The Academy of Medical Sciences

Academy of Medical Sciences response to S&T for Growth - A new HMG Africa Approach

Q1. Science, research, technology and innovation are widely recognised as drivers of economic growth. The UK Government wants to ensure that our future S&T partnerships with African countries are developed with economic growth as a joint and tangible goal.

(a) What are the best ways to ensure the UK and Africa embark on fair and equitable partnerships that can mutually deliver economic growth?

Any partnership established between the UK and Africa should have co-developed (an approach in which stakeholders work together, sharing power and responsibility from the start to the end of the project, including the generation of knowledge), production as its core principles. This enables partners to recognise equal strengths, appreciate bi-directional learning, and for the UK to respect the innovations occurring within Africa.

Adequate time must be dedicated to co-develop a research agenda that addresses research questions of interest to Africa and not just the UK. Listening is key to co-development with communities, policymakers and health practitioners. Not only does this help build trust in the partnership, but ensures the partnership responds to local, national, and regional needs defined by individuals, researchers, and communities in those nations and regions.

To act on these principles, the UK must recognise that in many instances leadership in this space is found in-country and not imposed from the Global North. Many countries within Africa have strong Principal Investigators (PI's) that can lead and develop research projects, and this is particularly important as projects move to implementation phases and need local knowledge and intelligence. The UK must promote opportunities that can be co-developed with PI's and partners in Africa to ensure they are mutually beneficial and meet in-country needs. Importantly, the grant terms accompanying such opportunities must be conducive to working equitably with partners.

(b) Can you envisage and outline briefly below how such a model partnership might work in practice?

When establishing partnerships between Africa and the UK, there is value in developing a Memorandum of Understanding (MoU) or Terms of Reference (TOR) which sets out the arrangements and the reciprocal benefits to partners (as was the premise of the Newton Fund).

There is value for all partners to have the expectations, benefits, and arrangements 'formalised' and this can help achieve 'buy-in' at a governmental level. Adequate time must be given to co-develop, iterate, and agree an MoU or TOR and to build trust between partners. Building trust takes time but it is easily broken, as highlighted in the UKRI Oversees Development Assistance (ODA) review of the impact of budget cuts.[1]

With regards to promoting leaders in Africa, good models should look to move towards allowing leadership – i.e. the Principal Investigator (PI) on the project – to be based in the African institution, often with a UK collaborator, to increase equity in the relationship and support research which can be both mutually beneficial and responds to local needs. Good examples of Government supported schemes already exist which could be replicated, for example those administered by the Medical Research Council (MRC).[2] [3]

Looking ahead, an important step in establishing equitable partnerships would be to direct appropriate portions of funding to the African partner and not to be routed through

UK institutions. This approach should be taken across all government departments and by UKRI. African institutions may need support to administer the funds and report on expenditure, which would need to be explored at the start of each project.

However, decisions should be made with careful consideration of unintended consequences, for example ensuring partnerships provide value for money and it does not become uneconomical for UK institutions to be involved in international endeavours. Partnership funding with contributions from African partners - ideally governments - could be a good mechanism to deliver positive partnerships.

Q2. What are the most critical challenges currently facing Africa's science research, technology and innovation sectors?

We have outlined below the main challenges facing Africa's science research, technology and innovation sectors, some of which are interlinked issues:

- **Availability and sustainability of funding** is a predominant challenge facing African Research and Innovation, particularly a current lack of longer-term strategic funding. This is both an issue for overseas funding and domestic funding, with a lack of commitment from National Governments across Africa to dedicate funds to research.
- **Innovation and regulatory barriers** - although there are exceptions, many African countries do not have a thriving science-based tertiary education sector with innovation at the heart of university life. This means that spinouts of Small and Medium Enterprises (SME's) from universities are less frequent, and the early stages of the innovation pipeline are absent. Pharmacological innovation is challenging, with a lack of regulatory structures to encourage and respond to innovation. Key elements of the translational pathway, from fundamental discovery to human challenge, followed by safety and efficacy in clinical trials, are often absent. Therefore, whilst good examples of innovation exist across Africa, progress can be hindered without these structures in place to carry them through into translation. This can lead to research talent leaving, to gain experience and enjoy a career in high-income countries (HICs), with this scientific diaspora further reinforcing a dependency on the Global North.
- **The challenge of developing and retaining a skilled workforce** is further compounded by the issue of local organisations paying lower salaries than international partners for very similar work. This again creates a pull towards HIC partners and organisations, adding to 'brain drain' and talent retainment challenges.
- **Knowledge transfer, tech transfer and drug manufacturing** - Tech 'know how' still sits largely in the Global North, and partnerships with pharmaceutical and vaccine companies are not so well established across the continent. There is a good opportunity in this space for the UK to support knowledge transfer - and utilise its experience of well-established industry connections - to facilitate partnerships that can increase vaccine and drug manufacturing in Africa and plug the gap for local manufacturing and tech hubs. There is also a need to break the current culture of dependence, particularly in vaccine manufacturing, and facilitate Africa to prioritise local development, with models and methods which work for the African context.

- **Climate change** - As highlighted in a 2024 Academy of Medical Sciences and Academy of Sciences of South Africa report, Africa will face the greatest threat from climate change, including from warming and mass migration, with a pressing need to implement climate change measures within African health systems (and beyond), amid resource constraints and ever-shifting environmental conditions on the continent.[4] This adds a double burden of planning for the future and responding to emerging threats, and the latter may come as a priority over investment in science and technology.

Q3. What are the key barriers preventing UK and African scientists and innovators working together to resolve these challenges? How can governments help address these challenges?

The UK and African partners work together extremely well, and can continue to boost such partnerships in an enabling environment.

However, from a domestic perspective, it is increasingly challenging for UK universities to partner internationally, with little incentive for Higher Education Institutions (HEIs), particularly for universities outside of the Russell Group, due to limited resources. To alleviate this, the UK Government should consider developing partnerships between Russell group and non-Russell group universities to offer support in establishing international partnerships.

However, partnerships can be viewed as 'high-risk' and vulnerable in the event of a political change which can result in funding cuts. To ensure the sustainability of the system, the UK Government should retain its legal commitment to ODA and work with other governments to protect and demonstrate the value of long-term investment in research in Africa from ODA.

From an African perspective, the lack of longer-term funding to enable African HEIs to develop their talent and capacity remains a major barrier to collaboration, further hindered by the barriers highlighted previously. It remains challenging to find local scientists with the correct expertise for many research and technology partnerships, creating a need for more programmes which match emerging and leading African Scientists with UK S&T. Moving forwards, it will be important for the UK Government to support schemes that link demand, resources and expertise in African countries with the UK.

Moreover, African Governments should embed the promotion of research and Intellectual property (IP) within their HEIs early on in the educational pathway, to steer and enable talented individuals to do research and innovate. Developing sustainable career pathways for research will be critical to these efforts, however, to enable talent to thrive in Africa, infrastructure for innovation needs to be developed and strengthened. There is an important space for the UK to support this.

As a first step, requiring joint UK and African co-Principal investigators in any health-related project or programme will be important for in a productive and mutually beneficial partnership, with a majority of the resource going to the African institution.

Q4. How can we leverage the strength of our existing Africa-UK partnerships in science, research, technology and innovation to create a step change that will deliver economic growth for both sides?

Building on existing partnerships

Many long-standing partnerships already exist, for example, centres of excellence in Africa which are already starting collaborative work on tech solutions. There are many African countries with long-standing relationships with the UK, including those with well-established UK-Africa Research Units which could be further developed. These partnerships should be built on and strengthened, and productive research institutions should be leveraged to continue building S&T capacity across the continent. For example, the likes of the Wellcome Trust, National Institute for Health and Care Research (NIHR) and MRC units in The Gambia, Uganda, Malawi and Kenya could be used to expand activity and encourage a greater focus on translation and innovation in health areas such as vaccine research and development.

Funding

From a funding perspective, schemes should focus on joint exchange, pump priming and building scientific collaborations in mutually strategically important areas to both partners, for example:

- **Infectious diseases research**, gives the opportunity for African leadership given the greater burden of disease and ability for large efficacy trials can take place which can inform UK health policy.
- **Non-communicable diseases**, which are increasing in Africa and a major health burden in the UK, provides many opportunities for scientific collaboration to support prevention and treatment, including product development.
- **Climate change**, particularly its health impacts, as noted previously, are a grave challenge for Africa, providing a vital opportunity to collaborate and respond to the global threat of climate impacts.

To support the next generation of African researchers who can lead in these areas, the UK Government should encourage schemes which focus on building capacity and promoting UK-Africa links at an earlier career stage, rather than just focusing on the Professoriate. All funding should also be structured around co-partnership, to enable capacity strengthening. Funding schemes that have dedicated time for research (enabling Africa-based researchers to be 'bought out' of their teaching or clinical duties) are also valuable, as they help facilitate the genuine co-delivery of activities.

Existing and new partnerships should, ideally at the start of each collaboration, encourage African institutions to think about how to support and develop their skilled workforce to conduct research and ensure a sustainable pipeline going forwards.

Good examples of schemes supporting early career researchers already exist. For example, the UK National Academies have collaborated to deliver Newton International Fellowships, which have provided early career international researchers with an opportunity to build links and undertake a research project for an extended period with leading researchers in the UK.[5]

To underpin these efforts, the UK Government should work with African Governments to promote research, and to encourage South-South partnerships which forge links

between African Researchers and policy makers, to co-develop national research agendas.

National Academies, with their access to multidisciplinary research expertise play a key role here. For example, the Academy of Medical Sciences global health policy workshops partners with LMIC Academies to consider how scientific evidence can help address key global health challenges, support in-country capacity for tailored, local, impactful scientific policy and foster connections, including across Africa on various issues.[6] The Academy also works more broadly in its international career development programmes, grants and policy work to identify key stages in the medical and health research pathway to support Early Career Researchers, and has fostered strong networks across the continent via this work.

Q5. Are there any other forms of S&T collaboration that we are not currently thinking about?

There is an opportunity to further involve industry in S&T collaboration, particularly on areas such as testing of new drugs (e.g. for Non-Communicable Diseases (NCD's)) in LMICs. The UK Government should consider its role in facilitating trustworthy partnerships across the African continent. Nonetheless, due diligence must be taken to ensure such partnerships are beneficial for local stakeholders and are geared towards addressing local need.

There is also an opportunity to consider how the UK could encourage African nations to develop their own support systems for entrepreneurs in S&T going forward. As a starting point, there may be a role in facilitating in-country innovation by providing access to venture capital for African entrepreneurs and linking African scientists to SME's to pitch their ideas.

More generally, there could be a greater focus on activities and programmes which support and recognise the benefits of forging of South-South partnerships. This would help the building of local capacity across the region in a more sustainable manner by enabling and encouraging African nations and researchers to collaborate on S&T development.

Further, the UK Government should consider how it can work more collaboratively and develop partnerships with NGOs, which could have added benefit of raising quality of the research done in-country by NGOs.

Q6. Please outline specific S&T opportunities you have identified with individual African countries and set out what this could deliver for both countries?

Developing local vaccine manufacturing capacity - Africa provides a huge opportunity for local vaccine development, however much more capacity is needed. The UK should consider partnerships which build on small scale vaccine capacity, including facilitating partnerships between African countries and companies who are developing specific products. For example, the African Snakebite Research Group at Liverpool School of Tropical Medicine are working successfully with the Kenyan and Nigeran governments to develop anti-venom capacity. Efforts already taking place, for example, in Kenya, Ghana, Senegal, Rwanda to build manufacturing capacity could be built upon.

Addressing regulatory barriers– regulatory barriers are posing a challenge to many African researchers, which has led to a lack of harmonisation, coordination, and absence of strong regulatory authorities for licencing of new drugs and trials in some countries. The Academy's Clinical Research Pathways policy project, funded by the International Science Partnership Fund, in its preliminary evidence gathering stage, has identified a number of areas in which governance is providing a barrier to clinical research in Africa. Initiatives such as the WHO Africa Vaccine Regulatory Forum (AVAREF) are trying to address this.[7] The UK Medicines and Healthcare products Regulatory Agency (MHRA) provides an excellent example which African countries can look to; the UK Government should explore how a partnership between the MHRA and African regulatory authorities could mutually support development.

Climate change – We have noted above the critical challenge faced by Africa due to climate change. Our 2024 report noted the importance of political will and regional collaboration to address these issues, as well as the central role of knowledge exchange and workforce capacity building. Given the scale of the global challenge, there will be opportunities for the UK to work with Africa with mutual benefits from scientific collaboration in this area.[4]

Partnerships around biotech – Africa also provides a strong opportunity to benefit from partnerships on areas such as diagnostics, AI and telecoms, where the UK is making strong advances.

The UK Government should also explore opportunities to work with countries that may have previously been viewed as more 'challenging' to work with or where we do not have existing partnerships which are strong, for example, Chad, Ethiopia and the DRC. In addition, the expansion of the priority countries in UK funding mechanisms such as the International Science Partnership Fund should be prioritised so that a more holistic approach to collaboration is achieved across the whole continent. This also supports the strengthening of South-South partnerships.

Q7. What should the UK do more of and less of?

Foremost, the Government should focus on consistency of its offer to Africa, ensuring coherent opportunities that build upon one another. Longer-term funding would enable the UK to provide a stable offer, and this should include provision for capacity strengthening.

Collaboration should also focus on two-way learning and capacity enhancement, and the Government should encourage a focus on this. A consideration of local contexts is essential, rather than assuming what has worked from the Global North.

There should also be a focus on research and technology around neglected diseases, and those areas which are a large burden but do not necessarily offer an opportunity for financial return from tech innovations.

To underpin all of this, the UK Government should also address the current structure of funding for international partnerships to ensure sustainability, and find the most appropriate models for delivering them in an equitable, mutually beneficial manner. Such a review should also consider the UK's approach to partnerships which may not always result in economic growth.

Q8. Are you aware of other nations working to address similar issues e.g. S&T for growth in Africa and, if so, which countries?

China provides an example of addressing S&T innovation on a long-term scale, as opposed to approaching S&T funding in line with political cycles. Within Europe, Norway provides a good example of strong investment, and good examples can also be seen from France who are investing well in Francophone countries, and Spain, for example, via the Barcelona Institute for Global Health Unit.[8]

There will be an important gap for the UK to fill in research and development in light of the recent change in policy towards foreign investment from the United States. It should also be noted that the UK still has an enormous competitive advantage as the preferred partner for most of Africa compared to other countries, and should leverage this.

Q8. Are there opportunities for the UK to partner regionally or plurilaterally, involving other non-African partners? If so, what would the UK's bespoke offer be to enhance such a partnership?

Working plurilaterally has benefits including helping to foster regional and global links, including promoting South-South connections. The UK has strong partnerships with many LMIC nations and it could therefore play a key role in linking and promoting Global South collaborations. National Academies do, and can continue to, play a key role in fostering connections. The Academy of Medical Sciences Clinical Research Pathways project, funded by the International Science Partnerships fund, for example, is adopting the approach of partnering with 6 LMIC partners, including African nations, to explore clinical research career pathways. As well as addressing regional challenges, the project has helped to boost knowledge sharing between LMICs and foster global connections. The project has co-developed an MoU with each partner to ensure the project is delivered equitably.

Providing leadership around equitable partnerships could be a bespoke offer of the UK to African partnerships. At present, African researchers and institutions still view EU/HIC partnerships as being approached mostly 'top down'. There is therefore a space for the UK to use thought leadership and to demonstrate the benefits of equitable partnerships with Africa and beyond, and ensure this is developed with African countries and researchers. Regionally, organisations such as the Science for Africa Foundation which work continentally could provide strong partnership opportunities.

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[1] https://www.ukri.org/wp-content/uploads/2022/07/UKRI-280722-ODAReview-Consequences2021ODABudgetCuts-KeyFindingsReport.pdf
[2] https://www.ukri.org/opportunity/applied-global-health-research/
[3] https://www.ukri.org/opportunity/african-research-leaders/
[4] https://acmedsci.ac.uk/file-download/44026928
[5] https://acmedsci.ac.uk/grants-and-schemes/grant-schemes/newton-international-fellowships
[6] https://acmedsci.ac.uk/policy/policy-projects/GCRF-workshops
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