UKCDR

UK ODA and Wellcome-Funded Research Capacity Strengthening in LMICs:

Case Studies

These case studies were developed as part of a UKCDR led cross-funder review of UK-funded research capacity strengthening (RCS) in low- and middle-income countries (LMICs) and accompany an analysis of the *UK Funding Landscape for Research Capacity Strengthening in LMICs* conducted in 2021.

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ABOUT UKCDR

UK Collaborative on Development Research (UKCDR) is a collaborative of government and research funders working in international development. Our core contributing members include the Department for Business, Energy and Industrial Strategy (BEIS); the Foreign, Commonwealth and Development Office (FCDO); the Department of Health and Social Care (DHSC); UK Research and Innovation (UKRI); and Wellcome. UKCDR exists to amplify the value and impact of research for global development by promoting coherence, collaboration and joint action among UK research funders.

For further information on UKCDR, please visit ukcdr.org.uk.

Case studies for research capacity strengthening in low- and middle-income countries

This collection of case studies highlights UK funded research capacity strengthening (RCS) programmes in low- and middle-income countries (LMICs) that have had significant impact and demonstrate the value of coherence between UK funders. Impacts have been made at the individual, institutional and environmental/systems level in LMICs. This includes strengthened research skills and research management systems, research productivity, new national/international collaborations and an enabling environment for research. Together, these case studies highlight the value of funding RCS initiatives, including success factors and the vision for their future. This is a resource for UK funders, practitioners and senior decision makers in RCS, to highlight key examples of impact and to inspire future programmes.

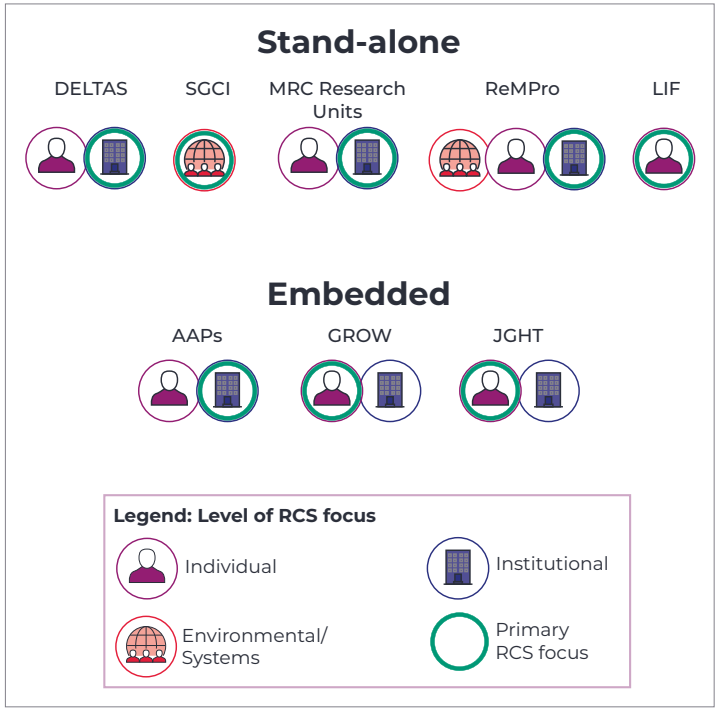
Introduction

Strong research and innovation capacities in LMICs underpin socio-economic development, and the UK has invested in strengthening research capacity in LMICs over many decades. RCS are initiatives aimed at "enhancing the ability and resources of individuals, institutions and/or systems to undertake, communicate and/or use high quality research efficiently, effectively and sustainably". These case studies are examples of RCS supported by UK funders and categorised as being either 'stand-alone' (dedicated programmes where RCS is the primary/sole purpose in one location or a variety of locations) or 'embedded' as part of research programmes. The case studies included are:

- **DELTAS** Developing Excellence in Leadership and Training in Africa
- **GROW** GCRF Growing Research Capacity
- **JGHT** Joint Global Health Trials
- **LIF** Leaders in Innovation Fellowships
- **Major Centres and Platforms:** Medical Research Council (MRC)-funded Africa Research Units and Wellcome Africa and Asia programmes (AAPs)
- **ReMPro Africa** Research Management Programme in Africa
- **SGCI** Science Granting Councils Initiative

Each case study highlights impacts at different levels of the research ecosystem (individual, institutional and environmental/systems)[1] . Figure 1 outlines which level each programme is aimed at supporting. The methodology for identifying and developing the case studies is outlined in the Annex.

Figure 1: UK-funded RCS programmes primary and secondary level of focus



Developing Excellence in Leadership, Training and Science in Africa (DELTAS)

A major health research capacity strengthening programme to support Africa-led development of world-class researchers and scientific leaders in Africa.

KEY INFORMATION

UK funders: Wellcome and FCDO

Total UK investment: £62.6M

Project dates: 2015-2020

Lead institutions: African Academy of Sciences, Alliance for Accelerating Excellence in Science in Africa (AAS/AESA)

Countries of focus: South Africa, Ghana, Zimbabwe, Cote d'Ivoire, Senegal, Ethiopia, Malawi, Zambia, Botswana, Namibia, Democratic Republic of the Congo, Rwanda, Cameroon, Gabon, Kenya, Uganda, Nigeria, Burkina Faso, Mali

Model/approaches to RCS: Stand-alone through fellowships, training, mentoring, south-south collaboration, research leadership, institutional strengthening, supporting public engagement, knowledge translation and research impact capacities

Find out more: The 11 teams: Afrique-One ASPIRE; AMARI; CARTA+; DELGEME; IDeAL; MARCAD; MUII-Plus; SANTHE; SSACAB; THRiVE-2; WACCBIP

Background

DELTAS is a long-term research capacity strengthening programme, a unique feature is its African-led consortia-based model that fosters strong intra-African collaboration. Over an initial period of five years (2015-2020), it has supported 11 collaborative teams and spans 54 lead and partner institutions from across the continent. DELTAS also invest in research careers through funding training fellowships at MSc, PhD and postdoctoral levels.

The goal of DELTAS is to train researchers with the capacity to lead locally relevant and high-quality research to impact health science, policy and practice in Africa through four strategic areas:

1. **Scientific quality:** excellent science through competitive recruitment of fellows in strong scientific environments.
2. **Research training:** providing academic support, training and supervision to develop world-class researchers.
3. **Scientific citizenship:** fostering mentorship, leadership and equitable collaboration in science, and engagement with public and policy stakeholders.
4. **Research management and environment:** providing researchers with access to administrative support, adequate resources and creating supportive, sustainable research management environments e.g. financial management.

Impacts

Scientific quality:

DELTAS research has resulted in:

- 492 publications in 2020 (almost double the number in 2019), with 85% in peer reviewed journals.
- DELTAS scientific outputs contributed to policy impact at regional and global level e.g. revised WHO guidelines for rabies and HIV management[2].

Research training:

- Over 750 short trainings, workshops and courses with a total of 15,233 participants has led to local researcher career development.
- 2,011 research fellows from undergraduate interns to senior researchers recruited, exceeding the recruitment target and achieving a gender parity of 53% male and 47% female.

Scientific citizenship:

- Community, policy and public engagement activities held by DELTAS research fellows have reached thousands and raised the profile of research institutions locally and regionally.
- Over 2,500 research communication activities across the continent has reached over 100 million people.

Research management and environment:

- Refurbishment / building of 88 research facilities including laboratories, computer rooms etc across all 54 host and partner institutions, providing excellent supportive research environments for fellows to conduct their research.

Success factors and lessons learned

- Build intra-African research collaborations alongside North South collaborations.
- African research leadership facilitates an African perspective and agenda setting to solve African research challenges, including through international collaborations.
- Balance excellence with equity in funding decision making: pair weaker research institutions alongside stronger institutions to develop strong research, financial, managerial and operational capacities, and extend the value of funding to more beneficiaries across the continent.

Future vision

Funding for the second phase of DELTAS (2021-2026) has been approved by Wellcome and FCDO, awards have not yet been announced. The design and management for Phase 2 was led by AAS/AESA. The philosophy underpinning DELTAS is to continue to shift the centre of gravity of African science funding from the UK to Africa. An emphasis on strengthening the whole research ecosystem, research excellence and institutional equity remains.

Growing Research Capacity (GROW)

KEY INFORMATION

UK funders: BEIS via UKRI

Funding programme: Global Challenges Research Fund (GCRF)

Total UK investment: £225 million

Project dates: 2017-2021

Countries of focus: 69 partner countries

Model/approaches to RCS: Embedded

Find out more: GCRF Growing research capability to meet the challenges faced by developing countries [PDF]

A funding programme under the Global Challenges Research Fund (GCRF) to grow research capacity around the world

Background

GROW is part of the wider £1.5 billion Global Challenges Research Fund (GCRF), which supports cutting-edge research and innovation that addresses global issues faced by LMICs. One of the focuses of the GCRF is to strengthen capability for research.

In 2016, GCRF launched a 'Growing Research Capability' call, otherwise known as GROW, to grow research capacity around the globe and to strengthen and broaden skills and expertise to address specific challenges of developing regions and countries. Thirty-seven projects have been successful in addressing 11 challenge areas across 69 partner countries. Each project is a collaboration between institutions in LMICs and the UK. The challenge areas fit under three themes:

1. Equitable access to sustainable development
2. Sustainable economies and societies
3. Human rights, good governance and social justice

Impacts

Across the 37 supported projects, a range of RCS impacts from individual, institutional and environmental/systems perspectives have been achieved. For example:

GCRF African SWIFT: The Science for Weather Information and Forecasting Techniques (SWIFT) programme aims to deliver a step change in African weather forecasting capability and communication to protect the lives and livelihoods of African people while improving the economies of their countries. Relevant impacts include:

Research capability and productivity:

- Introduction of a technique called nowcasting, enabling meteorologists to make accurate, hour-by-hour forecasts as severe storm conditions begin to form.
- Scientists involved with SWIFT and a partner organisation, the African Centre of Meteorological Applications for Development (ACMAD), developed techniques to predict location and scale of impending meningitis outbreaks in sub-Saharan Africa using weather data.
- The Kenya Electricity Generating Company (KenGen) are providing energy security to Kenya's population and phasing out fossil fuel use through better hydropower planning, informed directly by African SWIFT weather forecasts.
- In all the above examples, scientists effectively connect forecasting science and modelling through to users who are then making decisions that are directly contributing to the UN Sustainable Development Goals.

Career trajectory:

- Skills and experience strengthened during the programme contributed towards selection of a SWIFT academic, from a competitive pool of over 400 African scientists, to join the second cohort of Future Leaders – African Independent Research (FLAIR) Fellowships. This demonstrates the value of UK schemes to support research career pathways.
- SWIFT training materials are being used to train over 150 meteorologists a year through partner institutions and researchers from four leading African universities have developed operational meteorology through the programme's meteorological testbed events.
- Five research fellowships for early-career researchers have expanded fellows' knowledge of African weather and climate research and leadership experience.

CABANA: A capacity strengthening project for bioinformatics in Latin America that aims to accelerate implementation of data-driven biology in the region by creating a sustainable capacity-building programme. This has led to:

Sustainable provision of training:

- The 'Train the Trainer' initiative has helped to transform scientists into effective and confident trainers to deliver sustainable training programmes in their own institutes and across CABANA's network throughout Latin America - magnifying skills developed.

National and International collaborations:

- CABANA consists of an international consortium of 10 organisations, nine in Latin America and one in the UK and has worked with civil society and government to inform them on the value of bioinformatics.

Success factors and lessons learned

- Inviting applications that are challenge-focused rather than thematic area enabled the formulation interdisciplinary teams to address development challenges.
- The 37 GROW projects are working on a wide range of challenges and utilising a range of RCS approaches.
- Projects have worked with overseas partners to scope where capacity strengthening is most required to enable them to target their interventions.

Future vision

The 37 GROW projects are now in their final year and are being encouraged to consider legacy and sustainability.

Joint Global Health Trials (JGHT)

KEY INFORMATION

UK funders: MRC, FCDO, DHSC/NIHR, Wellcome

Funding programme: Two strands: Full trial awards and Development awards

Total UK investment: ~£200M

Project dates: 2009-present

Countries of focus: All LMICs, current trial sites located in 47 countries across Africa, South Asia, Southeast Asia, Northeast Asia, Caribbean, Latin America, Central America, Europe, Middle East and North Africa region.

Model/approaches to RCS: Embedded

Find out more: Joint Global Health Trials - Funding - Medical Research Council (ukri.org)

A funding scheme to generate new knowledge about interventions that promise to contribute to the improvement of health in LMICs that have built clinical trial capacity.

Background

The JGHT scheme was set up in 2009 to deliver key efficacy and effectiveness data for health interventions in LMICs. This robust evidence is required to support policy change and real-world implementation, which ultimately leads to health impact. Global health trial platforms are underrepresented in LMICs - where LMICs host 90% of the global burden of disease[3] but less than 20% of clinical trials are being conducted there[4]. This is driven by barriers faced by LMIC researchers such as a lack of financial and human capacity, lack of research environment and operational barriers[5].

The establishment of JGHT has pooled resources to allow UK funders to support trials of larger scope and/or cost, whilst sharing any potential risks. JGHT-funded studies can be led by applicants from LMICs and/or the UK but must be conducted in an LMIC. Although not an explicit goal, JGHT-funded research has built clinical trials capacity through the studies it has funded in low-resource settings.

Impacts

An independent review[6] of the scheme reported a range of RCS impacts:

Skills development and LMIC-led research:

- 71% of co-investigators reported enhanced scientific knowledge which has been used for further work.
- The scheme provided substantial support to LMIC-led research institutes including 46 awards made direct to LMIC principal investigators.
- The establishment of the JGHT development award scheme provided funds for pilot studies and has served as an entry point to global health research and trials for less experienced principal investigators, including LMIC based investigators.

Improved trial capacity:

There is evidence that the JGHT scheme has had a positive impact on clinical trial capacity in the LMIC institutions.

- Funded 82 late-phase clinical trials and 67 development awards. Funding of development awards has prepared groundwork for future trials in areas not previously involved geographically or addressed in terms of heath needs.
- 65% of principal investigators (PI) from closed full-trials highlighted that the research had enhanced trial capacity at the trial site(s), including through training in trial methodology and data management.

Research and policy impact:

- JGHT-funded research has generated new knowledge about interventions which in turn are starting to contribute to improving health in LMICs.
- Study results from trials have directly resulted in health policy impacts, for example updated WHO guidelines and recommendations.
- The scheme has strengthened capacity to successfully apply for further funding and strengthened relationships with policy makers, influencing the likelihood of research uptake and impact:

"The information gathered and the wealth of experience has made [our] organisation attractive for other research donors and partners and has strengthened the relationship with the Ministry of Education and Health."

- LMIC-based investigator

Success factors and lessons learned

- Funding LMIC researchers directly has facilitated LMIC leadership and ownership of the research agenda.
- Funding trials through JGHT has helped to overcome barriers (e.g. financial and human capacity) and strengthen capacity for sites to conduct more trials in future.

Future vision

Global health trial funding will likely remain focused on delivering impact from the trial. However, the funders are looking at ways to facilitate capacity strengthening, either embedded in the research grants, or as standalone activities.

Leaders in Innovation Fellowships (LIF)

KEY INFORMATION

UK funders: BEIS

Funding programme: Newton Fund

Total UK investment: £20.6m to date

Project dates: 2015-present

Countries of focus: Brazil, Chile, China, Colombia, Egypt, India, Indonesia, Jordan, Kenya, Malaysia, Mexico, Peru, The Philippines, South Africa, Thailand, Turkey and Vietnam

Model/approaches to RCS: Stand-alone through fellowships, training, mentoring, peer networks, alumni networking, learning and sharing events, community of practice

Find out more: Leaders in Innovation Fellowships - Royal Academy of Engineering (raeng.org.uk)

Photo from: Royal Academy of Engineering

A programme to bring together emerging leaders in the global innovation community to contribute to social and economic development of their country through commercialisation and engineering-based innovation.

Background

The Leaders in Innovation Fellowships (LIF) programme is delivered under the UK's Newton Fund by the Royal Academy of Engineering (RAEng) in partnership with in-country organisations. LIF supports researchers and academics to turn ideas and research into products and helps them develop an entrepreneurial mindset and skillset. It provides access to high-quality skills training focused on commercialisation; a network of peers in-country, the UK and around the world; and a rich and varied experience with immediate and long-term benefits for their innovations. It is a year-long programme of bespoke support including:

- Mentoring by experts
- High-quality entrepreneurship skills training by experts and professionals
- On-going support at the home institution
- Access to an international network of peer innovators and mentors, including RAEng's broad network of engineers and innovators in the UK
- Access to resources, webinars and opportunities on the LIF online community hub
- In-country and regional events to amplify connections and relationships

Impacts

Skills development and sharing:

- Since 2014, over 1,100 LIF alumni have participated in the programme in all 17 Newton Fund partner countries and developed skills in entrepreneurship, innovation and commercialisation.
- The LIF Community support programme recently expanded to include peer mentoring opportunities. 26 mentor-mentee pairs were made in the first year, with all participants receiving professional mentorship training.
- The LIF Online Community has enabled LIF participants, mentors, trainers, programme managers and in-country partners to network, create, learn, explore and innovate together online.

New collaborative programmes:

- The LIF Advance programme[7] is open to LIF alumni worldwide to achieve their full commercial potential and equip them to grow their businesses. The first cohort in 2020 included alumni from 13 countries and the theme was disability inclusion and reducing inequalities in healthcare.
- An independent auditor estimated that by 2030 the companies supported by LIF Advance had potential to generate £180 million in turnover, employ up to 160 people and improve the lives of 600 million people worldwide.
- The LIF Community Grants programme[8] supports LIF participants to build entrepreneurial networks in their local and regional contexts. In 2020, 16 LIF participants were awarded grants to implement community-building projects in Colombia, Indonesia, Jordan, Kenya, Malaysia, Mexico, Peru, South Africa and Turkey.

Research productivity and economic impact:

- Over 2,500 jobs created by LIF participants' companies.
- A total of $90 million in further investment, grants and funding has been raised by LIF participants in support of their innovations.
- 109 licensing deals have been secured.
- Example of an impactful LIF fellow project: Aruna is now one of the leading integrated fisheries e-commerce platforms in Indonesia with over 15,000 users from over 15 locations, who have seen a 20% increase in their income.

Success factors and lessons learned

- In-country partners have helped shaped the LIF programme to be more effective at supporting their entrepreneurs and local innovation ecosystems. They provide key insights and advice that increases the impact of the LIF programme locally, regionally and internationally.
- Although the LIF programme runs internationally, it has also had unique impacts within the UK. Participants and alumni form lasting partnerships with UK businesses, learn more about UK regulation, innovation and development, and create positive, long-lasting relationships with key members of the UK innovation ecosystem through their participation in the LIF mentoring programme.

Future vision

LIF will continue to build on relationships with in-country partners and UK innovation networks, helping to champion the value the programme and engineering entrepreneurship brings to local communities, UK national interests and sustainable development more broadly. In addition, LIF will continue to develop its community of 1,100 innovators as a self-sustaining peer to peer network that offers opportunities and support for LIF alumni to further their personal development and commercialisation journeys.

Major Centres and Platforms

a) MRC-funded Africa Research Units

KEY INFORMATION

UK funders: BEIS via UKRI-MRC

Funding programme: Core funding from UKRI-MRC, European and Developing Countries Clinical Trials Partnership (EDCTP)

Total UK investment: £97m over the 5 years (2016/17-2020/21) £68.7m to MRCG and £28.3m to MRC/UVRI and LSHTM Uganda Research Unit

Project dates: MRCG: 1947-present; MRC/UVRI and LSHTM Uganda Research Unit: 1988-present

Countries of focus: Uganda and The Gambia

Model/approaches to RCS: Centres of excellence centred around building research capacity in their respective countries

Find out more: https://www.mrcuganda.org/; https://www.mrc.gm/

Photo from: MRC Research Units, Gambia

The a) Medical Research Council (MRC)-funded Research Units and b) Wellcome-funded Africa and Asia Programmes are major centres and platforms that embed research capacity strengthening to be centres of excellence.

The MRC Unit The Gambia at London School of Hygiene & Tropical Medicine (LSHTM) (MRCG) (est. 1947) vision is to lead health research in West Africa to save lives and improve health across the world. RCS is interwoven in its mission statements, notably 'To train and develop MRCG staff to increase capacity in health research in the West African Region and beyond'. In 2016, the unit set up a dedicated 'Research training and career development department'. **The MRC/Uganda Virus Research Institute (UVRI) and LSHTM Uganda Research Unit** (est. 1988) is a centre of excellence for research on HIV/AIDs, emerging and re-emerging infections and non-communicable diseases (NCDs). Part of their mission is to build capacity for research in Africa. The Unit has a five-year training plan (2017-2022) to develop capacity for scientists and support staff at the unit and the region.

Impacts at MRCG

Provision and quality of training:

- Since 2016, 600 individuals on average per year have been trained through internships, BSc, MSc, PhD, certified professional and other skills training. Countries supported include Kenya, Nigeria, Ghana, Senegal and The Gambia in collaboration with the Medical Research Foundation and West African Health Organisation.
- The MRCG Retention Program enabled the unit to achieve 95% of lab-based technical support staff with at least a BSc degree (up from 30% 10 years ago).
- In 2020, support was provided to other West African countries to increase capacity in genomic sequencing, creating impact for the COVID-19 response and beyond.
- The Unit is setting up an internationally accredited fieldworker training programme with institutions in Kenya, Ghana and South Africa (among others).

MRCG wider RCS programmes and networks:

- Hosts the charity Africa Research Excellence Fund (AREF), dedicated to overcoming barriers faced by African researchers. To date, it has provided 46 fellowships, grant writing workshops to >170 attendees and 30 leadership programme fellows.
- Co-leads the West Africa Network of Excellence for Tuberculosis, AIDS and Malaria (WANETAM) with the Institute for Health Research, Epidemiological Surveillance and Training (IRESSEF) in Senegal to build capacity to prepare West African sites for clinical trials.
- Hosts three postdoctoral fellows from Senegal, Benin and The Gambia through the Crick African Network (CAN), a partnership with the Francis Crick Institute in the UK.

Impacts at MRC/UVRI and LSHTM Uganda Research Unit

Career pathways and quality training:

- To date, over 100 PhDs and 160 MSc have been supported.
- Multiple training opportunities are open to non-Ugandans, the current PhD and post doc cohorts include fellows from Cameroon, Ethiopia, Kenya, Malawi and Nigeria.
- Contributed to training of Ugandan Government laboratory technologists and scientists in virus sequencing, immunology/flow cytometry and bioinformatics, which has been vital in responding to the Covid-19 pandemic.

Strengthened research environment:

- Major partner in the East Africa Consortium for Clinical Research (EACCR), which significantly improved the regional quality and ethics of health research by developing a rigorous reciprocal clinical trial monitoring mechanism.
- MRC-Wellcome co-funded facility "The Training Building", opened in 2015, has enhanced the Unit's capacity to hold training events, seminars and symposia. Monthly scientific seminars and several bioinformatics courses have been run since.

Success factors and lessons learned

- Long term support has enabled the Units to develop a broad approach to RCS to support their diverse workforce from lab technicians to fieldworkers.
- The Units offer sustained career development pathways, which helps deliver equity (e.g. gender equity).
- The Units were able to rapidly redeploy staff and resources to support the national COVID-19 responses.
- The Units have forged strong relationships with the health ministries to increase the potential for policy impact.
- The Units work regionally to knowledge share and strengthen research capacity.

Future vision

The Units will focus on strengthening individual postgraduate training to sustain scientific excellence and develop research leaders. Both Units will capitalise on the recent transfer to LSHTM to further enhance training.

Major Centres and Platforms

b. Africa Asia Programmes (AAPs)

KEY INFORMATION

UK funders: Wellcome, FCDO, BEIS via UKRI-MRC

Funding programme: Core funding from Wellcome

Total UK investment: £120,878,000 (2015-2020 from Wellcome)

Project dates: KWTRP 1989-present, MLW 1998-present, AHRI 1984-present, MORU 2005-present, OUCRU 1979-present

Countries of focus: Kenya, Malawi, South Africa, Thailand, Laos, Vietnam, Uganda, Cambodia, Myanmar, Democratic Republic of the Congo, Indonesia, Nepal

Model/approaches to RCS: Embedded- centres of excellence with embedded RCS programmes

Find out more: Our programmes and initiatives in Africa and Asia | Wellcome

KWTRP; MLW; AHRI; MORU; OUCRU

Photo: In Bangkok, some of the 780 MORU Tropical Health Network research physicians, scientists, technicians, nurses, field workers and support staff who work in five research units and 50 sites across Asia and Africa

Credit: MORU 2019. Photo by Gerhard Jørén

Background

Over the past 40 years, Wellcome has invested in five major research programmes in Africa and Asia: KEMRI Wellcome Trust Research Programme (**KWTRP**), Kenya; Malawi-Liverpool-Wellcome Trust Clinical Research Programme (**MLW**), Malawi; The Africa Health Research Institute (**AHRI**), South Africa; Mahidol Oxford Tropical Medicine Research Unit (**MORU**), Thailand and Laos; The Oxford University Clinical Research Unit (**OUCRU**), Vietnam.

Each AAP is partnered with a national institution in the LMIC, which is critical for conducting research that is responsive to local and regional priorities, with global relevance. The work at the AAPs is driven by the major health challenges in their regions and they train and support the next generation of researchers and research leaders in their regions. Scientific and operational support is provided in partnership with UK University partners: University of Oxford, Liverpool School of Tropical Medicine and University College London, respectively.

Impacts

The AAPs have had significant research capacity strengthening impact in their regions, evidenced in research outcomes and in strengthened capacity of individual researchers.

Research impact and productivity:

- Wellcome's support has included capital funding for infrastructure, most recently this has been to build capacity for administrative training and laboratory facilities in Malawi (MLW) and Thailand (OUCRU).
- Large multi-country clinical trials coordinated by MORU on artesunate for treatment of severe malaria led directly to a change in the WHO malaria treatment guidelines. The Medicines for Malaria Venture estimate that this has saved 450,000-500,000 young lives in Africa, since 2011[9].
- Each AAP has responded to the COVID-19 pandemic in their regions, supported by research capacity built over the years. This has enabled global work on sequencing and data sharing, surveillance and media engagement to occur rapidly e.g. MLW built and is running Malawi's first ever large-scale oxygen plant and OUCRU Vietnam is providing first participating sites for the Randomised Evaluation of COVID-19 Therapy (RECOVERY) Trial, the world's largest clinical trial for COVID-19 treatments.

International/national collaborations:

- AAPs have established strong links with national and international stakeholders e.g. AHRI collaborates with over 60 institutions globally and MORU's network contains five research units and 50 sites across Asia and Africa.
- Capacity built through long-term funding and local engagement at the AAPs has enabled other initiatives to benefit, e.g. two of the DELTAS programmes are hosted at AAPs: the Initiative to Develop African Research Leaders (IDeAL) hosted at KWTPR and the Sub-Saharan African Network for TB/HIV Research Excellence (SANTHE) hosted at AHRI.

Individual strengthening:

- The AAPs have fostered world class LMIC researchers, who have strong records in supervising and mentoring future generation of researchers in their own communities
- The five Wellcome AAPs employ 3,500 staff directly, with many more staff in linked capacities, and currently train 250 current PhD.

Success factors and lessons learned

- Longevity of core funding of AAPs by Wellcome (some over 30 years), reviewed on a five-yearly basis allows programmes the security to focus on developing research, researchers and building local stakeholder partnerships rather than always looking for the next grant.
- 'Long-term investment underpinning clinical, field and laboratory infrastructure has enabled high-quality research and the ability to pivot to address emerging priorities (e.g. COVID-19).
- 'Research is co-created with and relevant to the national/regional health priorities (i.e. Malaria, HIV, Dengue, TB) and feeds into national/international level health policy and practice, strengthening the research ecosystem.

Future vision

Each AAP has a distinct vision for its own future, with the common theme of conducting locally relevant research that serves their populations and developing national scientific leaders, whilst also having global research impact.

Research Management Programme in Africa (ReMPro Africa)

KEY INFORMATION

UK funders: Wellcome, FCDO, BEIS via UKRI and Royal Society, DHSC/NIHR

Total UK investment: £1M

Project dates: Since 2016

Lead Institutions: African Academy of Sciences, Alliance for Accelerating Excellence in Science in Africa (AAS/AESA)

Countries of focus: Pan-African

Model/approaches to RCS: Stand-alone through individual, institutional and systems strengthening

Find out more: Research Management Programme in Africa (ReMPro Africa) | The AAS (aasciences.africa)

Photo: Good Research Management Practice Workshop – Accra, Ghana 2019

Credit: GRMP 14, The African Academy of Sciences Kenya

Developing a holistic and multifaceted approach to build and improve research management systems and capacity in African institutions

Background

Research management consists of any action that an institution can take to improve the effectiveness of its researchers, but which is not part of the research process itself. ReMPro Africa began in 2016 in response to a scoping study[10] on research management in Africa.

ReMPro Africa is an AAS/AESA initiative in response to critical gaps identified in building the continent's research and development ecosystems. The overall goal is to address systemic level challenges at African institutions in creating and sustaining enabling research environments. Five UK funders have collaborated to provide funding for this initiative. It addresses four interconnected strands:

- **Institutional Leadership:** Awareness, engagement, and continuity of support for strengthening research management functions across generations of leadership and senior academic staff.
- **Sustainability:** Mechanisms to ensure that institutions can support their own research management functions, including financial and career sustainability, regardless of funder or government support.
- **Standards:** Common standards and good practice, recognised both by institutions and funding partners.
- **Developing individual capacity of research management staff**: To promote research management 'career' pathways in institutions, supported by an appropriate infrastructure of networks and training opportunities.

Impacts

Standards and Sustainability:

- Implemented the Good Financial Grant Practice (GFGP) standard with over 300 institutions having registered and completed a self-assessment; providing them with a clear framework to improve their grant management processes, procedures and policies.
- The first draft of the Good Research Management Practice (GRMP) is complete against which institutions will be able to benchmark their capacities and improve their research management systems.
- Collaborated with ESSENCE to publish the Five Keys to Improving Research Costing and Pricing in LMICs (2020)[11]. The good practice document provides guidance and practical tips on improving research costing and pricing and is published in three languages.

Developing individual and institutional capacity:

- Launched the International Research Management Staff Development Programme (IRMSDP) with the Association of Research Managers and Administrators (ARMA) UK. It engaged 58 research managers and administrators (69% female) from institutions across nine African countries and the UK to enhance south-south and north-south collaborations, build mutual understanding, share knowledge and co-create resources for the wider research management community of practice. 47 open-access tools and resources for research management professionals have been developed.
- Supported regional research management associations throughout Africa, including the establishment of the Northern African Research and Innovation Management Association (NARIMA) to provide a platform for the promotion and use of best practices in research and innovation management within institutions in North Africa.

Success factors and lessons learned

- AAS/AESA's reputation as a pan-African organisation and existing network with organisations in Africa and internationally provided leadership that is essential to driving the programme's success.
- Systems level coordination through AAS/AESA is an effective and efficient way to strengthen research management capacity rather than through individual research awards.
- A funders group enabled AAS/AESA to engage with funders collectively, enhancing coherence, reducing duplication in reporting and supporting more transparent and open decision making.
- Stronger communication between UK and African research managers can provide the basis for strong research collaboration.

Future vision

ReMPro Africa will finalise the GRMP standard to support benchmarking and capacity strengthening, develop costing and pricing toolkits that assist institutions with cost recovery, and strengthen and professionalise research management as a career in Africa.

Science Granting Councils Initiative in sub-Saharan Africa (SGCI)

Strengthening capacities of the Science Granting Councils (SGCs) in sub-Saharan Africa to support research/evidence-based policies that will contribute to economic and social development.

KEY INFORMATION

UK funders: FCDO (+UKRI for COVID-19 programming)

Co-funders: IDRC, Canada; National Research Foundation (NRF) South Africa; Swedish International Development Cooperation Agency (Sida); German Research Foundation (DFG); SGC contributions

Funding programme: FCDO's East Africa Research and Innovation Hub, within the Research and Evidence Division

Total UK investment: £5.4M (+£0.95M for COVID-19 programming)

Total investment: £7.3M (or £8.2M including UK COVID-19 funding)(Sida, IDRC, NRF, DFG have committed £10.3M to SGCI-2)

Project dates: 1 April 2015 - 30 September 2020

Lead institutions: IDRC, NRF

Countries of focus: Botswana, Burkina Faso, Côte d'Ivoire, Ethiopia, Ghana, Kenya, Malawi, Mozambique, Namibia, Rwanda, Senegal, Tanzania, Uganda, Zambia, Zimbabwe

Model/approaches to RCS: Stand-alone through research, peer-to-peer exchanges, learning-by-doing, training workshops, technical support

Find out more: SGCI.org

Background

In 2012-14 Canada's International Development Research Centre (IDRC) commissioned a study to better understand the role of Science Granting Councils (SGCs) in national science, technology and innovation (STI) systems in sub-Saharan Africa. This established the importance and potential contribution of a capacity strengthening programme for SGC staff and key stakeholders. In parallel, governments across Africa were making commitments to increase the contribution of STI in their economies and there was a growing recognition of national SGCs having a potentially key role in this context.

The long-term vision for SGCI is effective SGCs that will strengthen national science systems and result in nationally led research that contributes to economic and social development in sub-Saharan Africa. In the medium-term, the objective is more effective research investments and strengthened research leadership for development. This is achieved through customised training, technical support and peer-to-peer learning. Research on issues such as research excellence and master classes with regional and international peers have also stimulated discussion amongst participating SGCs.

Impacts

Enabling new collaborative funding calls:

- SGCs received technical and financial support that led to nine new binational/trinational cooperation agreements, enabling several to run first-time joint calls for intra-Africa research collaboration.
- Launched the COVID-19 Africa Rapid Grant Fund- a US$5.75M multi funder platform for COVID-19 research in Africa, led by African researchers. SGCs helped identify projects that met national priorities and will use results to inform national strategies. 74 research and science engagement projects were funded across 16 African countries, half are led by women PIs.

Strengthening the research environment:

- Increased the international visibility of sub-Saharan Africa's SGCs, e.g. in the Global Research Council membership group.
- Shared knowledge and experiences among the SGCs on effective strategies for engaging governments to increase spending on research, development and innovation (RDI) (e.g. helped Ghana's Ministry of Environment, Science, Technology and Innovation establish the Ghana Innovation and Research Commercialisation (GIRC) Centre).

Development of RCS tools:

- Templates, training manuals, toolkits and standard operating procedures for research calls/grants management for use by SGCs and to institutionalize capacities built under SGCI.
- Tools for collecting micro-level datasets on RDI and staff training on analysis and use in designing and managing research and RDI programmes/projects (e.g. Zambia's preliminary survey revealed limited participation by women in RDI and led to a specific research funding window for them).

Success factors and lessons learned

- Tailor capacity strengthening to national and institutional contexts. In addition to many commonalities, there are differences in how Councils operate and the resources available to them, to which programming needs to be sensitive.
- Create opportunities for learning-by-doing, peer-to-peer learning and networking.
- Conduct research (e.g. studies on the political economy of SGCs[12]) to inform capacity strengthening.
- Collaboration between SGCs and regionally based technical support agencies helps to renew and sustain their capacities and reinforce STI systems.
- Strengthened SGCs result in a more collaborative and cohesive national and regional research ecosystem.

Future vision

Under SGCI-2, there is more emphasis on learning-by-doing through increased scope for SGCs to run research calls nationally and in collaboration with each other. As well as renewed attention to research excellence and integrating gender and inclusivity into SGC policies and procedures. There is also scope to expand SGCI activities in West Africa.

Annex: Methodology for case studies

A sample of case studies of research capacity strengthening (RCS) impact and/or coherence were nominated by the project Steering Group for inclusion in this output to demonstrate impact from UK Official Development Assistance (ODA) and Wellcome-funded RCS in LMICs. The Steering Group was made up of UK funders of research and RCS in international development, namely BEIS, DHSC, FCDO, UKRI, and Wellcome. There were 13 suggested case studies under the criteria below.

Criteria

Case studies RCS coherence/impact particularly:

- joint UK-funded RCS programmes (by core UKCDR members)
- programmes that have had significant impact and/or demonstrate UK coherence
- programmes that have impacted across different levels (individuals, institutional, environmental/systems)
- case studies where UK programmes have linked up support for particular LMIC researchers/ institutions, e.g. follow on fellowship awards (desirable).

UKCDR and the Steering group shortlisted seven case studies, which as a collective of case studies aimed to cover programmes from all UKCDR core members, across different levels and provide a range of geographic and thematic examples.

These were developed into case studies under an agreed template by UK funders, programme partners and UKCDR.

Data limitations

- **Generalisability**: The impacts presented in the case studies represent only the impacts reported in the context of the specific projects, and cannot be generalised to other projects or scenarios, or UK-funded RCS more broadly.
- **Exhaustiveness**: The case studies may not reflect all impacts resulting from the project in question, as some impacts may emerge only over longer periods of time or may not have been identified by the project team and beneficiaries.

Endnotes

1 Research capacity can be strengthened at one or more different and interacting levels:
- Individual: The development of researchers and teams via for example, training, fellowships and scholarships.
- Institutional: Supporting research capacity of universities, institutes and think-tanks to fund, manage and sustain their own research through research management, leadership, communications, incentives or infrastructure of organisations.
- Environmental: Improving structures and the political and regulatory context under which research is undertaken and used, as well as ensuring research grants embed best practice principles e.g. equitable partnerships.

2 Kunaratnam, Y., Waage, J., Bucher. A, Boyd, C. (2020) A mapping & analysis of UK-funded fellowships & scholarships for Africa

3 Yegros-Yegros, A., van de Klippe, W., Abad-Garcia, M.F. et al. (2020) Exploring why global health needs are unmet by research efforts: the potential influences of geography, industry and publication incentives | Health Research Policy and Systems | Full Text (biomedcentral.com)

4 Clinicaltrials.gov. US National Institute of Health. 2015. https://clinicaltrials.gov/ct2/search/map.

5 Alemayehu, C., Mitchell, G. & Nikles, J. (2018) Barriers for conducting clinical trials in developing countries- a systematic review | International Journal for Equity in Health | Full Text (biomedcentral.com)

6 Varnai, P., Rentel, M., Davé, A., Simpson, K., Tiriduzzi, C., Pottinger, E. (2019) https://mrc.ukri.org/documents/pdf/jght-review-technopolis-main-report/

7 LIF Advance 2020 - Royal Academy of Engineering (raeng.org.uk)

8 LIF Community Grants - Royal Academy of Engineering (raeng.org.uk)

9 Scaling-up injectable artesunate to save more lives from severe malaria | Medicines for Malaria Venture (mmv.org)

10 Wellcome Scoping Work on Research Management in LMICs – Africa and India | UKCDR

11 ESSENCE: Five Keys to improving research costing in low-and middle income countries | UKCDR

12 Chataway, J., Dobson, C., Daniels, C., Byrne, R., Hanlin, R., Tigabu, A., (2019) Science granting councils in Sub-Saharan Africa: Trends and tensions | Science and Public Policy | Oxford Academic (oup.com)