

Africa Capacity Building Initiative case study

Challenges and benefits for PhD students

The ACBI programme at a glance

Strengthening research capacity in low-and-middle-income countries is recognised by international research funders and development agencies as a major contributor to a country's socioeconomic development and to achieving Sustainable Development Goals¹. The UK Government's Foreign, Commonwealth & Development Office (FCDO) and the Royal Society (RS) have funded the Africa Capacity Building Initiative (ACBI) which aims to 'strengthen the research and training capacity of higher education institutions and support the development of individual scientists in sub-Saharan Africa through UK-Africa research collaborations'². ACBI funds ten research consortia; each consortium comprises one UK and three African institutions. Research within ACBI focuses on water and sanitation; renewable energy; and soil-related science. The ACBI programme supported 38 PhD candidates from 26 African research institutions across 18 African countries.

The Centre for Capacity Research (CCR) at the Liverpool School of Tropical Medicine, led the monitoring, evaluation and learning component of the ACBI programme. CCR's research investigated the factors influencing the progress of PhD students and the benefits that PhD students acquired from belonging to an ACBI research consortium.

This case study highlights some of the challenges reported by ACBI-affiliated PhD students, summarises the benefits to the students of belonging to a consortium, and outlines lessons learned that can inform the design and evaluation of other research capacity strengthening programmes.

Challenges

Most of the challenges reported by the students were related to their institutions' systems, with few reporting challenges at the individual and consortium levels, including:

- **Supervision quality and power relations.** A negative supervision experience (including challenges with interpersonal relationships with supervisors and having a large number of supervisors), led to demotivation, frustration, struggles and delays.
- **Lack of supportive working and learning environments** at the local institution or department emerged as one of the frustrating aspects among a few students. Students emphasised the importance of having a positive and encouraging research environment that goes beyond the physical facilities, equipment and infrastructure, to encompass inspiring and knowledgeable experts and research leaders who value the professional progress and advancement of the doctoral students and early career researchers.
- **Poor institutional infrastructure and facilities** occasionally hindered students' research especially in relation to poorly equipped laboratories and a lack of research tools (e.g. functional laboratory or field equipment, adequate consumables, advanced software and hardware for computational research); poor wi-fi/internet; power cuts; and limited access to scientific journals and research articles.
- **Institutional bureaucracy and delays** particularly impacted on the processing of students' stipends and the procurement of equipment, which led to major disruptions in research progress.
- **Lack of local funds for research**, especially for vital research topics that may have been overlooked by the local government, result in an unsatisfactory research environment and absence of bursaries for research students who are not part of a doctoral programme such as ACBI.

1. United Nations Educational Scientific and Cultural Organization (UNESCO). UNESCO Science Report: towards 2030. (2015) (see <https://unesdoc.unesco.org/ark:/48223/pf0000235406>, accessed 25 October 2021)

2. Royal Society-FCDO Africa Capacity Building Initiative (see <https://royalsociety.org/grants-schemes-awards/grants/africa-capacity-building/>, accessed 25 October 2021)

Benefits and opportunities

CCR's research revealed that ACBI played a fundamental role in fostering students' opportunities to carry out quality research; established valuable personal and professional relationships within and beyond ACBI; and enhanced their personal and professional development. In interviews, PhD students spoke about the key benefits and opportunities the ACBI programme had brought them. Almost all ACBI-affiliated PhD students said that their participation in the ACBI programme has been life-changing and a privilege. They reported a significant increase in self-confidence and an advancement in both research and generic life skills - many PhD students now feel better equipped to mentor and train their peers, masters students and undergraduates within their home institutions, and feel empowered to progress into fellowship programmes and lectureship positions after graduation.

There were also indirect benefits for affiliated African institutions and other non-ACBI researchers, including students and research support staff such as technicians. These included training, improved research facilities, better equipment, research collaborations, and improved visibility for researchers and institutions.

The vast majority of students who responded to the baseline questionnaire (88%) reported feeling *“advantaged compared to other PhD candidates at their department or school”*.



Image: ACBI PhD Students during Scientific Writing Skills Training at a Capacity Building Event in Lusaka, Zambia October 2019.

Students' progress in research benefitted significantly from belonging to an ACBI consortium. Support from their consortium members, and from the RS ACBI management team, often enabled them to overcome the challenges faced by other postgraduate research students who were not part of a large international programme.

Support for institutional research systems

Where weak administrative, procurement, financial and quality assurance systems existed, individual research consortia facilitated the processing of funds (including stipend payments) and procurement of equipment, and assisted with travel arrangements through a UK or different African institution to avoid payment interruptions and delays. In some institutions, this has led to improved procurement systems and financial administration including faster processing of funding claims.

Learning from different academic cultures

ACBI offered plenty of regional and international travel opportunities so that students could learn new skills in their research field, extend their networks and be exposed to research systems and cultures in different institutions. Students regarded these opportunities as enriching experiences which positively changed their perceptions and expanded their horizons. For example, some gained a fresh view on their own working environment through their exposure to other institutions.

How were data collected?

Findings presented in this case study were mainly derived from qualitative data collected by CCR through semi-structured in-depth interviews with 35 out of 38 ACBI-affiliated PhD students in 2018–2019. Interview questions focused on: students' overall PhD progress; supervision; challenges which might be hindering or delaying their progress (at the personal, institutional and consortium levels); benefits to students of being involved in the ACBI programme; networking and collaboration; research outputs; and suggestions for improvements.

Additional quantitative data were collected through a self-administrated questionnaire for data triangulation purposes, with a response rate of 87% (33 out of 38 students).

Networking and establishing long-term relationships

Being part of a research consortium enabled ACBI students to network and establish professional relationships with both senior academics in their research field and with other fellow PhD students/colleagues. Such relationships were regarded as useful for future academic collaborations within and beyond ACBI (e.g. in the write up of joint publications, grant writing, expertise and knowledge sharing). This was achieved through the various organised events within and among consortia and across the whole programme. It was evident that such interactions with regional and international experts offered students the opportunity to receive academic and professional support, advice, and problem-solving guidance through the wider consortium, improving students' experiences and inspiring them to generate new ideas in their fields of study. Additionally, some students believed that the ACBI programme contributed to establishing a sense of solidarity among African partners through South-South collaborations, as enhanced communication was developed between ACBI students and researchers within and beyond their research consortium.

Acquiring new equipment and instrumentation

A substantial part of the ACBI programme was dedicated to facilitating the provision of laboratory and field research equipment (including laptops, computational software, advanced computers and consumables). This meant that in some cases students no longer needed to travel to other laboratories to conduct their experiments. The purchase of new laboratory equipment and computer software/hardware for ACBI-affiliated students, which often happened through the individual research consortium, also benefited other researchers and the local institution/department.

Access to publications

UK collaborators assisted PhD students and African partners by sending them electronic copies of publications and research articles. Through ACBI, some students were registered at a UK university which facilitated their direct access to online resources and publications.

Fostering research outputs

Belonging to ACBI research consortia contributed to fostering research outputs among students. Having students' work and draft manuscripts reviewed by experts - as well as receiving the right guidance - motivated students to progress more quickly with their research work compared to non-ACBI PhD students. Moreover, peer-reviewed publications were perceived to improve the reputation of the students, researchers and the institution to help establish a track record and enhance their careers.

Financial benefits

The provision of ACBI funds to fully cover tuition fees and student stipends allowed PhD students to commit and concentrate on their studies, rather than having to support their living costs through employment or even leave academia for paid employment. This 'full funding' meant that students could be selected based on their academic merit rather than their ability to pay. They could also progress more quickly than non-ACBI students and were keen to graduate whilst course fees were provided.

Personal and professional development

Students were able to advance their knowledge and skills through: a) exchange visits to other research/academic institutions within Africa and the UK - such visits were deemed as valuable, inspiring and beneficial as they offered students the opportunity to learn about new techniques and to use state-of-art laboratories and equipment unavailable in their home country; b) participating in various types of training - such as technical and research skills; life/generic skills; and management skills; and c) participating and presenting in national, regional and international conferences and meetings which strengthened students' communication skills and self-confidence. Additionally, colleagues, students and technicians outside of the ACBI programme benefited from the ACBI-funding training programmes held at their institutions.

Improved English language skills

Francophone students who spent time in the UK and interacted with researchers and academics in English, reported an improvement in their English language skills.

In summary

The ACBI programme through its research consortia model succeeded in addressing many of the key challenges that postgraduate research students face when pursuing their doctoral studies at African institutions. It helped them overcome barriers hindering their academic and research progress, and their personal and professional development.

The research consortia model facilitated bringing together world-class experts and researchers from the UK and African countries, and allowed for a valuable exchange of knowledge, skills and expertise in multiple disciplines within and outside researchers' main research theme/field. It strengthened the relationship between consortia members and paved the way for future collaborations (including within Africa) and professional long-term partnerships during and beyond the lifetime of the programme. Overall, ACBI research consortia supported doctoral students to conduct high-quality research and fostering research outputs.

Key lessons and considerations to guide future improvements

Translating lessons learnt from CCR's research into actions will help to improve future PhD and research capacity strengthening programmes and limit the barriers/challenges that doctoral students face in low-and middle-income countries.

Key lessons

There is a growing evidence that high quality PhD training programmes in African research institutions are crucial for enhancing research quality and outputs, as well as retaining researchers in Africa³. This requires governmental commitment to invest in higher education institutions and adequate financial support for research from international stakeholders⁴. Key lessons learned from the ACBI programme about how to improve PhD training programmes include:

- **Invest in quality supervision and processes for monitoring students' progress.** Pivotal ways of enhancing PhD progress which do not require additional funds or external resources include: Limiting the number of supervisors, and ensuring clear mechanisms for monitoring progress, defining the roles and responsibilities of students and their supervisors (including effective lines of communication and problem solving; establishing healthy and constructive relationships with the supervisors and the research team) and assigning an external/independent mentor for every PhD student.
- **Invest in infrastructure and a supportive working and learning environment in institutions.** Students who reported having good research facilities and infrastructure (including research equipment) at their institutions and a supportive working environment, also reported better progress and less challenges in terms of having sufficient research support.
- **Conduct a training needs assessment** for each student at the start and periodically throughout the programme; provide training tailored to their personal needs and their development stage. This may include language support for people from non-anglophone countries.
- **Maximise opportunities for PhD students to expand their learning beyond the scientific/technical knowledge and to enhance their leadership and management skills.** For example, allocate them managerial responsibilities of small research projects and allow them to supervise junior students and/or manage field assistants.

- **Facilitate opportunities** for students to be involved in multidisciplinary research collaborations and implementation, for example, by working collaboratively with communities and with scientists from various scientific fields.

Suggestions to research managers to improve future research capacity strengthening programmes

- **Enhance communication** with PhD students including providing clear, transparent and written communication about their stipend, the grant terms and conditions and their reporting responsibilities.
- **Encourage mechanisms for promoting equity and transparency** in determining the amount of stipend for students – including balancing compensation for African (Co) Principal Investigators against students' stipend as an inappropriate student-supervisor differential may impact relationships.
- **Consider providing generic training** for Principal Investigators, Co-Principal Investigators, and supervisors in research management, communication, supervision, team building and governance.
- **Support the establishment of an alumni network** to foster future collaborations among researchers; share funding opportunities and post-doctoral prospects with all partners/beneficiaries who were involved in the research capacity strengthening programme.



Image: ACBI PhD Students and Programme Managers at a Capacity Building Event in Lusaka, Zambia October 2019.

3. Kellerman R et al 2012 Investing in African research training institutions creates sustainable capacity for Africa: the case of the University of the Witwatersrand School of Public Health masters programme in epidemiology and biostatistics. *Health Res Policy Sys.* 10, 11. (see <https://doi.org/10.1186/1478-4505-10-11>)

4. Vicente-Crespo M, Agunbiade O, Eyers J, et al. Institutionalizing research capacity strengthening in LMICs: A systematic review and meta-synthesis. *AAS Open Res* 2020;3:43. doi: 10.12688/aasopenres.13116.3