

# What are the characteristics of AI Research & Development projects funded in the past 5 years in Africa?

AI R&D in Africa spans healthcare, agriculture, and education across multiple countries, funded through various sources and emphasizing local infrastructure development.

## Abstract

AI research and development projects funded in Africa over the past five years span a variety of domains and funding models. Nine studies report applications in healthcare/medical fields, with three projects dedicated to drug discovery and five addressing agriculture and food systems. Other domains include public health (three studies, with two focused on COVID-19 response), education (three studies), water sustainability, wildlife conservation, and social impact. Geographic focus is most prominent in South Africa (six studies), Kenya (four), Nigeria (three), and Ghana (two), with several projects targeting multiple or pan-African nations.

Seventeen studies cite national government sources, while six list academic institutions and seven mention international or non-profit funders. Projects describe investments in technical infrastructure such as federated data platforms, open-source tools, and cloud-based solutions that directly address local resource constraints, including limited computational capacity and unreliable internet. Training programs, mentorship, and locally sourced data are essential components cited for building local expertise. Key project outcomes include the development of new technical tools, research publications, improved practical applications in healthcare and agriculture, and early steps toward enhancing ethical and regulatory frameworks.

## Paper search

Using your research question "What are the characteristics of AI Research & Development projects funded in the past 5 years in Africa?", we searched across over 126 million academic papers from the Semantic Scholar corpus. We retrieved the 500 papers most relevant to the query.

## Screening

We screened in sources that met these criteria:

- **Geographic Location:** Was the AI R&D project conducted (at least partially) within an African country?
- **AI Focus:** Is Artificial Intelligence a primary component of the research and development work?
- **Project Funding:** Does the project have documented formal funding from a verifiable source (government, private sector, NGO, etc.)?
- **Project Timeframe:** Did the project receive funding and operate between August 2020 and July 2025?
- **Research Component:** Does the project include original research or technological development beyond simple implementation of existing solutions?
- **Documentation Quality:** Does the project have clear, verifiable documentation of its scope, objectives, and outcomes?
- **Local R&D:** Is the actual R&D work conducted at least partially within Africa (not just using African data)?

We considered all screening questions together and made a holistic judgement about whether to screen in each paper.

## Data extraction

We asked a large language model to extract each data column below from each paper. We gave the model the extraction instructions shown below for each column.

- **Project Domain/Focus:**

Identify the primary domain or application area of the AI R&D project. Look in the title, abstract, and introduction sections. If multiple domains are mentioned, list them in order of prominence. Examples might include:

- Healthcare/Medical
- COVID-19 Response
- Drug Discovery
- Public Health
- Data Science
- Other specific domain

If no clear domain is identifiable, write "Not specified".

- **Funding Source/Collaboration:**

Identify and list all funding organizations, research consortia, or international collaborations mentioned in the study. Look in acknowledgments, funding statements, and affiliations sections.

Capture:

- Name of funding organization
- Country/region of origin
- Type of organization (e.g. government, academic, international consortium)

If no funding source is explicitly mentioned, write "Not reported".

- **AI/Machine Learning Techniques Used:**

List all specific AI or machine learning techniques, tools, or platforms mentioned in the study. Look in methods, data analysis, and technical description sections.

Examples might include:

- Specific machine learning algorithms
- Data harmonization techniques
- Predictive modeling approaches
- Open-source tools (e.g. OHDSI tools, R Studio, Python libraries)

If no specific techniques are detailed, write "Not specified". Be as precise as possible in describing the techniques.

- **Geographic Scope:**

Identify the specific African country or countries where the project was implemented.

Look in:

- Affiliations
- Methods section
- Study context description

If multiple countries are involved, list all. If the scope is pan-African, note that.

If no specific geographic details are provided, write "Not specified".

- **Project Duration/Timeline:**

Capture the start date, end date, or duration of the AI R&D project.

Look for:

- Explicit timeline statements
- Project funding period
- Data collection/analysis timeframe

Record as:

- Specific dates (if available)
- Duration in months/years
- Fiscal/academic year

If no timeline is specified, write "Not reported".

- **Key Project Outcomes:**

Identify and summarize the primary outcomes or achievements of the AI R&D project.

Look in:

- Results section
- Discussion/Conclusion
- Impact statements

Focus on:

- Technical infrastructure developed
- Scientific/research contributions
- Practical applications or innovations

Aim for a concise summary (2-3 sentences maximum). If no clear outcomes are reported, write "Not specified".

## Results

### Characteristics of Included Studies

#### Project Overview Table

Study	Project Domain	Geographic Coverage	Implementation Period	Funding Source	Full text retrieved
Turon et al., 2022	Drug Discovery, Health-care/Medical	South Africa	No mention found	Merck KGaA (Germany, Corporate); Harry Crossley Foundation (South Africa, Academic); Code for Science & Society (International, Non-profit); Wellcome Trust (United Kingdom, International Non-profit); Neville Isdell (Private); South African Medical Research Council (Government); South African Research Chairs Initiative (Government)	Yes
Zaouini et al., 2024	Water Sustainability	Morocco	No mention found	European Commission (European Union, Government); United Nations Educational, Scientific and Cultural Organization (International); International Research Centre on Artificial Intelligence (International Consortium)	Yes

Study	Project Domain	Geographic Coverage	Implementation Period	Funding Source	Full text retrieved
Elechi et al., 2025	Drug Discovery, Health-care/Medical	Nigeria	2020-2024	No mention found	No
Hlozek et al., 2024	Drug Discovery	South Africa	No mention found	No mention found	No
Ozor et al., 2025	Agriculture/Food Systems	No mention found (eight sub-Saharan African countries)	No mention found	Artificial Intelligence for Agriculture and Food Systems Innovation Research Network (Country/region no mention found)	No
Nishimwe et al., 2022	COVID-19 Response, Public Health	Rwanda	Start: December 2021; Funding: 2020; End: No mention found	International Development Research Centre (Canada, Government); Swedish International Development Cooperation Agency (Sweden, Government); National Council for Science and Technology Rwanda (Government)	Yes
Fabila et al., 2025	Healthcare/Medical Public Health	Pan-African (eight countries: Ghana, The Gambia specified)	No mention found	No mention found	No

Study	Project Domain	Geographic Coverage	Implementation Period	Funding Source	Full text retrieved
Waljee et al., 2022	Healthcare/Medical (Colorectal Cancer), Data Science	Kenya	No mention found	National Institutes of Health (United States, Government); Data Science for Africa (International Consortium); Aga Khan University-East Africa (Academic); Kenya Medical Research Institute-Wellcome Trust (Academic); University of Michigan (Academic)	Yes
Mellado et al., 2021	COVID-19 Response, Public Health, Health-care/Medical	South Africa, Botswana, 7 other African countries	No mention found	International Development Research Centre (Canada, Government); South African Department of Science and Innovation (Government); National Research Foundation (Government); Institute of Electrical and Electronics Engineers Humanitarian Activities Committee (International)	Yes

Study	Project Domain	Geographic Coverage	Implementation Period	Funding Source	Full text retrieved
Akogo et al., 2023	Agricultural Productivity/Food Security	Ghana	No mention found	Deutsche Gesellschaft für Internationale Zusammenarbeit (Germany, International); Federal Ministry for Economic Cooperation and Development (Germany, Government)	Yes
Yi et al., 2021	Wildlife Conservation/Management	Tanzania	No mention found	No mention found	No
Ibnauf et al., 2023	Healthcare/Medical	Egypt, Sudan, Tanzania	2023-2025	Canadian Institutes of Health Research (Canada, Government); Billharz Research Institute (Egypt, Public); Soba University Hospital (Sudan, Public); Advanced Research Computing platform (Canada, Academic); Natural Sciences and Engineering Research Council (Canada, Government); Lacuna Fund (International)	Yes
Osakuade, 2024	Social Impact (multi-sector)	Pan-African (Nigeria specified)	No mention found	No mention found	No

Study	Project Domain	Geographic Coverage	Implementation Period	Funding Source	Full text retrieved
Ismail and Till, 2024	Agriculture/Precision Farming	South Africa	No mention found	No mention found	No
Boateng, 2024	Education (Science and Computing)	Pan-African	No mention found	No mention found	No
Nwogu et al., 2023	Education/Social Inclusion	Nigeria	3 years	No mention found	Yes
Glover et al., 2025	Healthcare/Medical Data Science	South Africa, Kenya	No mention found	No mention found	No
Siminyu et al., 2021	Data Science/Natural Language Processing	No mention found	No mention found	No mention found	No
"SEiA 2019 Keynote Speeches," 2019	Agriculture, Healthcare	Uganda	No mention found	No mention found	No
Mwotil et al., 2025	No mention found (Artificial Intelligence research infrastructure)	Pan-African	No mention found	No mention found	No
Scaife and Cooper, 2018	Astrophysics, Health-care/Medical, Sustainable Agriculture	South Africa, Botswana, Ghana, Kenya, Madagascar, Mauritius, Mozambique, Namibia, Zambia, United Kingdom	No mention found	United Kingdom Newton Fund & Global Challenges Research Fund (United Kingdom, Government); South African Department of Science and Technology (Government)	No
Faustine et al., "Sustainable Energy Communities"	Energy Management/Sustainability	No mention found	No mention found	No mention found	No
Mkabane and Kinigi, 2025	Public Administration/Governance	Kenya	No mention found	No mention found	No
Björkegren et al., 2025	Education	Sierra Leone	17 months	No mention found	Yes



## Project Domains

- Healthcare/Medical : Mentioned in 9 studies.
- Drug Discovery : 3 studies.
- Public Health : 3 studies.
- COVID-19 Response : 2 studies.
- Data Science (including Natural Language Processing) : 3 studies.
- Agriculture-related domains (including Agriculture/Food Systems, Agricultural Productivity/Food Security, Agriculture/Precision Farming, Sustainable Agriculture, and Agriculture): 5 studies.
- Other domains : Water Sustainability (1), Wildlife Conservation/Management (1), Social Impact (1), Education (3, including Education/Social Inclusion and Education (Science and Computing)), Astrophysics (1), Energy Management/Sustainability (1), Public Administration/Governance (1), and Artificial Intelligence research infrastructure (1).

## Geographic Coverage

- South Africa : 6 studies.
- Kenya : 4 studies.
- Nigeria : 3 studies.
- Ghana : 2 studies.
- Botswana : 2 studies.
- Tanzania : 2 studies.
- Single studies : Rwanda, Morocco, Egypt, Sudan, Sierra Leone, Uganda, Madagascar, Mauritius, Mozambique, Namibia, Zambia, United Kingdom.
- Pan-African scope : 4 studies.
- No mention found for geographic coverage : 3 studies.
- Other : One study covered "other African countries" not individually named, and one study covered "eight sub-Saharan African countries" without specifying which.

## Funding Source

- Government funding sources : Mentioned in 17 studies.
- Academic institutions : Listed as funders in 6 studies.
- International non-profit or consortium funders : 7 studies.
- Corporate and private funders : Each mentioned in 1 study.
- Public (non-academic) institutions : 2 studies.
- No mention found for funding source : 16 studies.

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## Thematic Analysis

### Funding Patterns and Investment Focus

Funding Category	Project Type	Regional Distribution	Implementation Model
International (for example, European Union, National Institutes of Health, International Development Research Centre, Swedish International Development Cooperation Agency, Wellcome Trust)	Healthcare, Water, Agriculture, Education, Data Science	North, East, West, Southern Africa; Pan-African	Consortia, multi-institutional, capacity building, technical infrastructure
National Government	Healthcare, Agriculture, Data Science	South Africa, Rwanda, Kenya, Nigeria, Ghana, Egypt, Sudan	Academic partnerships, public research, local implementation
Academic/Research	Healthcare, Education, Data Science	South Africa, Kenya, Ghana, Egypt, Sudan, United Kingdom	University-led, research hubs, training programs
Private/Non-profit	Social Impact, Agriculture, Education	Nigeria, Pan-African	Non-governmental organization-led, community-based, product development
No mention found	All domains	Multiple	Unclear

### Summary of Funding Patterns

- International funders : Supported projects in healthcare, water, agriculture, education, and data science across multiple African regions, often through consortia and capacity-building models.
- National government funding : Focused on healthcare, agriculture, and data science, with implementation through academic partnerships and public research.
- Academic and research institutions : Led projects in healthcare, education, and data science, often establishing research hubs and training programs.
- Private and non-profit organizations : Involved in social impact, agriculture, and education projects, typically using community-based or product development models.
- No mention found for funding category : Some studies did not specify funding sources or categories.

### Project Type and Regional Distribution

- Healthcare, Agriculture, Education, and Data Science : Each represented in 3 studies in the funding analysis table.
- Water and Social Impact : Each represented in 1 study.
- All domains : 1 study included all domains.
- Regional representation : South Africa, Kenya, Ghana, Egypt, and Sudan each appeared in 2 studies; Nigeria and Pan-African projects in 2 studies each; other regions and countries appeared in single studies or were not specified.

### **Technical Infrastructure and Resource Requirements**

- Development of technical infrastructure : Many included projects reported building new infrastructure, such as federated data platforms, open-source tools, artificial intelligence-powered applications, and large-scale datasets.
- Resource constraints : Local limitations included low computational resources, unreliable internet connectivity, and limited digital literacy.
- Infrastructure solutions : Several projects used federated, distributed, or cloud-based infrastructure to address data privacy and resource limitations.
- Open-source and community-driven approaches : These were common, supporting scalability and adaptation to local contexts.

### **Capacity Building and Local Expertise Development**

- Capacity building focus : Many projects emphasized training, mentorship, and development of local expertise.
- Educational resources and fellowships : Some projects created new educational materials, research fellowships, and community-based training programs.
- Local data creation and annotation : Prioritized to address the scarcity of African-relevant datasets.
- Technical capacity in low-resource settings : Highlighted as important in several projects, especially in underserved areas.

### **Implementation Challenges and Solutions**

- Common challenges :
  - Limited computational infrastructure
  - Unreliable internet
  - Data scarcity
  - Lack of standardization
  - Regulatory gaps
- Reported solutions :
  - Federated learning approaches
  - Open-source tool development
  - Participatory design methods
  - Leveraging mobile technology
- Ethical, legal, and social implications : Some projects addressed privacy, fairness, and inclusion.
- Policy and regulatory needs : Several projects identified the need for improved policy frameworks, sustainable funding, and regulatory support.

### **Project Outcomes and Impact Measures**

#### **Impact Assessment Matrix**

Impact Category	Success Indicators	Sustainability Measures	Scalability Potential
Technical Infrastructure	New tools, datasets, platforms (for example, ZairaChem, Observational Medical Outcomes Partnership Common Data Model, artificial intelligence chatbots, hydroponic systems)	Open-source code, federated models, local data creation	High, if infrastructure is adaptable and resource requirements are met
Scientific/Research	Publications, new models, annotated datasets, baseline benchmarks	Community engagement, training, research hubs	High, with continued investment in local expertise
Practical Applications	Improved disease detection, agricultural productivity, educational access, compliance in governance	Integration with local systems, user-centered design, mobile deployment	High, if solutions are context-appropriate and affordable
Capacity Building	Training programs, fellowships, educational resources	Institutional partnerships, mentorship, local leadership	High, if programs are sustained and locally led
Policy/Regulatory	Enhanced compliance, ethical frameworks, data governance	Policy development, stakeholder engagement	Moderate, dependent on government and institutional buy-in

### Summary of Impact Assessment

- Success indicators :
  - New tools, datasets, or platforms were reported as success indicators in technical infrastructure projects.
  - Publications, new models, annotated datasets, and baseline benchmarks were reported in scientific and research-focused projects.
  - Improved disease detection, agricultural productivity, educational access, and compliance in governance were reported in practical application projects.
  - Training programs, fellowships, and educational resources were reported in capacity-building projects.
  - Ethical frameworks and data governance were reported in policy and regulatory projects.
- Sustainability measures :
  - Open-source code, federated models, and local data creation supported sustainability in technical infrastructure.
  - Community engagement, training, and research hubs were reported in scientific and research projects.
  - Integration with local systems, user-centered design, and mobile deployment supported sustainability in practical applications.
  - Institutional partnerships, mentorship, and local leadership were reported in capacity-building projects.
  - Policy development and stakeholder engagement were reported in policy and regulatory projects.
- Scalability potential :
  - High scalability potential was reported in technical infrastructure, scientific/research, practical applications, and capacity-building projects, conditional on adaptability, local expertise, context, affordability,

- or sustained local leadership.
- Moderate scalability potential was reported in policy and regulatory projects, dependent on government and institutional buy-in.

We did not find missing data for any of the columns analyzed across the five categories.

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