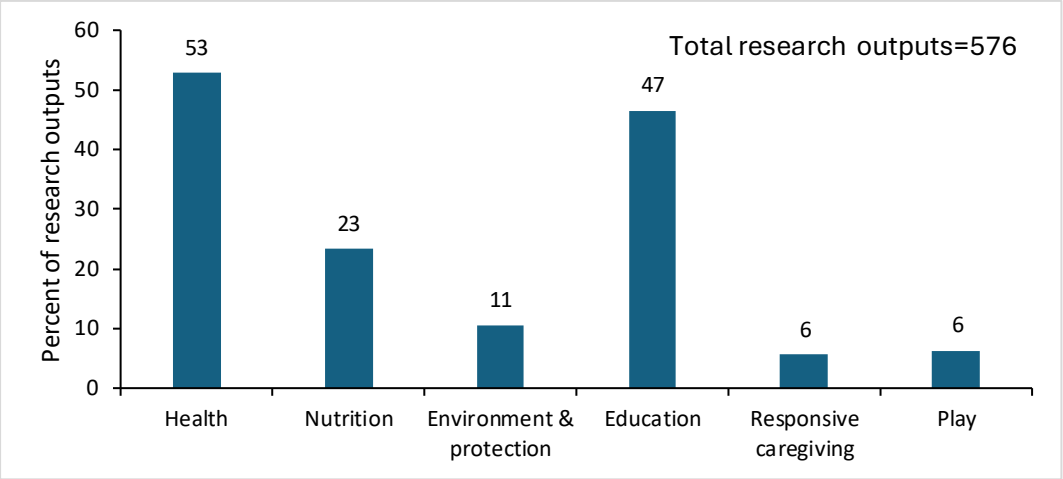
Figure 2: Number of research outputs (2010-2022)



Research outputs by ECD component

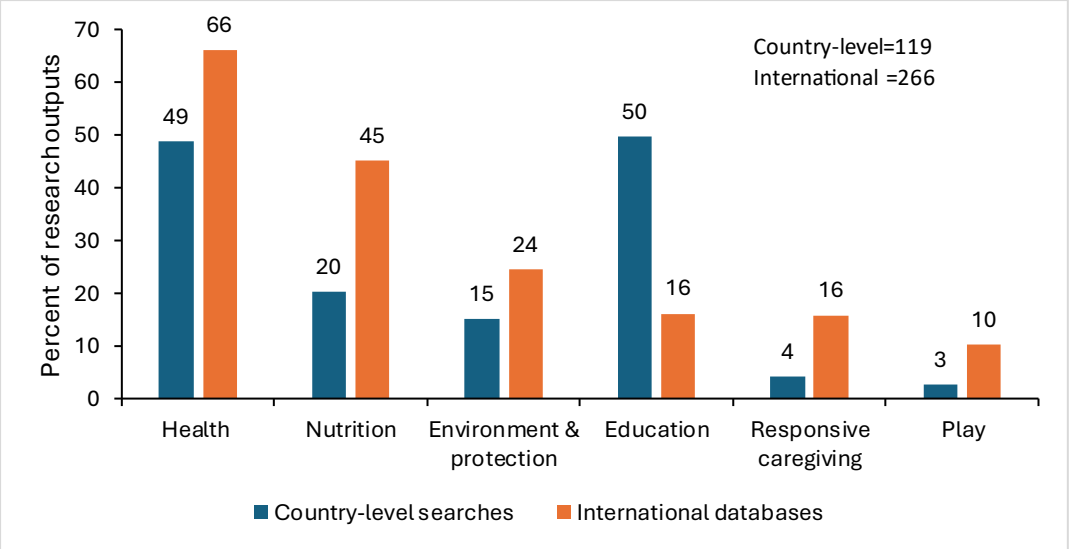
More than half of all nationally identified research outputs focused on health, while education research was reported in 47 percent of the research outputs. A UNESCO report similarly showed that Kenya's research outputs were highly concentrated in the health sector (UNESCO, 2023). Research on play and responsive caregiving was least common, representing 6 percent of the total research outputs (Figure 3). For publications identified from international databases, health and nutrition had the highest number of publications, while education constituted only 16 percent of the included publications (Figure 4). The relatively higher proportion of research outputs on education from our country searches could partly be due to ESSA networks reaching more education researchers as part of the search strategy.

Figure 3: Research outputs for each ECD component (2010-2022)



Note: Total is more than 100 percent because some research outputs focus on more than one component.

Figure 4: Comparison between country-level and international database searches by ECD component (2020-2022)



Note: The total is more than 100 percent because some research outputs focus on more than one component.

Most of the ECD research is siloed, with minimal interconnection across components. Only one study identified from the country-level searches interconnected across all six ECD components, while six research outputs connected with four components, excluding play, and environment and protection. For research

cutting across several components, research outputs on health were more likely to interconnect with nutrition, and least likely to also focus on play. For example, of the 317 research outputs on health, 117 also focused on nutrition, while only five also intersected with play. Research outputs on education were more likely to connect with environment and protection (studies mostly focused on environmental safety of care and learning centres) and play. All but three research outputs that focused on play also focused on education.

From the country-level searches, journal articles are the most prevalent form of research output identified. Working papers are almost non-existent, while few researchers publish books and book chapters and research or evaluation reports (Figure 5). Although this could reflect the pressure to publish journal articles as a requirement for academic promotion, it could also imply that other research outputs such as working papers and research, or evaluation reports are not made available online. Their lack of visibility could also be because researchers are not incentivised to upload unpublished research to institution repositories, or funders restrict their distribution online. This pattern is consistent across the six ECD components (Figure 6). There were however more PhD theses and books and book chapters identified on education compared to other components.

For the period 2020-2022, we identified that there were 99 journal articles from the country-level searches compared to 259 articles from the international databases. This suggests that Kenyan researchers are more likely to publish in international journals than national or regional ones.

Figure 5: Type of research output based on country-level searches (2010-2022)

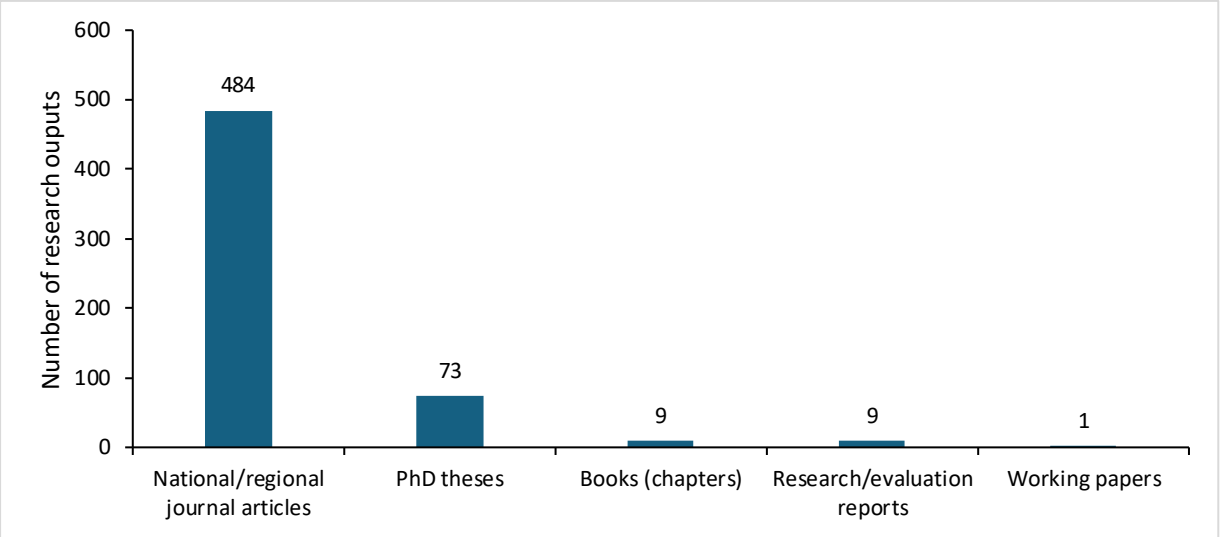
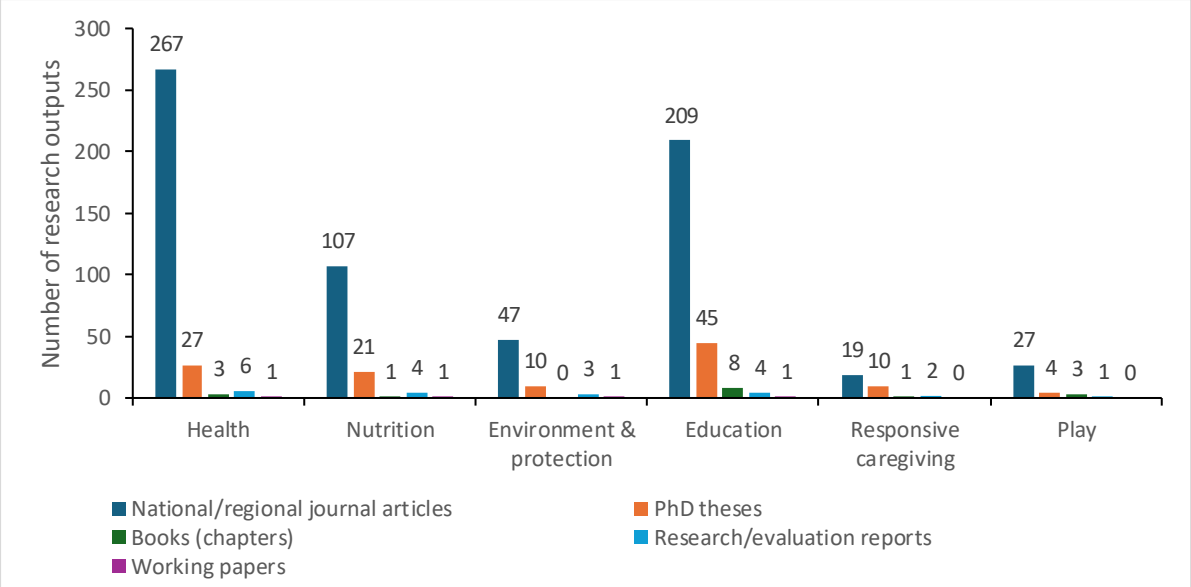


Figure 6: Type of research output by ECD component based on country-level searches (2010-2022)



Research funding

Kenya's development blueprint, Vision 2030, recognises the critical role played by research and development in accelerating economic development in the country (Republic of Kenya, 2007). To contribute towards this, the National Research Fund was established in 2013 to mobilise, allocate and manage financial resources, with

government committing to double its allocation to the fund from 1 percent in 2010 to 2 percent of GDP (Lutomiah et al., 2022; Ministry of Education, 2018a). However, recent evidence reports that only 0.8 percent of funds allocated is utilised (UKAID, 2019; UNESCO, 2023).

Our analysis shows that 36 percent of research outputs from country-level searches reported receiving funding, but this varied widely across ECD components. While 58 percent of research outputs on health reported receiving funding, none on play and only 9 percent on education received funding (Figure 7).

From international databases between 2020-2022, 71 percent of all publications received funding, with minimal variations across components, ranging from 68 percent on education to 85 percent of publications on play (Figure 8). This shows a huge difference in funding of research on play between country-level and international database searches.

Figure 7: Funding status based on country-level searches (2010-2022)

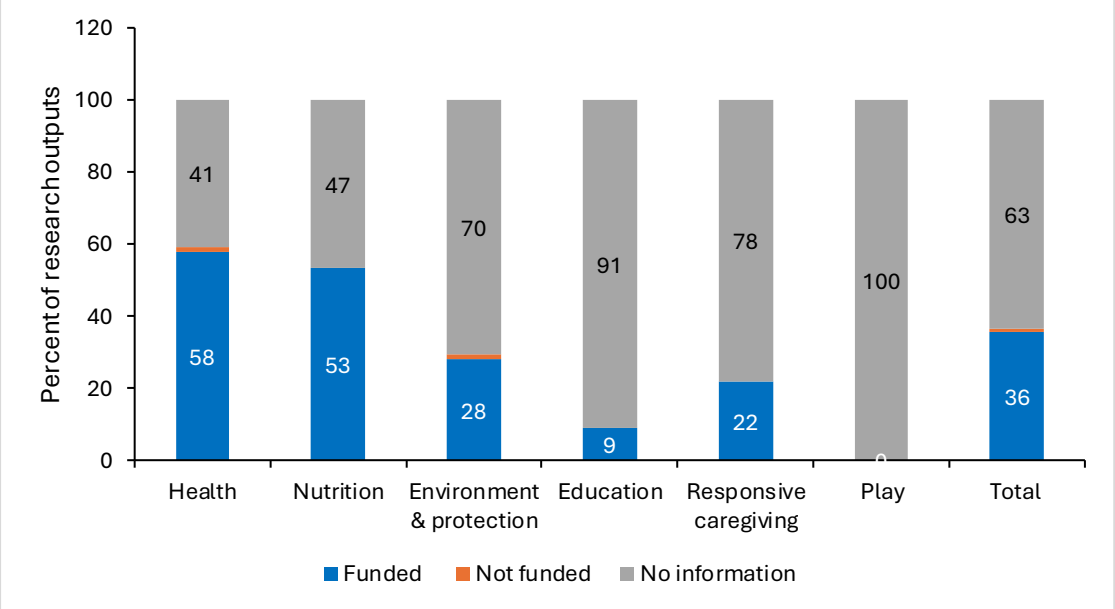
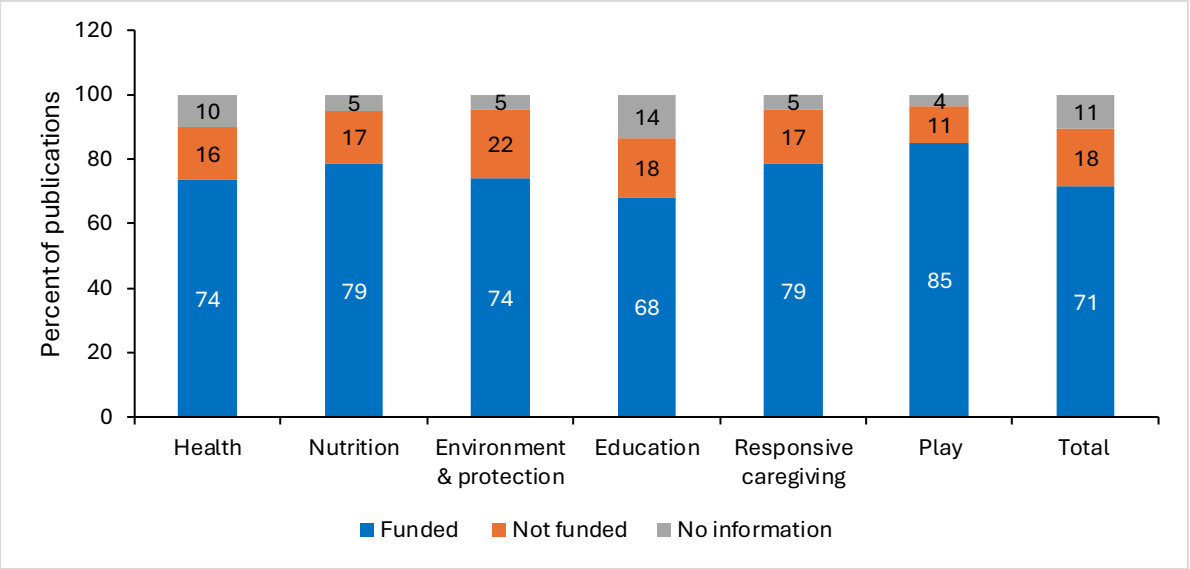


Figure 8: Funding status based on international database searches (2020-2022)

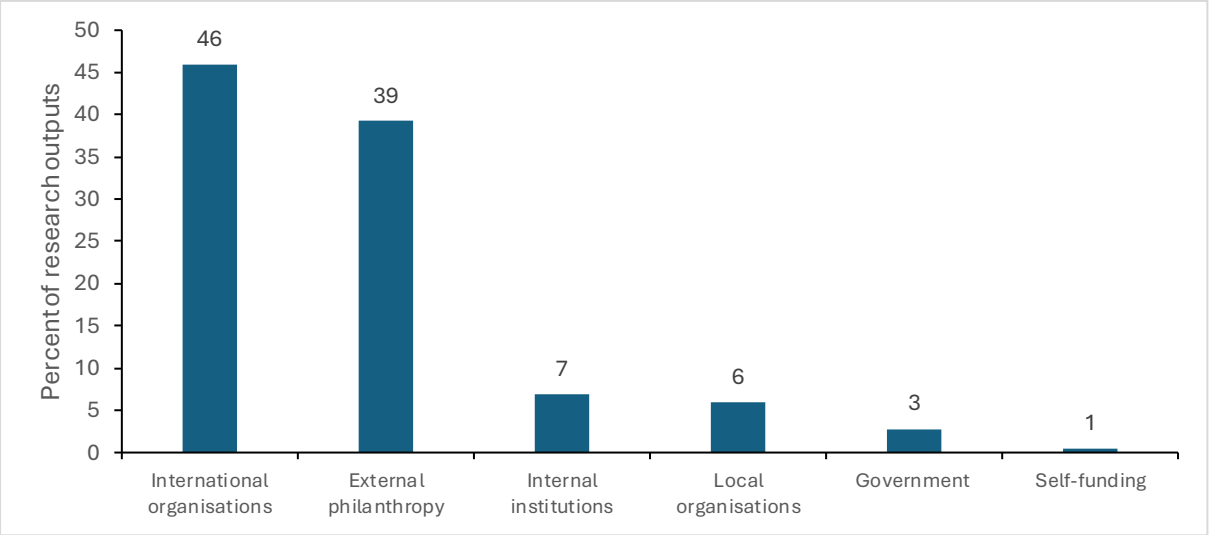


Looking at the various types of funding reported, international organisations are the most common source (46 percent), followed by philanthropic organisations (39 percent) (Figure 9). Government funded only 3 percent of the research, while local organisations accounted for 6 percent. Universities and research institutions funded 7 percent of the research from country-level searches.

The National Commission for Science, Technology and Innovation (NACOSTI) expects universities and other research institutions to spend at least 2 percent of both recurrent and capital expenditure on research, leveraging these funds to create partnerships, develop research collaborations and attract external funding. Despite this, evidence shows that only the most intensive-research institutions spend about 1 percent of government allocations to leverage additional funding (UKAID, 2019).

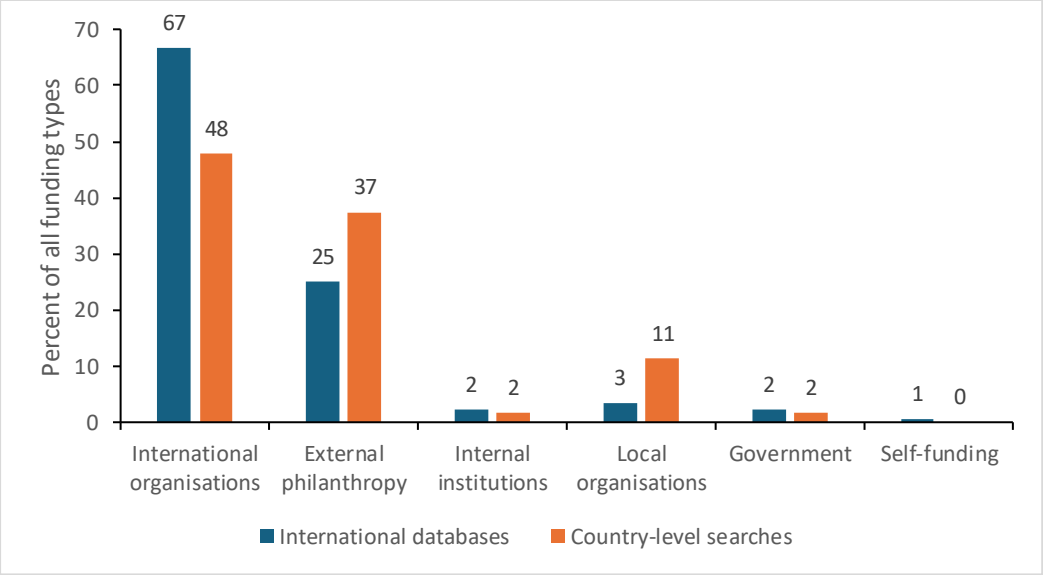
For publications from international databases identified in 2020-2022, international organisations are the main funding type followed by external philanthropists (Figure 10).

Figure 9: Funding types based on country-level searches (2010-2022)



Note: Some research outputs may have more than one funding source.

Figure 10: Funding types based on country-level and international database searches (2020-2022)



Note: Some publications may have more than one funding source.

There were no differences in the top two funders for research outputs whether from country-level searches or international databases. The Wellcome Trust, and Bill & Melinda Gates Foundation were the most common funders of ECD research in Kenya (Table 2). There was far more diversity in funders of publications from international databases, with the top three constituting 22.3 percent of the total

funders, compared to 31.1 percent for research outputs from country-level searches. If we consider top funders for the 2020-2022 period for which the country-level searches were undertaken, local organisations including the DELTAS Africa Initiative is featured among the top six funders.

Table 2: Most common funders identified from country-level and international database searches (2020-2022)

Publications from international database searches			**Research outputs from country-level searches**		
Funder	**No.**	**%**	**Funder**	**No.**	**%**
Bill & Melinda Gates Foundation	36	9.5	Wellcome Trust	15	13.5
Wellcome Trust	30	8.0	Bill & Melinda Gates Foundation	11	9.9
National Institute for Health	18	4.8	DELTAS Africa Initiative	9	8.1
Department for International Development, UK Government	17	4.5	Medical Research Council, UK	9	8.1
Eunice Kenney Shriver National Institute of Child Health and Human Development, USA	15	4.0	National Institute for Health	6	5.4
United States Agency for International Development	13	3.4	British Academy	3	2.7

International organisations and external philanthropists funded more than three quarters of research outputs from country-level searches, except for play, which received no funds (Figure 11). The most common funders identified above, such as Wellcome Trust, Bill & Melinda Gates Foundation, and the National Institute for Health funded research on health and nutrition, while the most common funders for education and other components were external philanthropy organisations including Conrad N. Hilton Foundation, William & Flora Hewlett Foundation, and Children's Investment Fund Foundation. These funders also funded health research outputs. Research outputs on responsive caregiving were more likely to be funded by internal institutions compared to other ECD components, but did not report any funding by government or local organisations.

International organisations and external philanthropy were also the most common funders across ECD components (Figure 12).

Figure 11: Funding type by ECD component based on country-level searches (2010-2022)

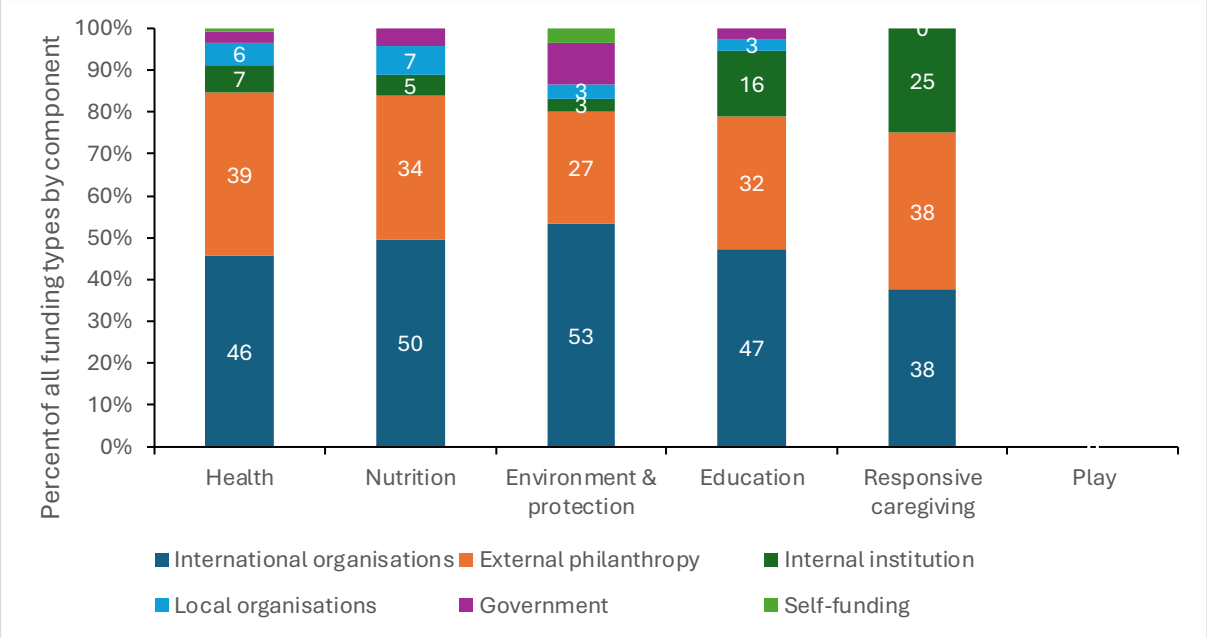
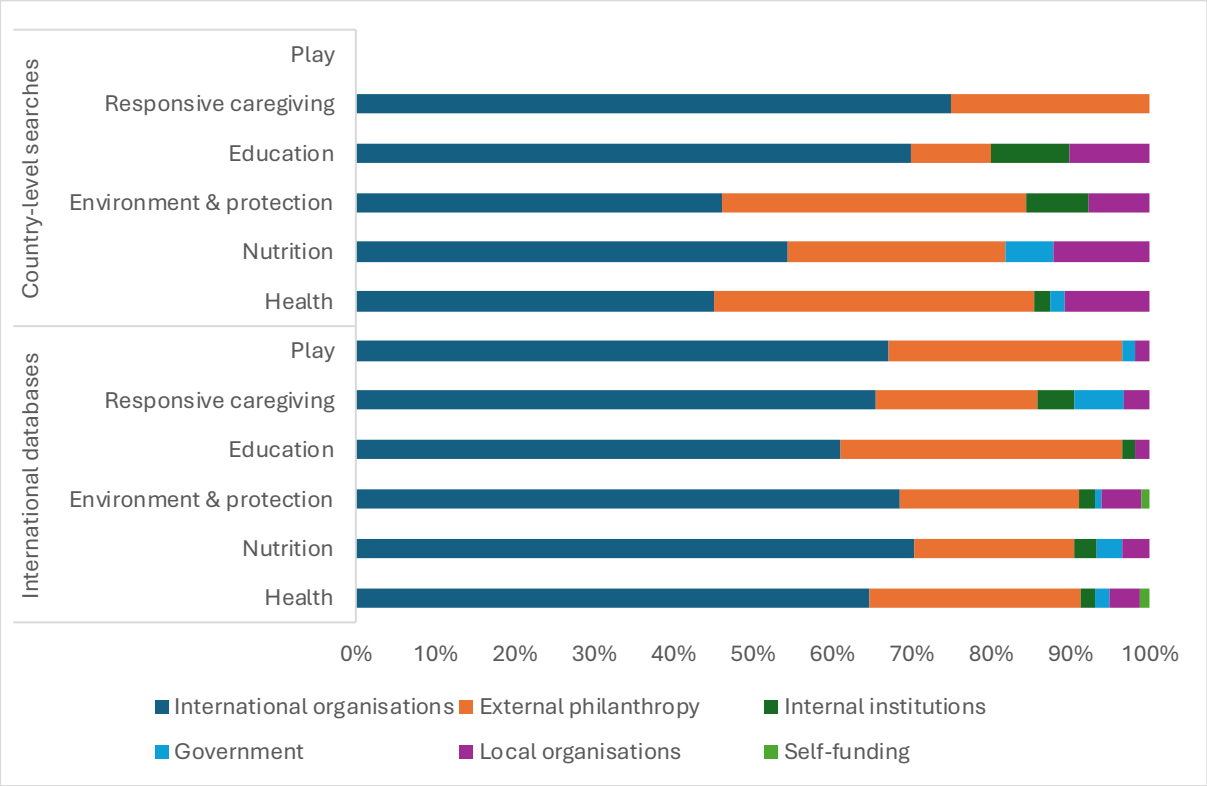


Figure 12: Funding type by ECD component based on country-level and international database searches (2020-2022)



Inequality included in the research outputs

In this section, we report on whether research took account of inequality, including in relation to gender, household income, disability, religion, and ethnicity. This analysis may help identify areas that deserve more attention in research given the Kenyan government's priorities.

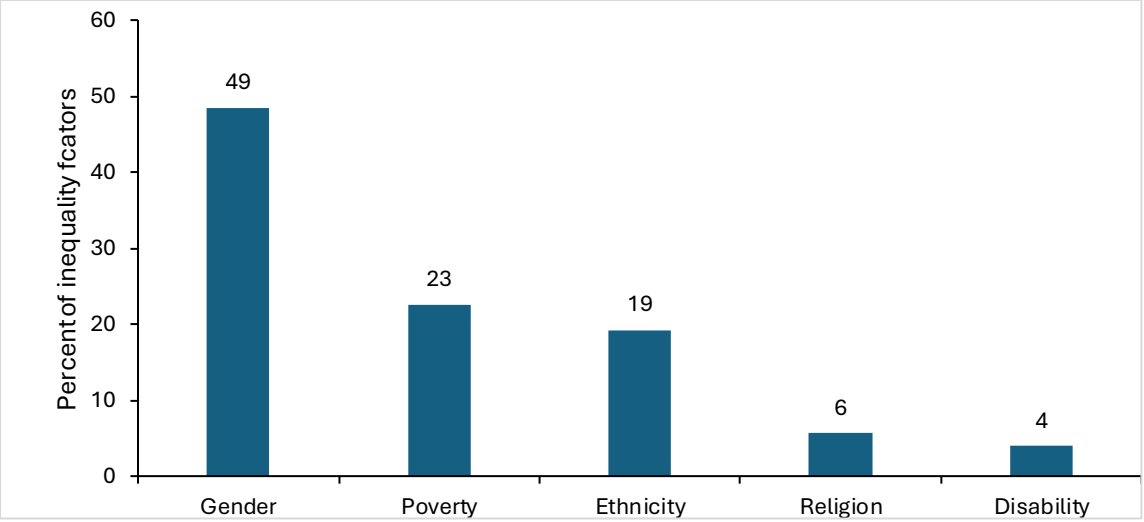
Kenya's Vision 2030 embeds equality, irrespective of one's race, ethnicity, religion, gender and socioeconomic status. The Integrated Education and Childhood Development Policy Framework further identifies equity and non-discrimination as one of its guiding principles. It notes that no child should be excluded from ECD services based on their race, gender, sex, marital status of their caregiver, ethnic or social origin, colour, sexual orientation, age, disability, religion, conscience, belief, language, culture and birth (Republic of Kenya, 2017). To identify forms of potential inequality that affect education opportunities, and provide evidence on promising approaches to achieve equality, research findings should take account of various inequalities. To explore this, we assessed whether the research outputs we analysed included attention to gender, social-economic status (poverty), disability, ethnicity and religion of participants. Just over one third (37 percent) of all research outputs accounted for any inequalities.

Of the five areas of inequality assessed, gender was the most common for country-level searches, representing almost half of all inequality factors Disability received the least attention, accounting for only 4 percent of inequalities included (Figure 13). As inclusion and support for children with disabilities is one of the priority programme areas and policy strategies of the IECD policy framework, more research should be conducted that is inclusive of children with disabilities. Only a small number of research outputs included multiple inequalities, with 7 percent having both gender and poverty, reducing to 2 percent if three inequalities (gender, poverty and ethnicity) are considered.

Comparing results for the same period (2020-2022), Figure 14 shows that 25 and 19 percent of publications from international databases and country-level resources respectively, did not include information on any of the areas of inequality. For publications from international databases, poverty was the most common area,

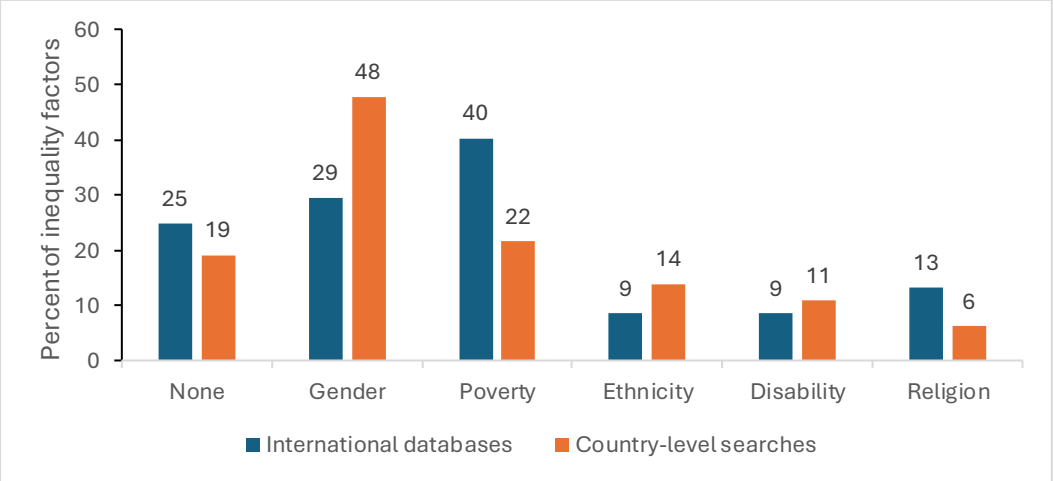
included in two in every five publications. Of the other three inequalities, religion was more likely to be included in publications from international databases, while ethnicity was more likely to be included in research outputs from country-level searches.

Figure 13: Inequality included in research outputs based on country-level searches (2010-2022)



Note: Some research outputs may include more than one form of inequality.

Figure 14: Inequality included in research outputs based on country-level and international database searches (2020-2022)



Note: Some research outputs may include more than one form of inequality.

The location of the research is important when interpreting results, as urban or rural areas may present different circumstances that could affect education opportunities, with rural areas often facing greater deprivation. Approximately 29 percent of the research outputs did not report where the research was conducted, while only 19 percent was conducted in rural areas for research outputs from country-level searches (Figure 15). For research outputs in country-level searches that reported location for the 2020-2022 period, a similar proportion (around one in four) was focused on rural areas (Figure 16).

Figure 15: Research location based on country-level searches (2010-2022)

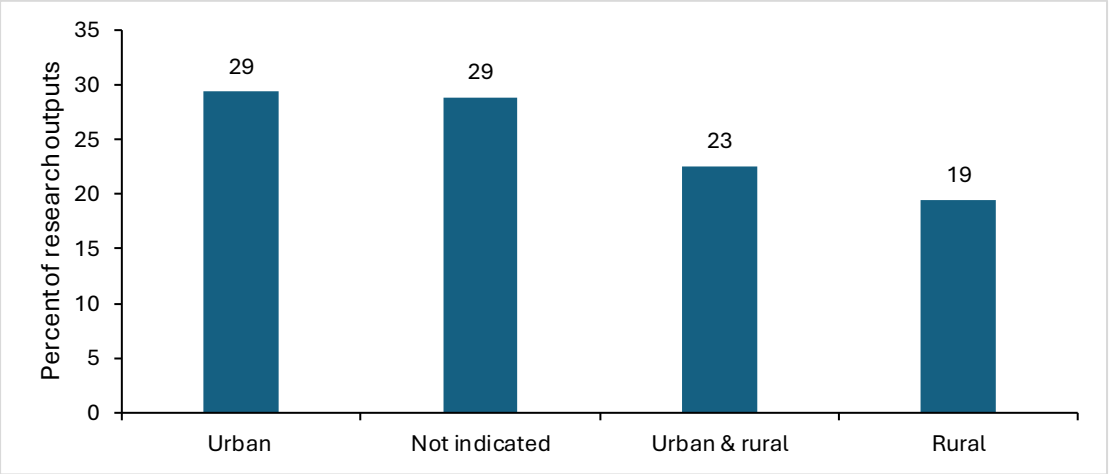
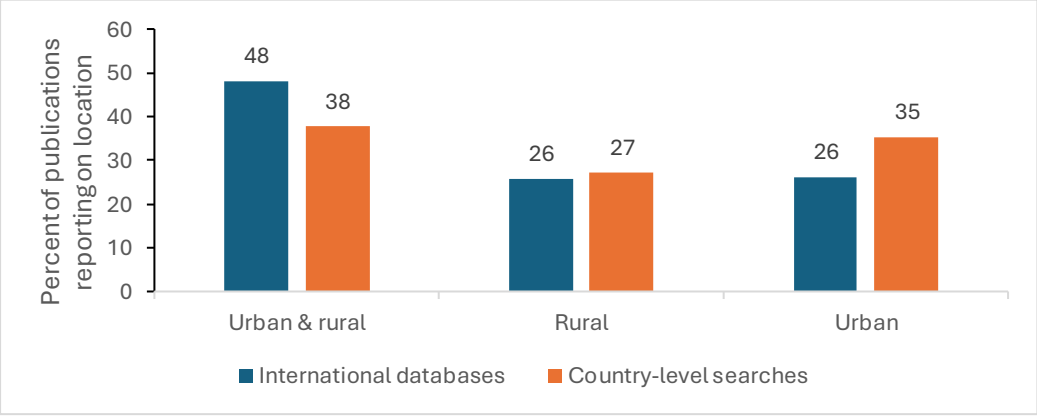


Figure 16: Research location based on country-level and international database searches (2020-2022)



Gender of ECD researchers

With the recognition of the importance of research and development in promoting the country's sustainable development and competitiveness in the global arena, the 2018 National Education Sector Strategic Plan (NESSP) seeks to enhance the Kenyan research environment. It suggests it will achieve this by 'improving quality of research and extension services in universities by promoting more participation by staff and students in carrying out research studies, training of academic staff to develop award winning research grant proposals and recognising universities and individual researchers.' (Ministry of Education, 2018a, p. 81). In 2022, Kenya was reported to have about 169 full-time researchers per million inhabitants, most of them with masters level qualification (UNESCO Institute for Statistics, 2024). Among these, about 36 percent of academic staff have PhD-level qualifications or equivalent, reducing to only 6.1 percent when all research and development personnel working in government, private sector, non-profits and academia are included (UKAID, 2019; UNESCO, 2023). Among these researchers, women represent almost four in every ten researchers (38.7 percent) (UNESCO, 2020).

In terms of research on ECD components, we sought to understand who conducts the research by gender, and the research institutions of the authors. We also assessed the extent of collaboration within and outside their countries to understand the opportunities researchers may have for networking.

Overall, we identified a similar proportion of female and male researchers authoring the research outputs based on country-level searches (Figure 17). In some areas, notably responsive caregiving, play and education, a higher proportion of authors were women. By contrast, there was a slightly higher proportion of male authors in health.

The picture from international databases is similar, with equal distribution between men and women researchers (Figure 18). Like the country searches, a larger proportion of women conducted research on play, responsive caregiving and education compared to men, while the pattern is reversed for health where slightly more men were likely to be authors.

Figure 17: Researcher gender by ECD component based on country-level searches (2010-2022)

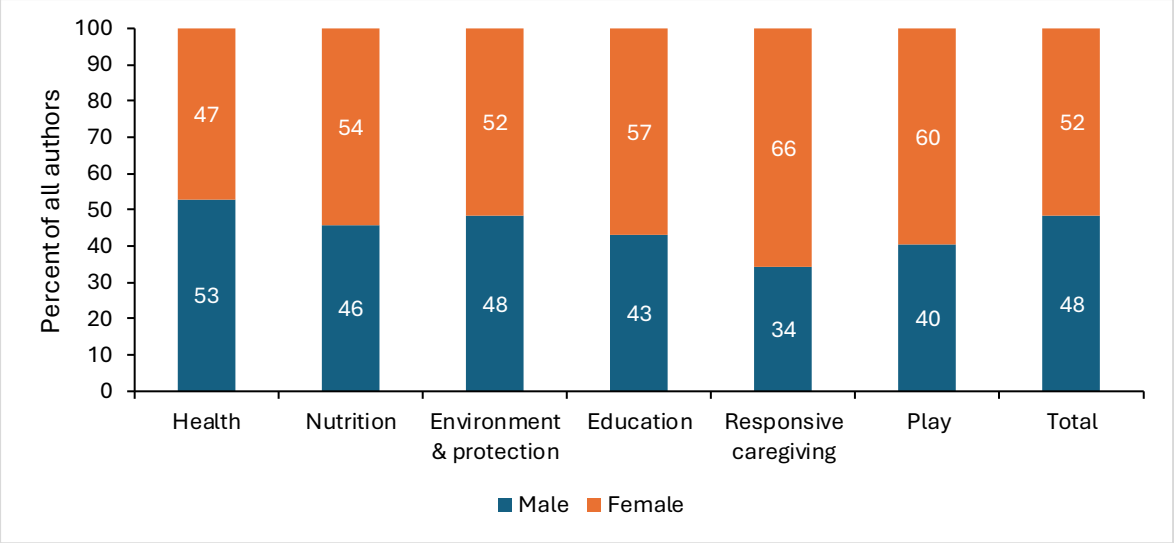
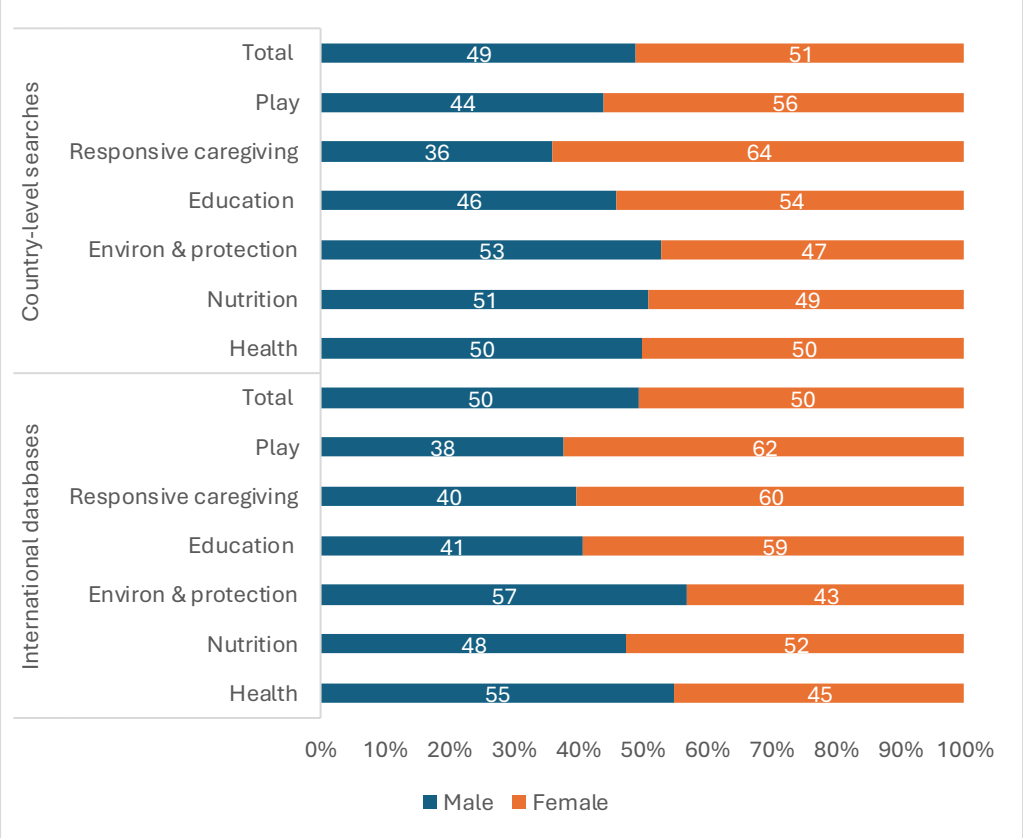


Figure 18: Researcher gender by ECD component based on country-level and international database searches (2020-2022)

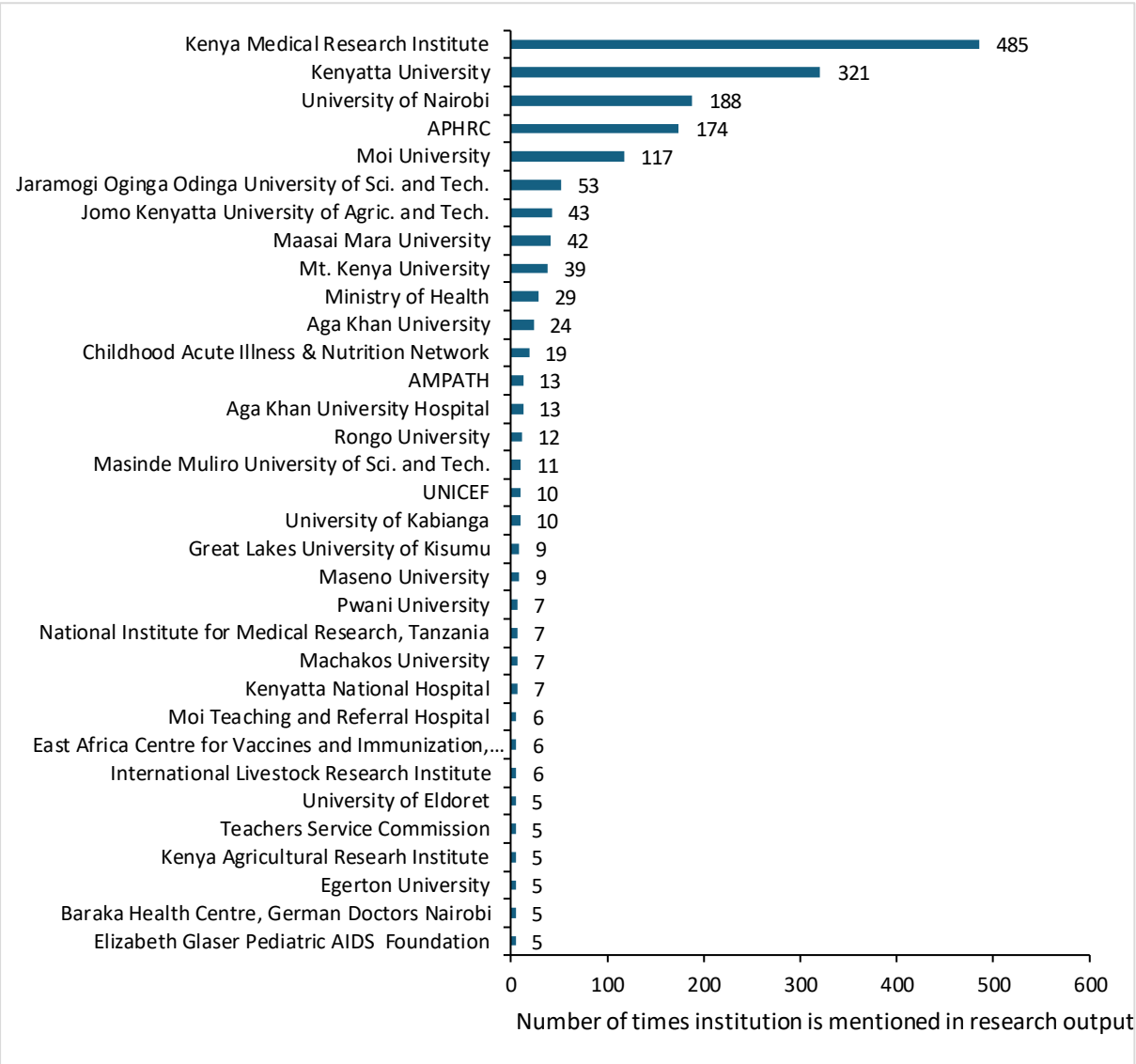


Researcher institutional affiliation

For our analysis of the institutions in which the researchers were based, we counted every time an institution was mentioned, irrespective of the number of authors based in the same institution. Figure 19 shows the institutions that were mentioned more than five times in the research outputs (for purposes of presentation, an additional 79 institutions that were mentioned four or less times were excluded). Researchers at the Kenya Medical Research Institute were the most active in research outputs, focusing entirely on health and to a smaller extent nutrition. The second most active institution was Kenyatta University, where education was the focus, with minimal overlap with research on play and environment and protection. Researchers in the next three active institutions, including African Population and Health Research Center, the University of Nairobi and Moi University, conducted research across all the ECD components, although the health component was slightly more prominent. Although there were three universities and two research institutes in the top five institutions with the highest research outputs, the differences in volume of research outputs between the research institutes and universities indicate that research production is more dominant in research institutes compared to universities.

The picture on institutional affiliation for authors of publications from international databases is similar to the country-level searches (Figure 20). However, some of the institutions appearing as the top ten most active ones for country-level searches are not visible in the international databases. This implies that authors from some institutions within Kenya appear to be less likely to publish in journals that appear in international databases.

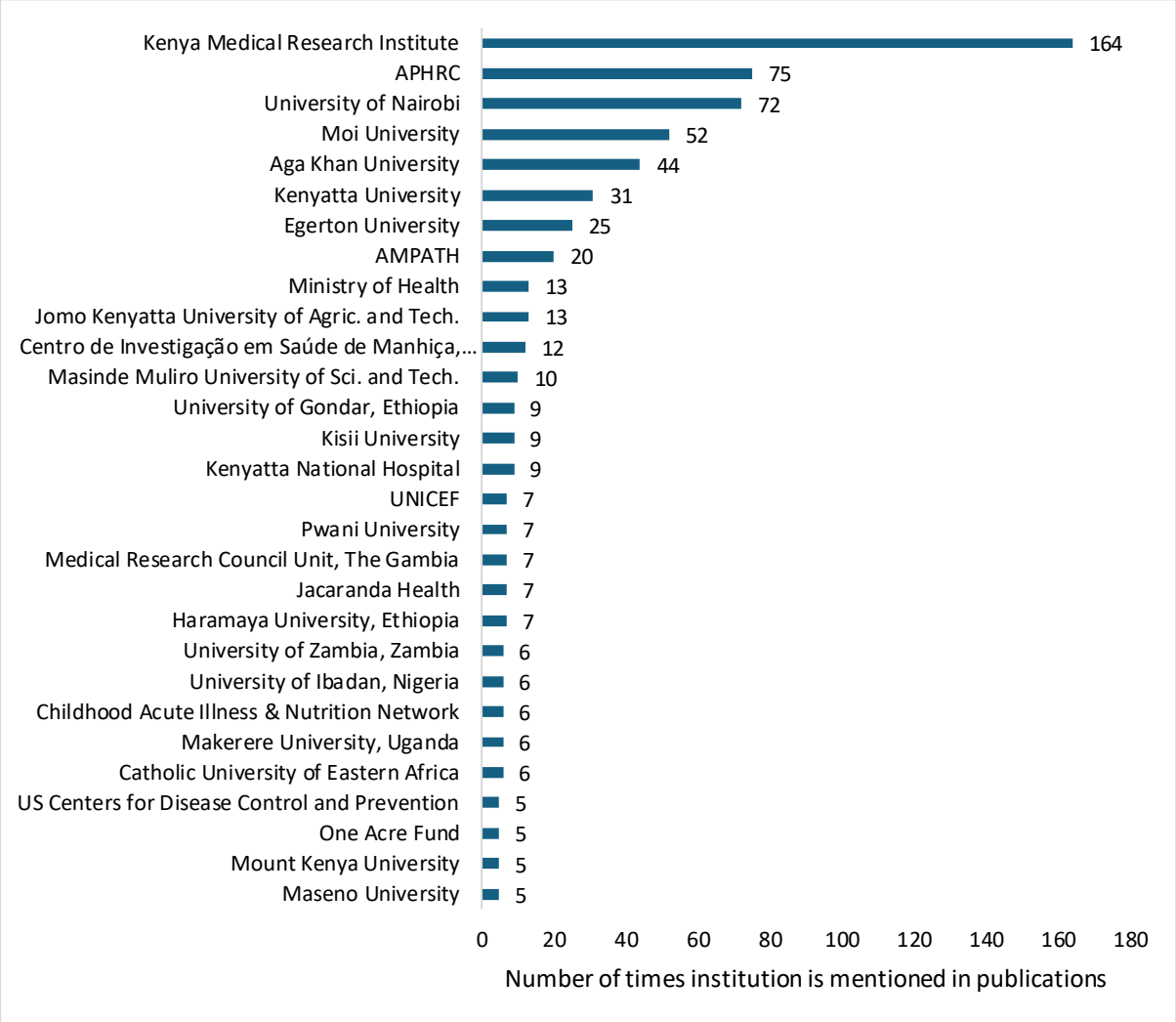
Figure 19: Institutional affiliation based on country-level searches (2010-2022)



Note: All institutions are in Kenya except where indicated.

Graph is limited to institutions mentioned more than five times.

Figure 20: Institutional affiliation based on international database searches (2020-2022)



Note: All institutions are in Kenya except where indicated.

Graph is limited to institutions mentioned more than four times.

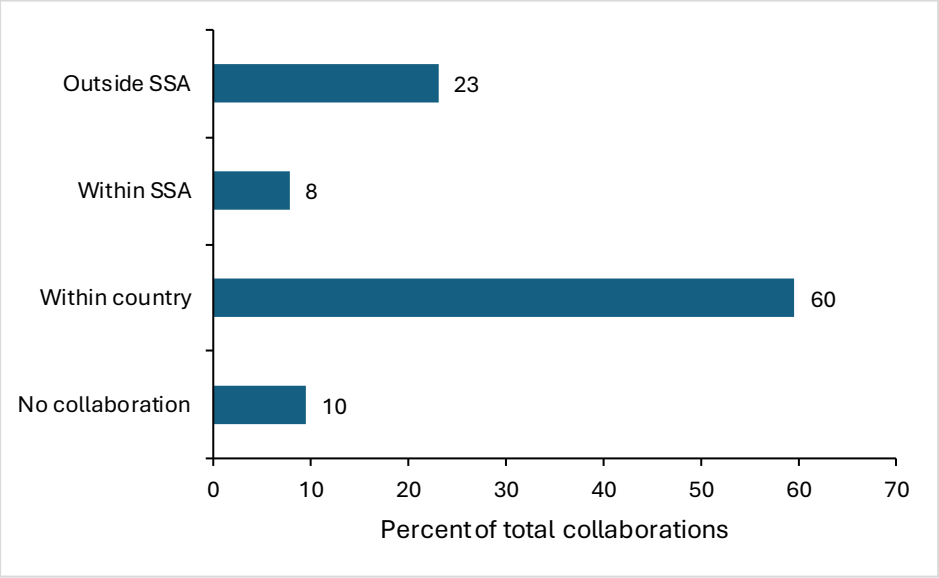
Collaboration among researchers within and outside SSA

Collaboration among researchers promotes networking and learning among researchers in different countries and can potentially help mentoring and skills development of young career or less experienced researchers. Collaboration can also increase research diffusion and improve visibility. We explored collaborations within Kenya, SSA and outside SSA. Collaborations between researchers across SSA accounted for 8 percent of all reported collaborations, while 23 percent represented collaborations outside SSA (Figure 21). A recent UNESCO report

similarly showed that between 2011 and 2019, 82 percent of its scientific research outputs were with international co-authors (UNESCO, 2023). Other analysis also shows that collaboration between authors in Kenya and outside SSA has been increasing, from just under 64 percent of the total number of research outputs in 2009, to almost 81 percent in 2018 (UKAID, 2019).

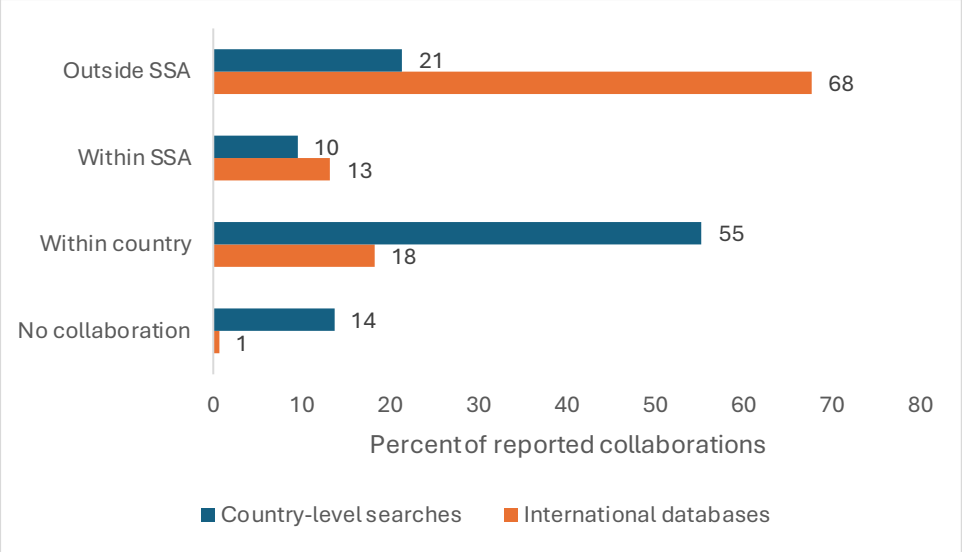
Analysis of author collaboration using international databases (2020-2022) show a different picture to the country-level searches for the same period. Only 1 percent of researchers from international databases do not report any collaboration, compared with 14 percent not doing so for those identified from international databases. More than two thirds of authors identified from international databases included collaboration with researchers outside SSA, compared with only 21 percent for those identified from country sources. By contrast, those identified from country-level sources were far more likely to engage in in-country collaboration than those from international databases (55 percent and 18 percent, respectively) (Figure 22).

Figure 21: Collaboration between researchers based on country-level searches (2010-2022)



Note: Some research outputs report multiple collaboration categories.
PhD theses were excluded from this analysis as they would be single authored.

Figure 22: Collaboration between researchers based on international database searches (2020-2022)



Note: Some research outputs report multiple collaborations.

PhD theses were excluded from this analysis as they would be single authored.

We further disaggregated the research outputs reporting collaboration to explore differences by ECD component. Research outputs on education and play had the lowest collaborations outside the country, whether within or outside SSA, while health and nutrition showed the highest proportion of collaboration outside SSA (Figure 23). There are minimal differences on collaboration across ECD components in publications from international databases (Figure 24). Compared to research outputs from country-level searches, publications on play had the highest proportion of collaboration outside Kenya, while health and responsive caregiving had the highest proportion of collaborations with the country.

Figure 23: Collaboration by ECD component based on country-level searches (2010-2022)

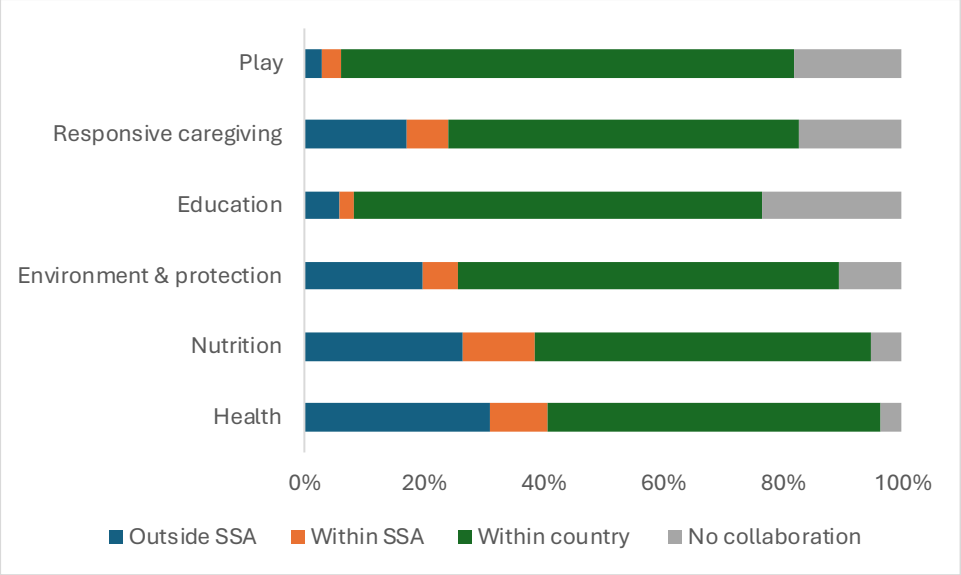
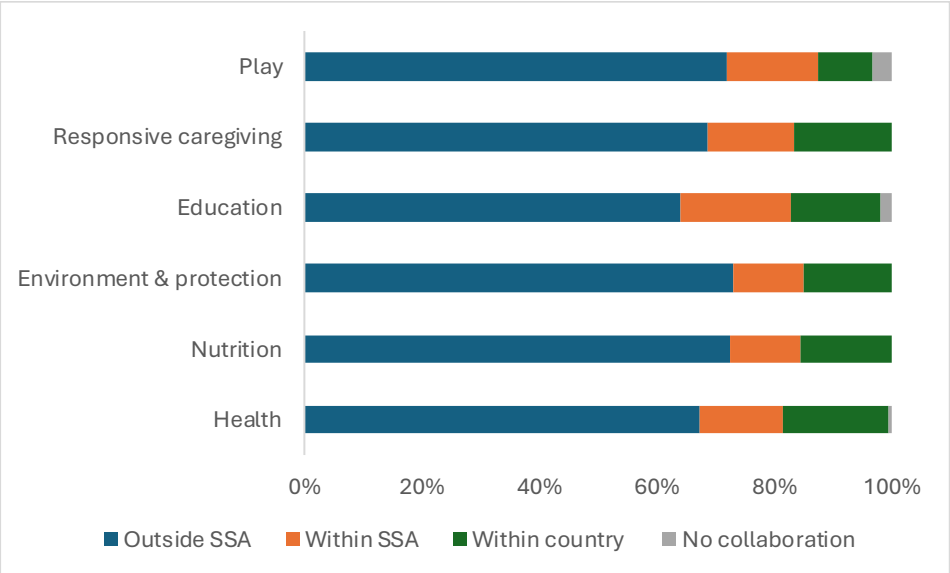


Figure 24: Collaboration by ECD component based on international database searches (2020-2022)



5. Challenges and limitations

Searching for unpublished or locally published research is time consuming as it entails screening through a large volume of documents to identify which research outputs meet the inclusion criteria. Further, most of the databases and institutional repositories do not support systematic searches or downloads. This required the team to individually copy information about each research output to the analysis spreadsheet.

Although all efforts were made to identify all relevant research outputs available online, it is possible that some were missed out. This includes research reports, working papers and books (chapters) that may not have been made available in institutional portals and websites. Some relevant research outputs identified were not accessible (require subscription) and thus are not included in the analysis. In addition, we only accessed research outputs via online sources, and so research available solely as physical research outputs is not included in this report.

We acknowledge that some of the research outputs identified from African Journals Online or institutional repositories may also be indexed in international databases including Scopus, Web of Science, among others. As such, the research presented in this report as sourced from local journals and databases may not be entirely exclusive of international journal articles. However, we expect this to be a relatively small number, and so do not anticipate it would affect the results significantly.

Further, we also acknowledge that there could be a greater representation of education research in this report, as the researchers we reached out to were those mostly in ESSA's database. These are more likely to be in education research. Searches of journal databases and repositories were not, however, limited to education and included ones across ECD sub-components.

In some cases, the numbers were very small when disaggregating by ECD sub-components. As such caution is sometimes needed in making comparisons.

6. Conclusion and recommendations

Kenya has an increasing number of research outputs on ECD, with 576 locally published or unpublished between 2010 and 2022. Since these research outputs are mostly published locally or unpublished, this mapping exercise highlights the existence of additional research on ECD that is unlikely to be visible in international spaces. This means they could be excluded when government and/or organisations develop international and local policies, and development agendas. However, more research is identified from international databases, suggesting that there is prominence of international journal articles amongst Kenyan researchers.

There is a huge research disparity among ECD components, with the highest gaps being on play and responsive caregiving. We report four main findings from this mapping exercise:

- Although there are more research outputs on health in the country-level searches, the difference with education research outputs is not marked. This contrasts with research outputs in international databases where research outputs on health far outweigh research outputs on education. This might be in part due to the fact we were better able to connect with researchers in education.
- Contrary to expectations, there are more female researchers than male researchers in all ECD components except health.
- There are more research outputs from research institutions than from universities, despite there being many more universities than research institutions in the country.
- International organisations and external philanthropists are the main funders for ECD research, with government and local organisations playing a minimal role. The funding varies across ECD components in research outputs from country-level searches, with no funding at all for research on play, and internal institutions funding more research on education, and environment and protection.

Recommendations

We present broad recommendations for all stakeholders in this area including ECD researchers, government, NGOs and bilateral/multilateral funders.

- **Encourage research outputs in those ECD components for which there is the least research, notably on play, and responsive caregiving.** This will provide a holistic picture of ECD in the country. Cross-cutting research that focuses on the totality of early childhood development can help reduce the siloed approach to ECD research.
- **Increase funding, particularly for research on education and play.** The Kenyan government should increase budgetary allocation to meet the 2 percent of GDP target, and encourage early career researchers. Other funding organisations should also increase funding, including for cross-cutting research.
- **Encourage collaboration between African researchers within the continent.** The development of a strong collaborative research community, particularly across countries in sub-Saharan Africa, would enable the sharing of lessons and knowledge, and provide opportunities for mentorship for early career researchers.
- **Intensify efforts to improve capacity and funding for increased research development and production.** This should target academic researchers, with collaboration between the Kenyan government and funding bodies through targeted grants, fellowships, and mentorships as stated in the 2018-2022 NESSP.
- **Support research to include analysis by inequality (such as gender, socio-economic status, disability, ethnicity, religion, among others).** This would provide evidence to inform Kenya's policies and programming to address inequalities for different groups of children.
- **Develop functional online repositories**. These should be developed within national and regional institutions to facilitate the accessibility and dissemination of evidence.

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Appendices

Appendix 1: List of organisations/institutions searched

1. African Population and Health Research Center: https://aphrc.org/publications/
2. AfricArXiv (Pan-African Open Access portal): https://info.africarxiv.org/
3. Aga Khan University: https://www.aku.edu/uc-nbi/Pages/home.aspx
4. Africa Journals Online (AJOL): https://www.ajol.info/index.php/ajol
5. Council for the Development of Social Science Research in Africa (CODESRIA): https://codesria.org/resources/
6. Day Star University: https://www.daystar.ac.ke/profiles/publications
7. Dedan Kimathi University of Technology: http://repository.dkut.ac.ke:8080/xmlui/?Itemid=250/
8. Early Childhood Development Action Network (ECDAN): https://ecdan.org/
9. Early Childhood Development Research in sub-Saharan Africa (ECDR-SSA) Compendium Project: http://www.ecdafricaresources.org/search.php?all_fields=early+childhood+development&author=&country=kenya&year=2011&language=&x=55&y=55
10. Egerton University: http://ir-library.egerton.ac.ke/jspui/
11. Embu University: http://repository.embuni.ac.ke/
12. Google Scholar: https://scholar.google.com/
13. IDEAS: https://ideas.repec.org/
14. IDRC: https://idl-bnc-idrc.dspacedirect.org/
15. International Livestock Research Institute (ILRI): https://cgspace.cgiar.org/communities/bde7139c-d321-46bb-aef6-ae70799e5edb
16. Jaramogi Oginga Odinga University of Science and Technology: http://ir.jooust.ac.ke/
17. Jesuit Historical Institute in Africa: http://thesisbank.jhia.ac.ke/
18. Jomo Kenyatta University of Agriculture and Technology: http://ir.jkuat.ac.ke/
19. Karatina University: https://karu.ac.ke/research/
20. KCA University: https://www.kcau.ac.ke/

21. KEMRI/Wellcome Trust Research Programme: https://kemri-wellcome.org/publications/
22. Kenya Agricultural Research Institute: https://www.kari.org/?q=content%2Fkari-e-repository
23. Kenya Education Research Database (KERD): https://kerd.ku.ac.ke/
24. Kenya Institute for Public Policy Research and Analysis: https://kippra.or.ke/publications/
25. Kenya Methodist University: http://repository.kemu.ac.ke:8080/xmlui/
26. Kenya National Bureau of Statistics: https://www.knbs.or.ke/publications/
27. Kenyatta University: https://ir-library.ku.ac.ke/
28. Kisii University
29. Maasai Mara University: http://41.89.101.166:8080/xmlui/
30. Machakos University: http://ir.mksu.ac.ke/
31. Management University of Africa: https://www.mua.ac.ke/departments/the-library/
32. Maseno University: https://www.maseno.ac.ke/publications2
33. Masinde Muliro University of Science and Technology: https://www.mmust.ac.ke/
34. Ministry of Education: https://www.education.go.ke/reports-0
35. Ministry of Health: https://www.health.go.ke/publications
36. Moi University: http://ir.mu.ac.ke:8080/jspui/
37. Mount Kenya University: https://erepository.mku.ac.ke/home
38. Murang'a University of Technology: http://repository.mut.ac.ke:8080/xmlui/
39. National Commission for Science, Technology and Innovation (NACOSTI): https://www.nacosti.go.ke/
40. NBER Working papers: https://www.nber.org/papers?page=1&perPage=50&sortBy=public_date
41. Open Research Africa: https://openresearchafrica.org/gateways
42. PAL Network: https://palnetwork.org/publications/
43. Partnership for African Social and Governance Research (PASGR): https://www.pasgr.org/publications/
44. ProQuest Global for Theses and Dissertations: https://about.proquest.com/en/products-services/pqdtglobal/
45. Pwani University: https://elibrary.pu.ac.ke/

46. Regional Education Learning Initiative (RELI) Africa: https://reliafrica.org/
47. Riara University: http://repository.riarauniversity.ac.ke/xmlui/
48. Rongo University: http://repository.rongovarsity.ac.ke/
49. Save the Children: https://www.savethechildren.org.uk/what-we-do/education
50. Science for Africa (SFA) Foundation: https://scienceforafrica.foundation/resources
51. South Eastern Kenya University: https://repository.seku.ac.ke/
52. St. Pauls University: https://journals.spu.ac.ke/index.php/amjr
53. Strathmore University: https://su-plus.strathmore.edu/
54. Technical University of Kenya: http://repository.tukenya.ac.ke/
55. Technical university of Mombasa: https://ir.tum.ac.ke/
56. The African Academy of Sciences (AAS): https://aasciences.africa/Resources#publications
57. The Catholic University of Eastern Africa Journals: https://journal.cuea.edu/
58. The World Bank open knowledge repository: https://openknowledge.worldbank.org/home
59. Twaweza: https://twaweza.org/
60. UNESCO: https://www.unesco.org/en/publications
61. UNICEF: https://www.unicef.org/reports
62. United States International University – Africa: https://erepo.usiu.ac.ke/
63. University of Nairobi: https://www.uonbi.ac.ke/

Endnotes

[i] In recognition that searches went beyond published academic articles and books to include unpublished research such as working papers, in this report we refer to both published and unpublished research as research outputs.

[ii] South Africa was excluded because researchers there may not face the same challenges faced by the rest of the SSA countries, and thus there are many more publications indexed in international databases (see Mitchell & Rose, 2018).

[iii] A related process was done with Mozambique, but only 20 research outputs were found. We have not included it in this report as the process adopted was not identical to the other four countries, as detailed in the mapping protocol developed for this exercise.

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