Times Higher Education | The Association of Commonwealth Universities

From Research Growth to Economic Impact:

Mapping Industry-Academic Partnerships in Sub-Saharan Africa

Acknowledgements

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Forewords

African higher education has never been more visible on the global stage. The 2027 Times Higher Education World University Rankings include 164 universities from across Africa, representing 60 per cent of all eligible institutions on the continent. It reflects the growing scale, ambition and international engagement of African universities, and gives institutions an increasingly powerful platform through which to understand, benchmark and communicate their progress.

Rankings are only one part of a much bigger story. Behind the data are universities building research capacity, developing new partnerships with industry and strengthening their contribution to national and regional development.

This report explores an increasingly important dimension of that progress: the relationship between universities, research and industry across Sub-Saharan Africa. The report combines expect new data, institutional case studies and examples of how universities are translating research into wider economic and societal value.

It is, above all, a report about momentum and the growing role of African universities in the global knowledge economy. With one of the world's fastest growing populations, African universities are readying themselves to deliver high quality education, linked with international research and industry, to support workforce development, innovation and prosperity.

Phil Baty

Chief Global Affairs Officer and COO, Times Higher Education

Using case studies from eight ACU members, this report shows the vital role universities can play as the engines of successful innovation ecosystems in developing countries.

Innovation is about more than creating marketable products. It includes new technologies and enterprises, but also new ways of working, policies and approaches that improve lives and strengthen economies and societies.

Across the ACU's network, universities are working with industry, government and civil society to maximise their economic and social impact by building research capacity and developing equitable partnerships. Our role is to connect institutions across the Commonwealth to help create the conditions in which research and ideas can translate into action.

The lessons of this report extend across the continent of Africa. African countries need Africa-specific solutions, and their universities will be central to developing them. Our collective challenge is to help ensure they have the investment, capacity and partnerships to do so.

Professor Colin Riordan

Chief Executive and Secretary General, Association of Commonwealth Universities

Africa's universities will play an increasingly important role in shaping the continent's economic and social future. As research capacity grows and economies become more knowledge intensive, stronger connections between universities, industry and government will be essential.

Universities bring research, ideas and talent; industry provides pathways into innovation, employment and growth; and governments create the conditions for collaboration at scale.

At the centre of this are Africa's students. They will become the researchers, entrepreneurs, and leaders of the future. Building stronger research and innovation ecosystems around them will help ensure that universities are not only educating that next generation, but equipping them to lead change across the continent.

Dr Ishan Cader
Managing Director (Consultancy), Times Higher Education

Executive Summary

Sub-Saharan Africa's universities are becoming a larger, more visible part of the global research system. Across Ghana, Kenya, Nigeria and South Africa, research output among the twenty most research-active universities in each country grew from around 39,500 publications in 2018 to nearly 80,000 in 2025, and industry engagement, measured through co-authorship, citation and income data, is real and growing.

The central finding of this report, is that research growth is significantly outpacing the development of the supporting systems needed to translate that research into economic and societal value. The fastest-growing universities are not, on average, the most industry-connected; international networks act as a stronger bridge to industry than domestic ones; and genuinely domestic industry engagement remains rare. Financing to connect research with industry exists, but the chain connecting discovery to application is often fragmented.

Each country nonetheless follows a distinct pathway. South Africa's is a story of depth; Kenya's of growing connectivity relative to a small research base; Ghana's of exceptional momentum; and Nigeria's of scale and future opportunity. Eight institutional case studies show what building the missing systems looks like in practice, spanning research contracting, technology transfer, incubation and public-health translation.

Africa's rapidly growing university research base represents a substantial, still-underused economic asset. The task now is to build the institutions, with multilateral financing and partnerships that can convert that asset into innovation, productive capacity, jobs and societal benefit.

Introduction

This collaboration between Times Higher Education (THE) and the Association of Commonwealth Universities (ACU), supported by Digital Science, seeks to draw attention to the growing intersection of research and industry in Sub-Saharan Africa. As national governments seek to align their higher education systems with economic growth and sustainable development ambitions, universities are increasingly asked to evidence how they contribute to workforce development, innovation and job creation. Their links with regional and global industry are crucial- for funding, for international networks, and for increasing the quality and influence of their research.

Drawing from THE and Digital Science datasets, this whitepaper provides a deep-dive into how universities interact with industry, focusing on Ghana, Kenya, Nigeria and South Africa to reveal divergent pathways towards improving the academia-industry nexus and its outputs. Eight ACU members from these countries also contribute case studies to further exemplify best practice.

There are 164 universities from Africa ranked in the 2027 edition of the THE World University Rankings. With universities needing to have over 1,000 research publications over the last 5 years to qualify for the ranking, it means 60% of all eligible universities from Africa have been ranked — demonstrating both increasing participation and visibility for the hard work undertaken in education and research across the continent.

There is a concentration of representation amongst six countries: universities from Egypt, Algeria, Nigeria, South Africa, Morocco and Tunisia accounted for 85% of all ranked universities from Africa. Ten countries from Africa are represented by just one university.

South Africa remains disproportionately dominant at the top of the ranking. It accounts for only 17 of Africa's 164 ranked universities (10.4%), but has 8 of the 26 African universities in the top 1,000, 7 of the 9 in the top 800, and 6 of the 7 in the top 600. Four of Africa's five top-400 universities are South African. There are some meaningful individual improvements, notably the University of Cape Town rising from 164 to 147, making it Africa's only top-200 institution.

Across the 164 universities, the average scores are much stronger for Research Quality (44.8) and International Outlook (44.7) than for Teaching (21.0), Industry (26.6) and particularly Research Environment (15.1). It suggests that many African universities are achieving international research visibility and citation impact without yet having comparable depth in the institutional environments that sustain research at scale.

The evidence in this report points to a single, central finding: research growth across these four countries is significantly outpacing the development of the systems needed to translate that research into economic and societal value. Publication output has grown rapidly and industry engagement is real, but the professional functions, financing mechanisms and institutional capabilities required to convert that growing research base into partnerships, products, policy influence and jobs have not kept pace. Closing that gap — not simply producing more research — is the central challenge this report explores.

It is also worth being clear about what this report does and does not claim. As Phil Baty notes in his foreword, rankings are only one part of a much bigger story: this is not an assessment of the quality or contribution of national higher education systems as a whole, but a focused analysis of research-intensive institutions for which comparable data are available.

The report's title refers to industry-academic partnerships, reflecting the primary focus of the quantitative analysis. Several of the strongest institutional case studies in this report, however, demonstrate that research translation happens through government, healthcare systems and communities as well as companies. While the quantitative analysis focuses primarily on research-industry relationships, the institutional case studies adopt a broader conception of research translation, recognising that economic and societal impact can also occur through government, public services, healthcare systems, communities and civil society.

The story of Sub-Saharan African universities

Sub-Saharan Africa (SSA) is becoming a broader and more visible part of the global higher education system, while depth of performance is developing at different speeds across the ranking pillars. In WUR 2027, 69 SSA institutions are ranked, and the University of Cape Town is the region's highest-ranked institution at 147th. The trend data also shows SSA's share of the global ranking rising from 1.3 per cent in 2020 to 3.0 per cent in 2027. At the same time, only 14 SSA universities sit within the global top 1,000 and five within the top 500, with all five top-500 institutions located in South Africa. The regional story is therefore increasingly one of scale as well as elite performance: participation is widening significantly, but the strongest globally competitive research capacity remains concentrated in a smaller group of institutions.

Nevertheless, SSA already compares favourably with Africa as a whole: in WUR 2027 it scores above the continental benchmark in every pillar, including Research Environment, Research Quality and Industry, and outperforms Africa across a wide range of research and industry metrics. The next opportunity is therefore to spread the characteristics already visible among SSA's stronger universities: higher research productivity, stronger research income, greater research influence, more sustained industry income and more effective translation into patents and innovation. Whilst the underlying research base is expanding, the strategic task ahead for countries in SSA is to connect that expanding research capacity more consistently to globally recognised research excellence, industry influence and economic application.

Mapping research-industry collaboration:

Focused analysis on Ghana, Kenya, Nigeria and South Africa

University–industry collaboration is already developing across Ghana, Kenya, Nigeria and South Africa. Across these 4 countries, research output climbed from around 39,500 publications in 2018 to nearly 80,000 in 2025 (Figure 1), creating a substantially larger platform for engagement with business than existed even five years ago.

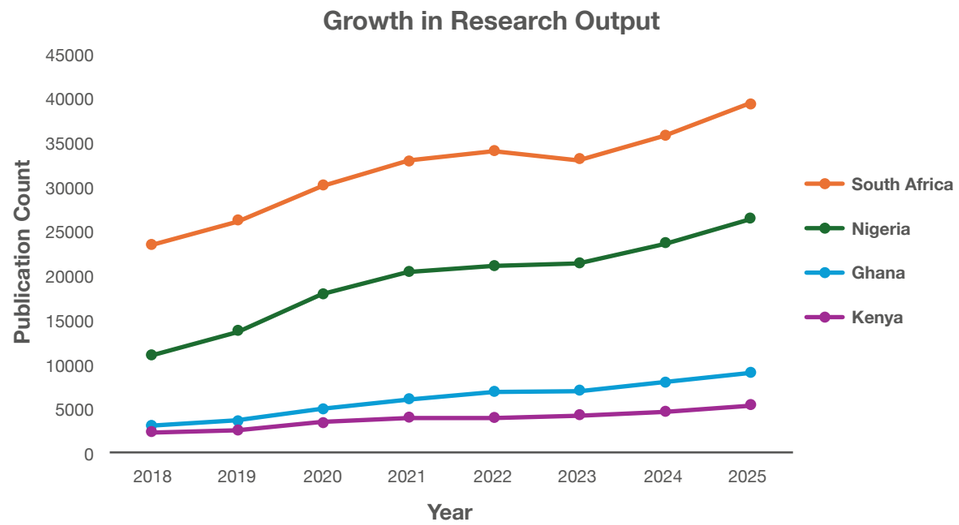

Figure 1: Growth in research output by country, 2018–2025.
Source: Dimensions (Digital Science), extracted via Google BigQuery. Publications 2018–2025.

The four countries are not following a single model. South Africa has the largest research base of the four and the highest weighted industry co-authorship rate, at 2.22%. Nigeria has the second-largest base but the lowest rate (0.72%). Ghana has grown fastest of all four (81.3% growth, against 26.2% for South Africa, 47.3% for Nigeria and 48.7% for Kenya) from the second smallest research base. Kenya, despite having the smallest base of all, achieves the second-highest collaboration rate (1.41%) — evidence that scale and connectivity are separate things, not two ends of the same variable (**Table 1**).

Country	Research output 2018–2025	Growth (early–late avg)	Weighted industry co-authorship rate	Median institutional rate
South Africa	256,514	26.2%	2.22%	1.385%
Kenya	29,701	48.7%	1.41%	1.005%
Ghana	46,814	81.3%	1.07%	0.52%
Nigeria	155,224	47.3%	0.72%	0.84%

Table 1: Country snapshot, 2018–2025.
Source: Dimensions (Digital Science), extracted via Google BigQuery. Publications 2018–2025.

The evidence points to several encouraging, distinct developments: South Africa has built a comparatively mature collaboration ecosystem; Kenya shows that a smaller, more specialised system can outperform its scale; Ghana's research growth has been exceptional; and Nigeria has a large and diverse research base with significant unrealised potential for stronger domestic industry links. Progress, however, remains uneven. Collaboration with industry tends to be concentrated among a relatively small number of universities, research growth does not automatically produce stronger commercial engagement, and international partners are often more visible than domestic ones. The central challenge for the region is therefore to move from individual partnerships and isolated success stories towards broader, more deeply embedded national collaboration systems.

Collaboration is already established, but its depth varies

The weighted share of publications involving an industry co-author is 2.22% in South Africa, 1.41% in Kenya, 1.07% in Ghana and 0.72% in Nigeria (Figure 2). South Africa alone accounts for approximately three-quarters (73.6%) of all recorded industry-co-authored output across the four countries.

Industry collaboration varies not only between countries but in how it is distributed within each national system. Among each country's twenty most research-active universities, South Africa combines the highest overall rate with a relatively strong institutional median (1.385%), meaning its lead is not confined to a handful of outliers. Kenya's institutional median (1.005%) sits closer to its national rate than any other country's, suggesting a more evenly-performing system amongst its most active institutions despite its small size. Ghana's national rate looks more concentrated among a smaller number of strong performers, with its median amongst its 20 most active institutions (0.52%) sitting well below its weighted rate. Nigeria's larger research-producing universities perform somewhat above the national rate (median 0.84% vs weighted 0.72%), pointing to a system where scale and engagement are still only loosely connected.

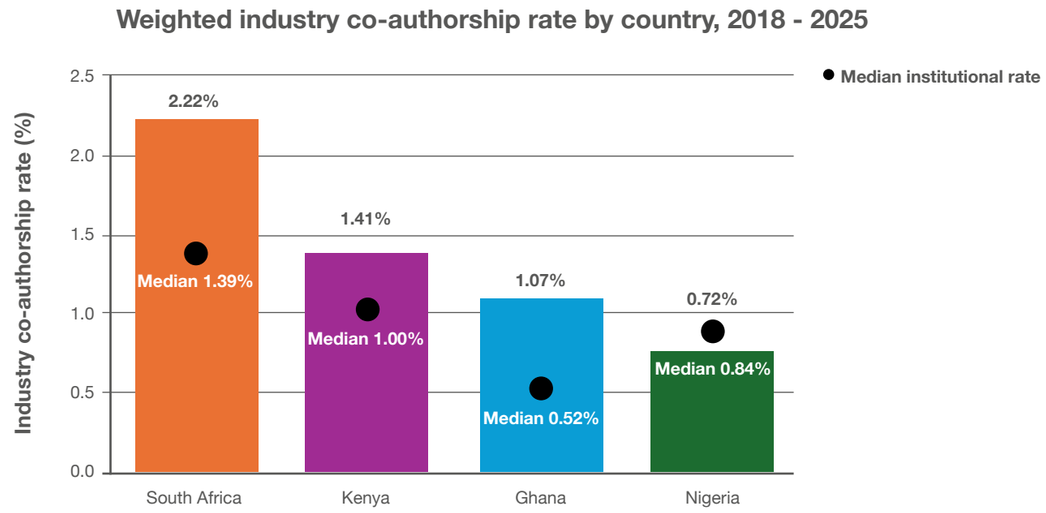

Figure 2: Weighted industry co-authorship rate by country and median institutional rate, among the 20 most research-active institutions.
Source: Dimensions (Digital Science), extracted via Google BigQuery. Publications 2018–2025.

Set against the wider institutional base beyond these leading twenty, the picture is starker still: the median peer institution in Ghana and Kenya records no industry co-authorship at all across 2018–2025, underlining how concentrated collaboration capacity currently is even in systems with strong performers at the top.

Research growth is outpacing partnership development

This is the central strategic gap in the data (Figure 3). Among 64 institutions with a sufficiently established early publication base, 19 combine above-median research growth with below-median industry collaboration. Across the group, the relationship between publication growth and industry collaboration is modestly negative (approximately –0.29). If anything, the fastest-growing institutions collaborate with industry slightly less, not more.

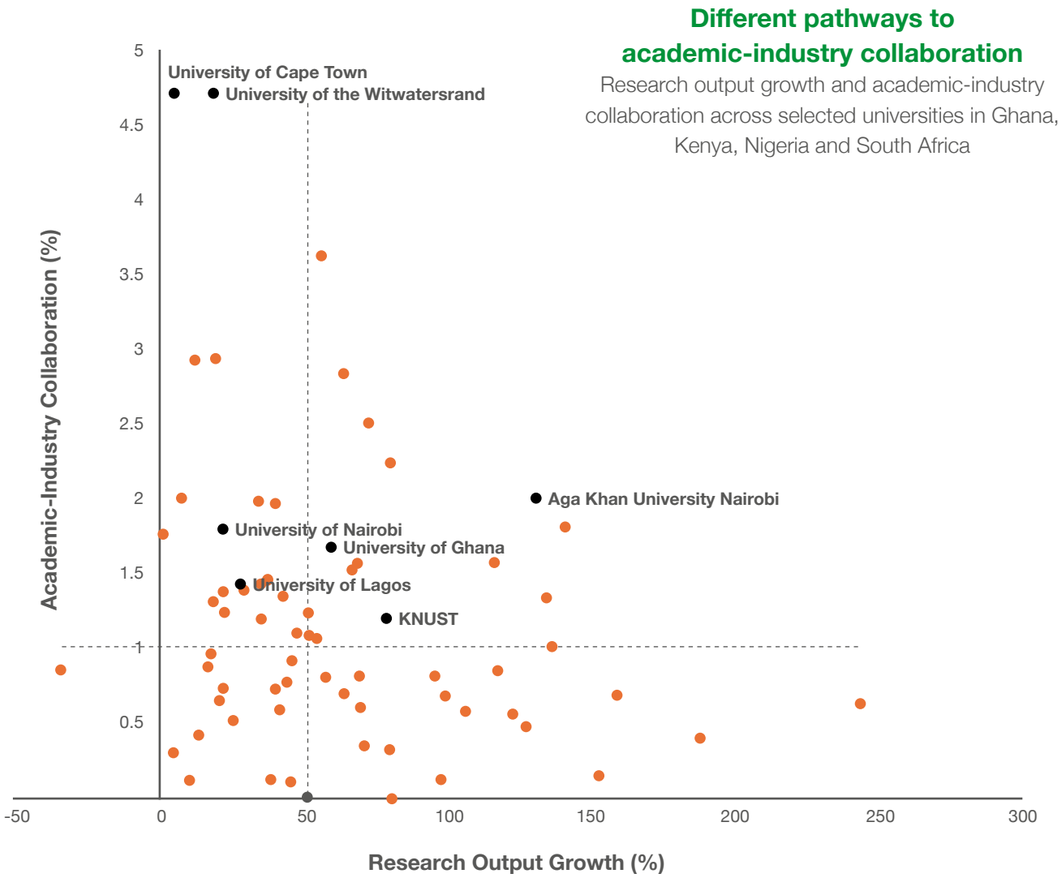

Figure 3: Research output growth plotted against academic–industry collaboration, selected universities.
Source: Dimensions (Digital Science), extracted via Google BigQuery. Publications 2018–2025.

Kenya, Ghana and Nigeria all contain fast-growing but relatively under-connected institutions. Set against that, several institutions manage both growth and connectivity together: the University of Johannesburg, Sefako Makgatho Health Sciences University, Aga Khan University Nairobi and the University of Health and Allied Sciences all combine strong output growth with above-average industry engagement. Their example matters because whilst research growth creates the potential for partnership, that potential has to be built deliberately and strategically, through professional industry-engagement functions, stronger institutional incentives, and clearer mechanisms through which companies can access academic expertise. Above all it takes strong institutional leadership that can be enabled by national-level direction and support.

International networks act as a bridge to industry

International and industry co-authorship show a moderate positive relationship but is one of the strongest enabling factors behind collaboration in the dataset (Figure 4). Institutions that are both highly international and strongly industry-connected include the University of Cape Town, the University of the Witwatersrand, Pwani University, Aga Khan University Nairobi, Strathmore University and the University of Health and Allied Sciences. International networks give universities access to global research consortia, specialist facilities and multinational companies. The strategic task is to use those same networks to draw in more domestic firms and strengthen local innovation capacity, rather than let international partners substitute for them.

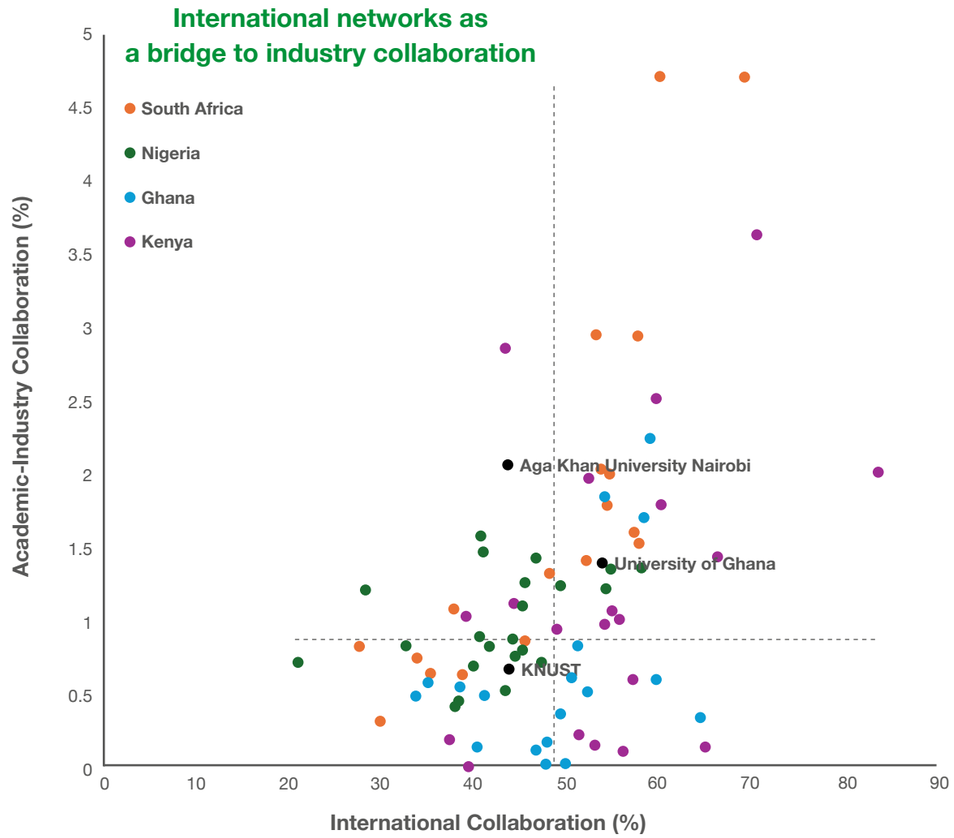

Figure 4: International collaboration plotted against academic–industry collaboration, by country.
Source: Dimensions (Digital Science), extracted via Google BigQuery. Publications 2018–2025.

Mapping Industry-Academic Collaboration

Overview of Sector Focus

Looking at exactly which sectors and companies cite each country's research offers a further, complementary lens on collaboration.

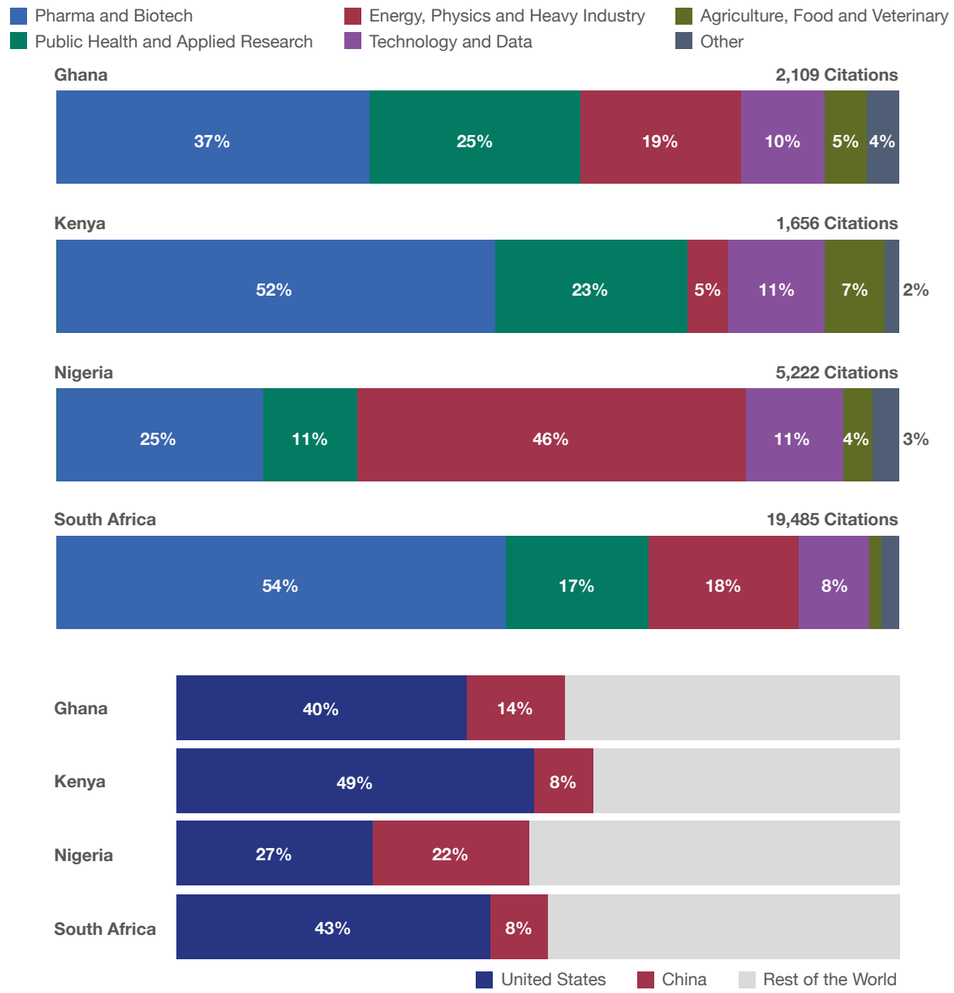

Figure 5: Sector mix of each country's top 100 industry citations and source by country. Bibliometric and citation data are drawn from Dimensions (Digital Science), extracted via Google BigQuery, covering Ghana, Kenya, Nigeria and South Africa's peer institutions, 2018–2025. Collaboration and citation figures are deduplicated at the country level rather than summed across individual institutions, to avoid double-counting shared publications

Sector mix diverges sharply across the four countries. Ghana and Kenya are health-led: pharmaceutical, biotech, public-health and applied-research organisations together account for 62% of Ghana's 2,109 industry citations and 75% of Kenya's 1,656. South Africa is more concentrated still — pharma and biotech alone take 54% of its 19,485 citations, comfortably the largest citation base of the four.

Nigeria is the clear exception. Energy, physics and heavy industry make up 46% of its 5,222 citations, the largest single-sector block anywhere in this analysis, reflecting a research base oriented toward oil, gas and power. Ghana shows a smaller version of the same pattern at 19%; the equivalent share falls to 5% in Kenya, where agriculture, food and veterinary science instead reaches 7%, the highest of the four. Technology and data barely moves, sitting between 8% and 11% everywhere.

The origins of these citations vary far less than their subject matter. The United States leads and China is second in every country, together accounting for between 49% of industry citations (Nigeria) and 58% (Kenya). Nigeria is the outlier on the Chinese side at 22%, against 14% for Ghana and 8% for both Kenya and South Africa.

Pooling the top citing organisations of each country's most research-active universities reveals a shared core beneath that divergent sector mix. Five organisations- Pfizer, Merck & Co, Microsoft and Google (all United States) and TNO (Netherlands)-appear in the top twenty of all four countries, even as everything else diverges with the shape of each national economy. Health provides the deepest and most consistent industry link everywhere, while each system carries its own secondary specialisation: oil and minerals in Nigeria and Ghana, infectious disease and agriculture in Kenya, physics and nuclear research in South Africa.

Genuinely domestic industry engagement remains rare throughout- no Kenyan organisation reaches its top twenty, and Ghana, Nigeria and South Africa manage one apiece; a theme the country-by-country maps that follow explore in more depth.

The following section provides a more focused look at each country. The eight institutional case studies were selected to illustrate how each country's collaboration profile translates into practice, not to rank individual universities. Each pairing reflects the country-level pattern set out above:

- **Ghana:** exceptional research growth, but relatively concentrated industry connectivity. The University of Ghana demonstrates broad institutional translation; KNUST shows long-term interfaces with productive industry.
- **Kenya:** a smaller system with comparatively high connectivity. The University of Nairobi shows the infrastructure being built to support translation; Aga Khan University demonstrates how international connectivity can lead to locally embedded health impact.
- **Nigeria:** a huge research base, but the weakest industry connectivity of the four. The University of Lagos illustrates the institutional capacity currently being built to close that gap, with Covenant University also showing dedication to IP transferability.
- **South Africa:** a mature, comparatively deep ecosystem. The University of Cape Town and the University of the Witwatersrand demonstrate what more developed translation infrastructure can look like.

Country Focus: Ghana

Ghana reaches industry mainly through medicine: public-health bodies and pharmaceutical firms dominate its collaboration list. A distinct second cluster (PetroChina, Saudi Aramco and the RSK Group) cites a different set of institutions: KNUST, the mining and energy-focused universities, and the technical universities. Only one Ghanaian organisation, the research network NESRA, appears among its own top twenty citers.

A further view of the same relationship comes from THE's World University Rankings data: research income received from industry per academic staff member. The country's median institution reports $5,222 per academic staff member (mean $12,218, pulled upward by a small number of higher-value institutions), around the middle of the four countries in absolute terms. But industry funding accounts for a median of 47.6% of institutions' total research income - the highest share of any of the four countries- suggesting Ghana's comparatively modest research income is unusually reliant on industry sources.

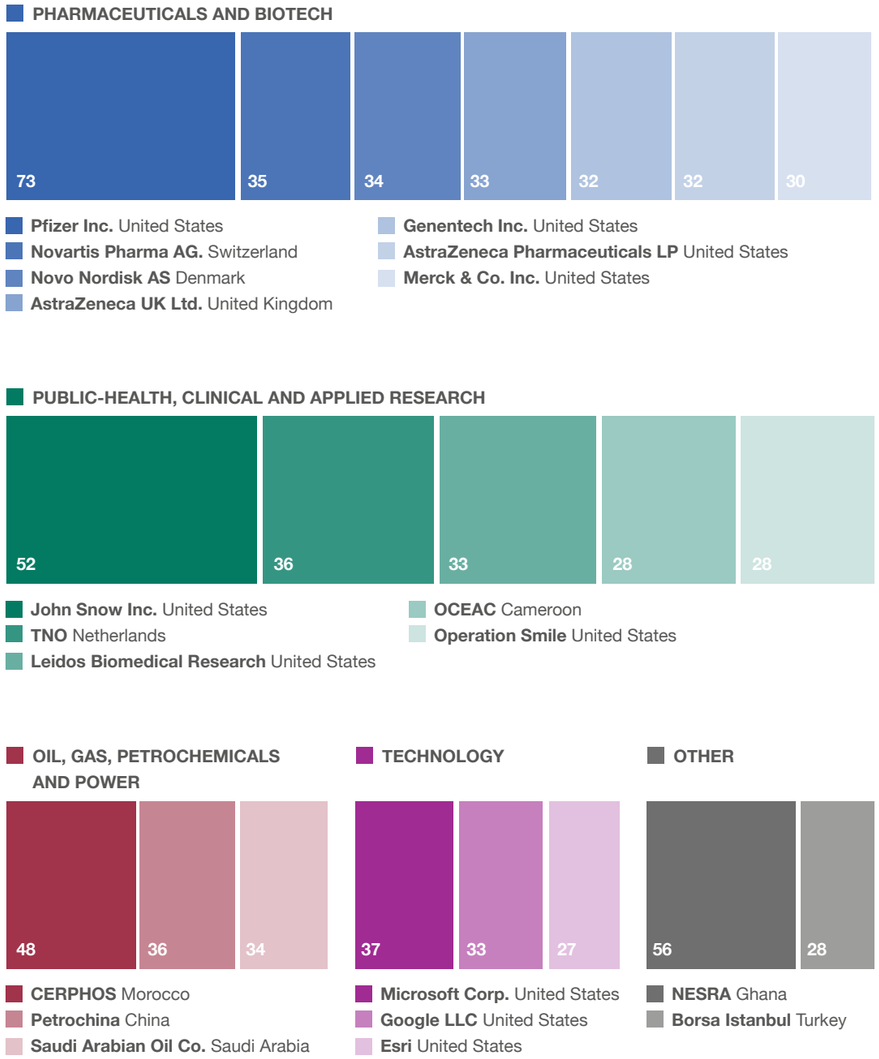

Figure 6: Ghana: top citing organisations pooled across its twenty most research-active universities. Source: Dimensions (Digital Science), extracted via Google BigQuery. Publications 2018–2025.

CASE STUDY ONE

University of Ghana

Embedding Translation Across a Research-Intensive University

The University of Ghana (UG) has spent almost two decades reshaping its research system around a broader understanding of impact. Since 2008, it has deliberately moved from an institution focused primarily on teaching and academic publication towards one in which research is increasingly expected to contribute to policy, public services, healthcare, innovation and national development.

Central to that transition has been the evolution of the University's Research and Innovation Directorate (RID), formerly the Office of Research, Innovation and Development. What began largely as a research administration and grants function has developed into an institutional hub supporting research development, intellectual property, technology transfer, entrepreneurship, commercialisation and external partnerships.

Creating an institution-wide research ecosystem

UG's approach extends beyond a standalone technology-transfer office. RID operates alongside specialist institutes and centres including the Noguchi Memorial Institute for Medical Research, University of Ghana Medical Centre, West Africa Centre for Crop Improvement and West African Centre for Cell Biology of Infectious Pathogens. This creates multiple pathways through which research can reach government, healthcare providers, companies and communities.

The university increasingly encourages researchers to consider potential users and impact from the beginning of a project. Government, health services, industry, communities and civil society can therefore be involved in shaping research rather than being approached only once findings have been published.

Research capacity supporting national health systems

The Noguchi Memorial Institute provides one of the clearest examples. During the Covid-19 pandemic, Noguchi became Ghana's principal reference laboratory. It expanded diagnostic and testing capacity, provided genomic sequencing and produced epidemiological evidence used in national public-health decision-making.

Its contribution extended beyond research publication to national surveillance systems, variant monitoring, laboratory workforce capability and pandemic preparedness. Longstanding malaria research has similarly contributed evidence to disease-control strategies, surveillance and clinical guidance.

This illustrates an important characteristic of research translation in health. The end user may not be a company. Government ministries, hospitals, laboratories and public-health agencies can provide equally significant routes through which academic research achieves practical impact.

Connecting international research to domestic priorities

International collaboration remains central to UG's research model. The university participates in networks including the African Research Universities Alliance and Worldwide Universities Network, alongside collaborations supported through NIH, Wellcome, UKRI and Horizon Europe.
These partnerships provide access to finance, infrastructure, specialist knowledge, research mobility and training. UG has increasingly sought to align them with priorities including infectious and non-communicable disease, food security, climate resilience, renewable energy, digital transformation and health-system strengthening.

Implementation partners are also increasingly involved at the design stage. Government can support policy adoption; hospitals provide environments for validation; industry offers manufacturing and market capability; and international organisations provide finance, technical expertise and routes to scale.

Impact

UG defines successful research translation broadly. Patents, licences, products and start-ups remain important, but they sit alongside policy influence, better healthcare, public-sector improvements, capacity development, food security, environmental sustainability and community outcomes.

This approach reflects the variety of routes through which a large research-intensive institution contributes to society. A discovery in biomedical science may move into clinical practice; public-health research may reshape policy; agricultural research may contribute to food security; and externally funded collaborations may build expertise and infrastructure that remains within the national research system.

The University of Ghana's experience therefore demonstrates the importance of building an ecosystem for translation, rather than expecting a single commercialisation function to deliver impact across a diverse research portfolio.

CASE STUDY TWO

KNUST

Building long-term pathways from research to productive use

Kwame Nkrumah University of Science and Technology (KNUST) has spent more than five decades developing mechanisms for connecting university knowledge with businesses, entrepreneurs and communities. Its experience demonstrates that effective research translation is not necessarily built around patents and spin-outs alone. It can also involve adapting technologies to local conditions, strengthening manufacturing capability, transferring technical skills and helping enterprises use research to solve practical problems.

At the centre of this approach is KNUST's Technology Consultancy Centre (TCC), established in 1972 as an interface between research and Ghana's productive economy. Over time, the university has complemented this longstanding model with more formal intellectual-property, technology-transfer and commercialisation capacity.

Taking technology transfer closer to users

An early lesson from the TCC was that conventional consultancy was not sufficient. Researchers and engineers needed to work directly with the people who would produce, adapt and use new technologies.

That thinking led KNUST to establish the Suame Intermediate Technology Transfer Unit in 1980 within Suame Magazine, Kumasi's large engineering and automotive cluster. Workshops for machining, metal founding, plant construction and woodworking enabled university technologies to be demonstrated and refined in real production environments while artisans and entrepreneurs received practical training.

The model subsequently extended into areas including food and agro-processing, renewable energy, ceramics and small-scale manufacturing. Its approach typically combines identification of a practical problem, co-development of machinery or processes, local fabrication, demonstration, training and support for adoption.

The impact went beyond individual projects. KNUST reports that by 1985 its machine-tools programme had helped establish ten light-engineering workshops, creating 136 direct workplaces and wider employment through connected activities. The success of the Suame model also contributed to the development of Ghana's national GRATIS network of technology-transfer centres. More recently, the university has continued to work within Suame, training 176 automotive mechanics in diagnostic technologies through a GIZ-supported initiative.

Building a contemporary commercialisation system

KNUST has since added a formal IP and Technology Transfer function within its Office of Grants and Research. Established in 2021, the function reports 19 invention disclosures, seven patent applications at different stages, six copyright registrations, an active licence and four spin-out initiatives being prepared for prospective commercial partners.

The university is also part of the Ghana Research and Industry Collaborative (GRIC), which creates a structured mechanism for introducing researchers to companies and investors. Researchers prepare concise "industry-friendly" summaries of their technologies before presenting them at matchmaking sessions. More than 16 sessions have generated over 100 expressions of interest across participating institutions; KNUST reports that seven innovations have generated more than 25 commercial leads.

FarmSense provides a more recent example of this ecosystem in action. Developed through KNUST's DIPPER Lab with Ghanaian company Sesi Technologies and Manchester Metropolitan University, FarmSense uses AI and Internet-of-Things technologies to analyse soil and provide farmers with crop and fertiliser recommendations.

KNUST reports that the technology has been tested with 600 farmers across five locations, with evidence of yield improvements of up to 60%. Commercialisation support has subsequently focused on wider deployment, business-model development, farmer and extension-agent training, market readiness and local production.

Impact

KNUST's experience suggests that successful translation depends as much on interfaces as inventions. Its strongest mechanisms bring researchers into direct contact with the people who manufacture, finance, regulate and use technology.

The institution also demonstrates why definitions of impact need to reflect local economies. A commercially valuable outcome may be a patent or spin-out, but it may equally be an SME increasing productivity, an artisan acquiring new technical skills, a technology being manufactured locally or a farmer adopting a more effective production method.

The underlying lesson is that research translation is a long-term institutional capability. It requires relationships, specialist people, prototyping and manufacturing infrastructure, finance and an understanding of how new knowledge can fit into existing productive systems.

Country Focus: Kenya

Kenya's list is dominated by pharmaceutical firms whose portfolios centre on HIV and infectious disease (Gilead Sciences, ViiV Healthcare, Janssen and GlaxoSmithKline)—alongside a distinct agricultural and veterinary strand running through Nairobi, Maseno, Embu, JKUAT and Kenyatta. No Kenyan organisation appears in its own top twenty.

Industry research income per staff is the lowest of the four countries in absolute terms: Kenya's median institution reports just $982 per academic staff member (mean $2,187). Yet industry funding still accounts for a median of 36.6% of institutions' total research income- second only to Ghana-suggesting Kenya's research base is comparatively industry-reliant even though the absolute sums involved remain small.

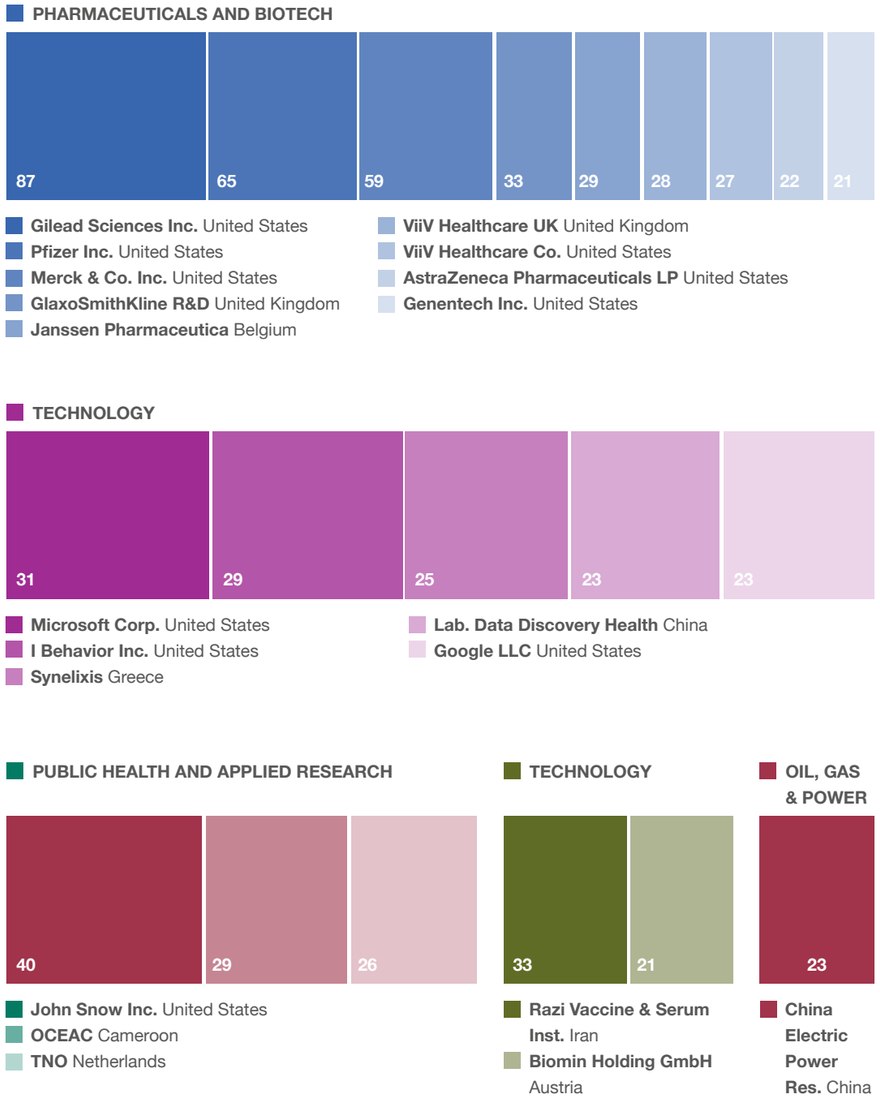

Figure 7: Kenya: top citing organisations.
Source: Dimensions (Digital Science), extracted via Google BigQuery. Publications 2018–2025.

CASE STUDY THREE

University of Nairobi

Building an innovation ecosystem around research excellence

The University of Nairobi (UoN) is seeking to move from producing research and individual innovations towards creating a more systematic pathway through which knowledge can become products, enterprises and practical solutions.

The university's strategy reflects a recognition that research excellence alone is not sufficient. Technologies frequently require additional funding, prototypes, commercial expertise, regulatory support and external partners before they are ready for adoption. UoN is therefore developing infrastructure designed specifically to address the space between academic discovery and market or societal use.

Building the missing infrastructure

The flagship initiative is the Silicon Savannah Innovation Park, anchored by an Engineering and Science Complex.

The planned Park is conceived not simply as additional research infrastructure but as an integrated ecosystem connecting academics, students, entrepreneurs, investors, companies and government. It is intended to provide incubation, commercialisation support, specialist infrastructure and partnership opportunities to help university research move towards market-ready technologies and enterprises.

This sits alongside the University's Innovation and Intellectual Property Management Office (IPMO), which identifies and protects research-based IP and supports its commercialisation. An Innovation Incubation and Commercialisation programme provides researchers and students with mentorship, proof-of-concept development, prototype refinement, incubation and industry engagement.

Sector-specific mechanisms include the Kantaria Agricultural Technology and Innovation Centre, which links academic research to businesses and farming communities. External relationships with organisations including Konza Technopolis, the Kenya National Innovation Agency and National Research Fund help connect university activity to the wider innovation ecosystem.

Different routes from research to application

Several university innovations demonstrate what such pathways can achieve.
Pera Foods was founded by Dr Duke Gekonge from doctoral research into indigenous crops. Supported through the university's incubation programme, the company has developed patented and commercialised food innovations intended to improve nutrition, add value to agricultural products and generate opportunities for farmers.

BIOFIX took a different route. The Rhizobium-based biofertiliser was developed through university research and subsequently commercialised through an IPMO-facilitated licensing agreement, enabling large-scale production and regional distribution.

Agricultural research has also translated through partnerships rather than company formation. Research led by Professor Paul Kimani has generated Kenya's first locally bred climbing-bean varieties and more than 50 common-bean varieties, including crops with drought-resistant, disease-resistant and biofortified characteristics. Partnerships with the Agricultural Development Corporation and commercial seed companies support certified production and wider dissemination.

Together, these examples demonstrate that research translation can involve entrepreneurship, licensing, industry adoption and dissemination through established market actors.

Bridging the finance and development gap

UoN also identifies persistent barriers. Research funding frequently ends before technologies reach proof-of-concept, prototype validation or market entry. High prototyping costs, limited venture capital for deep technologies, regulatory delays and different academic and commercial timescales make the transition particularly difficult.

This explains why the university is investing not only in IP protection but in incubation, demonstrations and spaces where innovators can meet potential users and investors. Its annual Nairobi Innovation Week brings researchers, students, businesses and policymakers together to showcase technologies and develop partnerships, while programmes such as C4Dlab provide hackathons, incubation and mentorship to student and early-career innovators.

Impact

The University of Nairobi's experience highlights the need for infrastructure after research has happened.

Universities can produce considerable scientific knowledge but still struggle to translate it if innovators lack proof-of-concept finance, prototyping facilities, commercial expertise and connections to firms or investors.

UoN is responding by building these functions into a connected institutional system. Its long-term ambition is therefore not simply to produce more individually successful innovations, but to create a repeatable pathway through which research can progress from discovery, through protection and development, towards adoption and societal and economic impact.

CASE STUDY FOUR

Aga Khan University

Translating research into health-system impact

Aga Khan University (AKU) has developed an approach to research translation that brings research, education and healthcare delivery together within a single academic health system. This integration creates a direct pathway between identifying problems in clinical practice, generating evidence and translating findings into healthcare services, professional training, policy and innovation.

The model is significant because research translation in health does not necessarily culminate in patents or commercial products. At AKU, success can mean new clinical guidance, stronger health services, improved workforce capability or technologies designed around the needs of healthcare systems and communities. Its strong international research connectivity provides access to specialist expertise, finance and infrastructure, while the university has increasingly sought to ensure that these partnerships reinforce locally led research and address national and regional health priorities.

Integrated research and healthcare delivery

The Mimba Yangu ("My Pregnancy") programme demonstrates how this model works in practice. The project addressed limited access to obstetric ultrasound expertise in resource-constrained settings by examining whether portable ultrasounds could safely be incorporated into routine antenatal care delivered by nurse-midwives.

Using hand-held ultrasound equipment, nurse-midwives were trained to undertake focused obstetric examinations in primary healthcare facilities. The programme brought together obstetricians, radiologists, implementation scientists and educators, combining competency-based training with specialist oversight, image-quality assurance and continuing mentorship.

Embedding the research within healthcare delivery helped ensure that the intervention remained connected to the realities of frontline services. AKU reports that women attended antenatal care earlier, valued being able to access ultrasound closer to home and experienced greater partner involvement in antenatal care. Importantly, the intervention also continued beyond the original research period.

The findings subsequently contributed to Kenya's National Obstetric Point-of-Care Ultrasound Guidelines, which support frontline nurses, midwives and clinical officers to undertake focused ultrasound for earlier identification of pregnancy complications. AKU faculty continue to support implementation through Ministry of Health technical working groups, curriculum development and evaluation.

Using data and international partnerships for locally relevant innovation

AKU is applying the same principle to digital health. Its Data Innovation Office brings clinicians, researchers and data scientists together around a secure electronic health-record repository containing more than a decade of data and over three million patient records from Nairobi, Mombasa and Kisumu. The infrastructure provides a foundation for AI-enabled research and allows technologies to be developed and tested using data that reflects East African populations and healthcare contexts.

One resulting initiative is Afya Gemma, a generative-AI clinical decision-support platform designed to provide healthcare professionals with guidance aligned with Kenyan treatment protocols. The project was selected for the Google.org Generative AI Accelerator and secured approximately US$1 million to support development. AKU reports that the multidisciplinary team produced a working prototype within six months and is piloting the platform across six healthcare facilities, with further expansion planned.

International partnerships are central to this work but are increasingly designed around local capability. AKU has, for example, become the first African and lower- or middle-income-country founding partner of the Mayo Clinic Platform Connect network, with plans to contribute anonymised patient data through a federated model while retaining data sovereignty. Its African Leadership for Measuring Brain Health in Children and Adolescents consortium is meanwhile training 82 fellows across Kenya, Zambia, Malawi and South Africa.

Impact

AKU's experience demonstrates that effective research translation can begin by designing research around the settings in which evidence will ultimately be used. Government, health providers, communities and external partners are involved not simply as recipients of findings but as participants in developing and implementing them. The success of this approach is reflected by the fact that over a 5-year period, AKU Kenya research influenced 821 policy documents from major organizations including World Health Organization, World Bank, and the Organization for Economic Co-operation and Development.

This approach also broadens conventional measures of research impact. For AKU, improvements to patient care, policy influence, clinical capacity, healthcare workforce development and access to services are as significant as commercial outcomes. The university's model shows how strong institutional integration and carefully structured international partnerships can help research move more quickly from discovery into policy, practice and innovation.

Country Focus: Nigeria

Nigeria is the clearest case of a single sector dominating: ten oil, gas and power and heavy industry companies account for 1,188 of the 2,012 citations shown- a bigger block than pharmaceuticals. NNPC is the only Nigerian organisation to appear.

Industry research income per staff in Nigeria has a median of $1,144 per academic staff member (mean $7,817, reflecting a small number of high-value outliers across its much larger population of ranked institutions). Industry funding accounts for a median of just 19.4% of institutions' total research income - the lowest share of the four countries- consistent with a research base that is broad but, relative to its size, only lightly industry-financed.

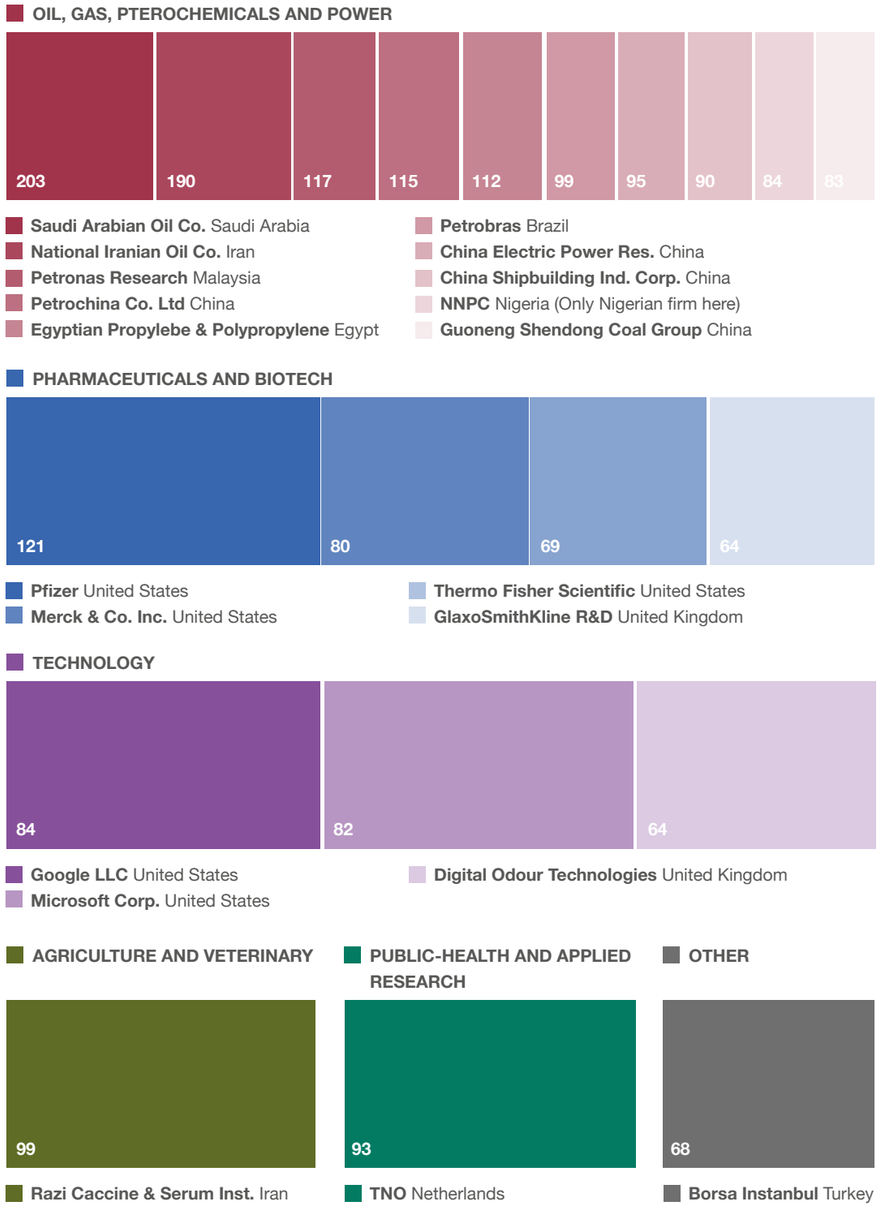

Figure 8: Nigeria; top 20 citing organisations.
Source: Dimensions (Digital Science), extracted via Google BigQuery. Publications 2018–2025.

CASE STUDY FIVE

University of Lagos

Creating Stronger Bridges Between Research and Innovation

The University of Lagos (UNILAG) is seeking to strengthen the infrastructure that connects its research and innovation activity with businesses, investors, government and communities. At the centre of this work is the University's Innovation and Technology Management Office (ITMO), which provides institutional support for identifying, protecting and developing research and innovations with commercial or societal potential.

Rather than relying on individual projects or researchers to navigate commercialisation independently, UNILAG is developing a network of intermediary functions designed to create clearer routes from university ideas to external users.

Building institutional bridges

ITMO was established under the University's Research and Innovation Policy to connect academic research to opportunities within the wider innovation economy. It provides governance and support for university inventions while seeking to build systems that endure beyond individual programmes.

These include a digitised intellectual-property registry and AI-powered chatbot, which give students and researchers easier access to IP and innovation information. The Technology Transfer Ambassadorship Programme extends expertise across faculties, while Project Innovation to Market provides innovators with training and incubation around commercialisation and market entry.

ITMO operates within a broader network that includes the Entrepreneurship and Skills Development Centre, NITDA IT Hub, UNILAG Design Studio, AI UniPod, Fabrication Laboratory and Artificial Intelligence and Robotics Laboratory. Together, these functions provide places where ideas can be developed through design, fabrication, entrepreneurship support and interaction with external partners.

Moving ideas towards practical application

The emerging portfolio spans healthcare, environmental challenges and digital technologies.

CerviTech is a health-technology initiative addressing musculoskeletal problems associated with extended smartphone use, while Riascope is developing a diagnostic device intended to improve malaria detection through precision imaging. AFRETEC-supported initiatives have provided incubation to teams working on energy and health innovation, while an AFRETEC Water Quality Project has developed monitoring prototypes for the Ilaje, Iwaya and Ago Egun communities surrounding the university.

UNILAG's Fabrication Laboratory has also supported functional prototypes addressing medical-device access and the recycling of plastic waste into filament for 3D printing. A collaboration between ITMO and Theseabilities Foundation is working to translate research-based assistive technologies for use by people with disabilities.

These examples demonstrate a broad conception of translation. The objective is not necessarily to establish a company around every idea, but to provide innovators with the resources, equipment, skills and partnerships necessary for their research to become useful and sustainable beyond the university.

Addressing the capacity gap

UNILAG's experience also highlights a challenge common to universities seeking to strengthen research commercialisation: intermediary infrastructure depends on specialist people.

The university identifies limited staffing within its Technology Transfer Unit as one of the main constraints on its ability to support researchers and innovation hubs at scale. As a public institution, recruitment is influenced by federal employment processes, making it difficult to build specialist capacity at the speed required.

UNILAG has responded through the Technology Transfer Ambassadors Programme, project-funded staff and partnerships with organisations including IREX, AFRETEC, the South West Innovation and Technology Company, Theseabilities Foundation and the Nigerian Impact Investing Research Industry Collaborative.

Impact

UNILAG demonstrates that research translation requires more than increasing the supply of research or providing physical innovation facilities. Universities also need the professional capacity that sits between discovery and application.

Technology-transfer specialists, business-development expertise, incubation programmes, IP support and external networks can make research more visible and accessible to organisations outside academia. The university's emerging model therefore provides an important illustration of institution-building: creating multiple pathways through which researchers and students can move an idea towards markets, public services or communities, while using partnerships to compensate for areas where internal capacity remains constrained.

CASE STUDY SIX

Covenant University

From publication to an impact-driven research culture industry

Covenant University is seeking to change the way research success is understood: moving from a culture centred primarily on academic publication towards one in which researchers are also encouraged to consider intellectual property, innovation, commercialisation and societal impact.

At the centre of this transition is the Covenant University Centre for Research, Innovation and Discovery (CUCRID). The Centre provides an institutional pathway through which promising research can be identified, evaluated and supported, including through intellectual-property awareness, patent identification and protection, innovation support and industry engagement. Activities such as IP clinics, technology exhibitions and patent support are intended to help researchers consider how discoveries might ultimately move beyond publication towards practical use.

This approach is particularly relevant in Nigeria, which has the second-largest research base of the four countries examined in this report but the lowest weighted industry co-authorship rate, at 0.72%. The national picture therefore points to considerable potential to translate growing research capacity into stronger links with industry and economic application.

Building a culture of innovation

Covenant's experience suggests that strengthening research translation requires changes in institutional culture as well as infrastructure.

The university has established an expectation that research should generate value beyond academic publication. Researchers are encouraged to consider whether findings have potential to become protectable intellectual property and, ultimately, useful products, technologies or services.

CUCRID supports this process through IP training clinics, researcher engagement and support for patent processes. Covenant describes this as a journey from publication through protection and connection towards impact. Importantly, the university does not regard patents themselves as the endpoint; its stated ambition is to increase the number that progress into useful technologies, products or services.

Moving research towards practical application

One example is ADPL Concentrate, developed through research in the College of Science and Technology to address challenges in livestock feed. Covenant reports that the work progressed from research findings to intellectual-property protection, with approximately 14 patented products associated with the technology, and subsequently attracted industry interest as it moved towards commercial deployment.

The relationship with ROLEP Veterinary Consult illustrates how industry can contribute to this process. Covenant characterises the partnership as two-way: university researchers contribute scientific expertise and research capability, while the company brings practical problems, market knowledge, operational experience, infrastructure and funding. CUCRID acts as an intermediary, identifying promising technologies within the university and helping connect researchers with companies and entrepreneurs.

Other projects demonstrate different stages of translation. Research into a high-gain cascaded DC-DC converter for efficient renewable-power utilisation has progressed to prototype development. Meanwhile, the Covenant Applied Informatics and Communication Africa Centre of Excellence has developed FEDGEN, a federated genomics cloud and high-performance computing infrastructure. Together, these initiatives illustrate attempts to move research in energy and digital technologies towards forms that can ultimately be used beyond the university.

Impact

For Covenant, successful translation is ultimately measured by what happens after research has been protected.

The university reports that ADPL Concentrate has contributed to addressing livestock-feed challenges while supporting farmer productivity, employment, new business activity and skills development among students and researchers. Its experience therefore reinforces the importance of looking beyond patent numbers towards whether research generates measurable economic or societal value.

Covenant also identifies a wider institutional lesson. Research translation cannot depend on an individual researcher or department. Leadership must make innovation and impact part of university strategy, while researchers need practical support to identify and protect intellectual property, develop prototypes, find external partners and attract investment. Strong relationships with industry, government and the wider innovation ecosystem are equally important.

Country Focus: South Africa

South Africa's citer list is led by thirteen pharmaceutical firms. It also has a physics and nuclear research strand with no equivalent in the other three countries, with its single most prolific citer being a German heavy-ion physics laboratory . Its own top twenty includes one domestic organisation, the South African Nuclear Energy Corporation, cited by ten universities.

Industry research income per staff confirms South Africa's lead even more clearly than citation counts do: its median institution reports $8,197 per academic staff member (mean $39,636, reflecting a small number of very high-value institutions) — comfortably the highest of the four countries in absolute terms. Industry funding accounts for a median of 31.0% of institutions' total research income- a smaller share than Ghana's or Kenya's, but on a far larger base, consistent with the more established, broadly-funded system described above.

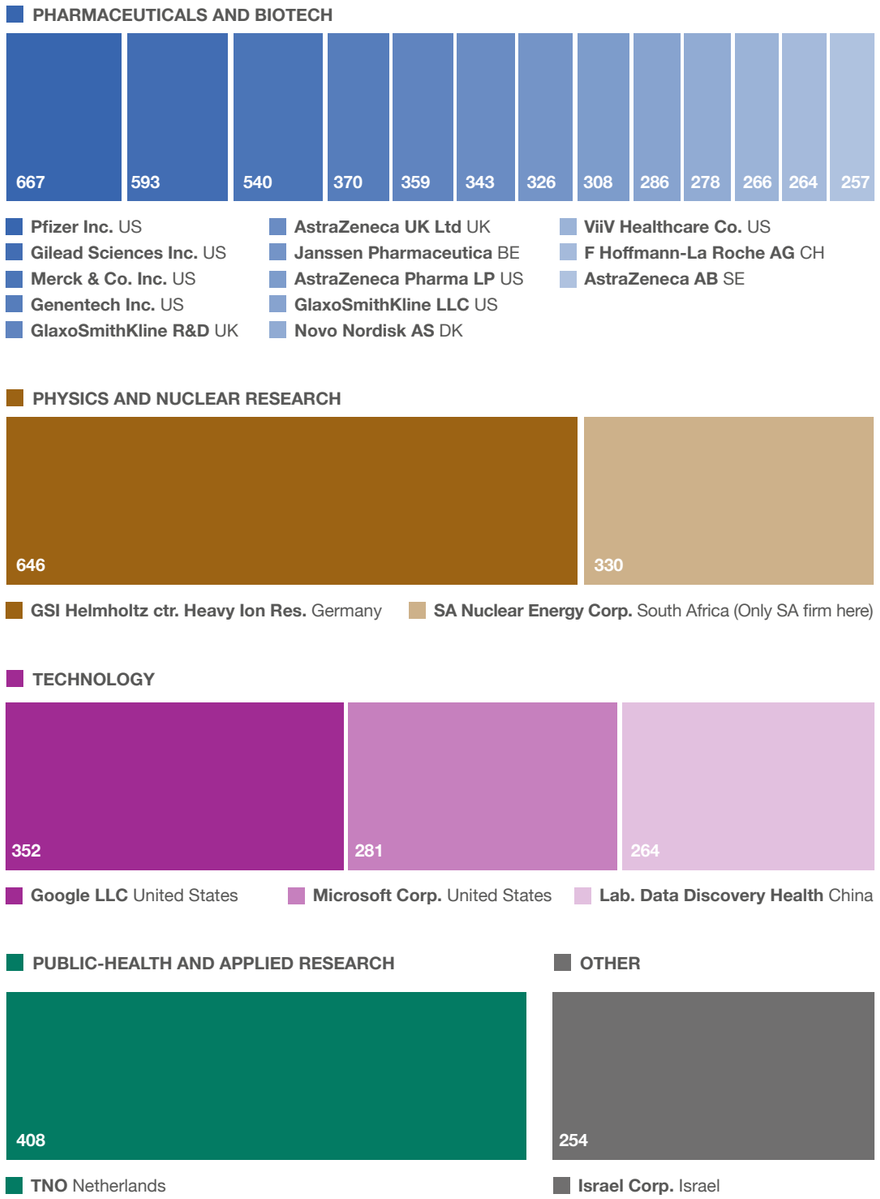

Figure 9: South Africa: top citing organisations.
Source: Dimensions (Digital Science), extracted via Google BigQuery. Publications 2018–2025.

CASE STUDY SEVEN

University of Cape Town

Building the machinery for research commercialisation

The University of Cape Town (UCT) has built one of the region's most established systems for translating university research into commercial and societal impact. Rather than relying on individual inventions, the university has invested over more than two decades in professional expertise, finance and external relationships that help move research towards application.

Building institutional infrastructure for translation

At the centre of UCT's ecosystem is Research Contracts and Innovation (RC&I), which brings together intellectual-property management, research contracting, licensing, commercialisation and industry engagement.

Recognising that promising research frequently stalls between discovery and commercial readiness, UCT has expanded its support to include proof-of-concept funding, technology maturation, entrepreneurial development and early-stage company creation. Funding mechanisms including the Innovation Builder Fund and Evergreen Fund provide routes for technologies and spin-outs to progress beyond the research stage.
Impulse Biomedical illustrates this pathway. Emerging from UCT research seeking to improve access to emergency allergy and asthma treatments, the company received RC&I support with intellectual property, commercial viability, company formation and investor engagement. It is developing products including the ZiBiPen reloadable autoinjector and Easy Squeezy asthma device.

The wider portfolio demonstrates the cumulative effect of this institutional approach. UCT reports that 40 spin-off companies emerging from university research between 2004 and 2024 created more than 440 jobs, while its equity holdings in spin-outs were valued at more than R250 million.

From international research to domestic innovation capacity

Commercialisation through spin-outs is only one route to impact. UCT's involvement in the development of a new mRNA vaccine for tuberculosis demonstrates how research can also move towards application through collaboration between universities, government, international partners and industry.

The scientific foundations emerged from immunology research led by UCT scientists Tom Scriba and Munya Musvosvi with researchers at Stanford University, supported by the Gates Foundation. Using advanced immune profiling of South African cohorts, the researchers identified TB antigens associated with protective immune responses, creating a foundation for new vaccine candidates.

The work contributed to the South African-led TITAN mRNA TB Vaccine Programme, involving UCT - including the South African Tuberculosis Vaccine Initiative - the University of the Witwatersrand and Stanford University. Vaccine development brings UCT and Wits researchers together with South African biotechnology company Afrigen Biologics and Vaccines, combining expertise in TB immunology, mRNA design, vaccine formulation, manufacturing-process development and preclinical

testing. The collaboration has generated a joint patent, encouraging preclinical results and plans for Phase 1 human clinical trials.

Importantly, TITAN sits within a wider national ecosystem. It forms part of the South African mRNA Vaccine Consortium, comprising 11 organisations working to establish end-to-end mRNA vaccine capability. It also draws on manufacturing capacity established at Afrigen through the WHO–Medicines Patent Pool mRNA Technology Transfer Programme, which achieved GMP licensure for biological investigational products in 2026.

The significance therefore extends beyond an individual vaccine. The programme is building scientific expertise, manufacturing capability, infrastructure and regulatory experience that could support future vaccine and therapeutic development. It provides a practical example of how international research networks can be used to strengthen domestic capability rather than substitute for it.

Creating a repeatable pathway to impact

UCT's experience demonstrates that research translation does not follow a single route. Some technologies are best developed through spin-outs or licensing; others require collaborative R&D involving universities, companies, government and international partners.

What connects these pathways is the institutional capacity surrounding the research. Specialist teams, proof-of-concept and early-stage finance, intellectual-property expertise, industry relationships and access to manufacturing and investment all help bridge the gap between discovery and use.

UCT therefore illustrates the broader challenge identified by this report: moving from individual partnerships and isolated successes towards collaborative systems capable of repeatedly translating research into economic and societal value. Its experience shows how sustained investment in institutional infrastructure, combined with international connectivity and domestic partnerships, can enable universities not simply to produce excellent research, but to build the capabilities through which that research contributes to innovation, employment, health and longer-term national resilience.

CASE STUDY EIGHT

University of Witwatersrand

Creating multiple gateways between research and industry

Wits University has developed a model of research translation built around long-term relationships, strong disciplinary expertise and multiple ways for external partners to engage with the institution.

Its research strengths include mining, engineering, energy, healthcare, data science and artificial intelligence — fields closely connected to major industrial and societal challenges. However, Wits' experience suggests that expertise alone does not produce successful partnerships. Universities must also make that expertise easy for external organisations to find, understand and use.

Creating clear routes into the university

Wits has established a series of multidisciplinary platforms that act as gateways between research and external partners. These include the Wits Innovation Centre, MIND Institute, Tshimologong Digital Innovation Precinct and BioHub. The university is also strengthening coordination between the Innovation Centre, Wits Enterprise and Wits Health Consortium so that research contracting, intellectual property, commercialisation and implementation are more closely connected.

These structures allow partnerships to develop in different ways. Some begin with company research needs; others emerge from university inventions, shared infrastructure or policy challenges.

Multiple routes to impact

Peco Power provides one example. Emerging from research within electrical and information engineering, its patented Power Brick combines battery storage and an inverter in a modular system that can be charged from solar energy or the electricity grid.

Wits Enterprise helped develop the commercialisation strategy and supported establishment of Peco Power as an independent company. The technology responds directly to electricity-access challenges by allowing households, schools or communities to expand the system progressively as needs and resources change.

AirSynQ illustrates another pathway. The Wits spin-out is developing lower-cost air-quality monitoring products combining sensors, Internet-of-Things connectivity and artificial intelligence. Systems have already been deployed in operational environments and Africa Weather is supporting distribution into the mining sector. In 2026, South Africa's Technology Innovation Agency approved R11.7 million for further product development and implementation.

A different model is emerging through the Wits–South African Hydrogen Leadership Initiative. The R100 million partnership involving Wits, Air Liquide and the Localisation Support Fund is developing a hydrogen "living laboratory" on campus where research, demonstration, postgraduate skills development and industry participation can occur together.

Although the project remains under development, it demonstrates a move towards shared platforms in which companies and researchers can jointly develop and test technologies while building domestic expertise and supply chains.

Professional support behind the partnerships

Underlying these initiatives is dedicated intermediary capacity. The Wits Innovation Centre helps assess the technical maturity, commercial and social potential of emerging ideas and advises researchers on intellectual property and appropriate routes to impact. Researchers can also access design and prototyping through the Innovation Systems Lab, as well as proof-of-concept and seed finance.

The objective is not to make researchers responsible for mastering every aspect of innovation. Wits argues that academics should not be expected simultaneously to act as inventors, patent specialists, business developers, fundraisers and regulatory experts. Professional intermediary teams are essential.

Impact beyond commercialisation

Wits also deliberately defines translation more broadly than patents or businesses.

Research from PRICELESS SA, the SAMRC/Wits Centre for Health Economics and Decision Science, contributed to the introduction of South Africa's Health Promotion Levy on sugar-sweetened beverages in 2018. Subsequent research identified reductions in purchases of sugary drinks — an example of research achieving impact through public policy and population health rather than commercialisation.

Wits therefore demonstrates the value of creating multiple gateways to impact. Contract research, spin-outs, shared infrastructure, policy advice, licensing and postgraduate training can all connect university expertise to external users.

The institutional lesson is that strong research to industry engagement depends not on finding one perfect commercialisation model, but on developing enough trusted routes for companies, government and communities to work effectively with a university's research strengths.

Financing the future for industry-academic collaboration in Sub-Saharan Africa

Stronger university–industry collaboration requires more than conventional research funding. Universities need finance not only to generate knowledge, but to build partnerships, test technologies, protect intellectual property and move promising research towards adoption. This is increasingly reflected in regional and international policy. UNESCO has called for better alignment between higher education, research and industry, while the African Union's STISA-2034 places collaboration between governments, universities and the private sector at the centre of Africa's transition towards a more innovation-driven economy.

Significant funding mechanisms already exist. The World Bank's Africa Higher Education Centers of Excellence programme has committed $657 million, alongside $72 million from the French Development Agency, supporting around 80 centres across more than 50 universities. Participating institutions have generated over 18,000 student internships with companies and more than $183 million in external revenue. The Regional Scholarship and Innovation Fund similarly supports applied research, innovation and commercialisation across African universities.

National mechanisms are also developing. Ghana launched a National Research Fund in 2026 with GHS100 million in seed capital, while Kenya's Research Financing and Capacity Strengthening Masterplan 2026–2036 places commercialisation, industry linkages and

innovation uptake within a longer-term national framework. Nigeria's TETFund combines research funding with programmes focused on commercialisation and academia–industry–government collaboration. South Africa has perhaps the most established model, including THRIP, which co-funds applied R&D between companies and universities, and Technology Innovation Agency funding for seed development, technology maturation and commercialisation.

This report's institutional case studies suggest the core problem is often not an absence of funding, but a fragmented funding chain. The University of Nairobi's case study describes how research funding frequently ends before technologies reach proof-of-concept, prototype validation or market entry, a gap that high prototyping costs and limited venture capital make harder to close. The University of Cape Town has had to build its own sequence of separate funds — an Innovation Builder Fund to mature research, an Evergreen Fund to invest in spin-offs, and a limited partnership in the University Technology Fund for venture-stage capital — precisely because no single financing pathway yet carries a technology from discovery to market. Wits' most promising projects similarly draw on a different, ad hoc combination of funders project by project, from a government innovation-agency grant to a corporate and localisation-fund partnership. Universities that can assemble that connective tissue convert isolated grants into repeatable systems; those that cannot are left rediscovering the same gap each time.

The opportunity is therefore not simply to increase research funding, but to repair a funding chain that is often fragmented rather than absent, connecting different forms of finance more effectively. Public and development funding can build research capacity; collaborative funding can bring companies into research earlier; and proof-of-concept and commercial finance can help promising ideas reach markets and communities. More coherent financing pathways could help turn individual partnerships into stronger national innovation systems.

From partnerships to collaborative systems

This report's central finding is that Sub-Saharan Africa's university research base is growing faster than the systems needed to translate it into economic and societal value — and that gap is both the region's central challenge and its central opportunity. Africa's rapidly growing university research base represents an economic asset: an expanding stock of knowledge, skills and international connections that already reaches industry, government, public services, healthcare systems and communities. If the institutions, finance and partnerships connecting that knowledge to the wider economy do not grow at a comparable pace, countries risk leaving substantial economic and societal value unrealised.

Each of the four countries is best understood as following its own pathway, not competing on a single scale. **South Africa's is a story of depth**: the highest collaboration rate of the four, an institutional median (1.385%) not far behind its national average, and nearly three-quarters of all four-country industry-co-authored output. **Kenya's is a story of connectivity**: the smallest research base of the four, but the second-highest collaboration rate, exemplified by Aga Khan University Nairobi's +130.8% growth, 83.4% international rate and rising industry engagement. **Ghana's is a story of momentum**: the fastest research growth of any country (+81.3%), led institutionally by the University of Health and Allied Sciences (+80.6% growth, 2.24% industry rate). **Nigeria's is a story of scale and opportunity**: a 0.72% collaboration rate spread across 155,224 publications-the second-largest research base of the four-meaning even modest gains in collaboration intensity would translate into a large absolute increase in industry-linked output (**Figure 10**).

Figure 10: From research growth to national economic and societal value.

Turning that opportunity into practice requires:

- Developing sector-based partnership portfolios aligned with national economic priorities.
- Supporting fast-growing universities to build industry liaison, contracting and technology-transfer capabilities.
- Using international partnerships as a route to involve more domestic companies and suppliers, not a substitute for them.
- Investing in shared facilities, test beds, seed funding and professional partnership teams.
- Measuring impact through research income, patents, products, skills, placements, employment and company innovation — not publications alone.

Sub-Saharan African universities are becoming increasingly visible and relevant to industry. The strategic opportunity now is to convert this growing research strength into broader, deeper and more locally rooted collaboration systems. The next challenge is whether the institutions, finance and partnerships surrounding that research can develop quickly enough to translate a growing knowledge base into innovation, productive capacity, jobs and societal benefit.

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