



Strengthening climate research capacity in Africa: lessons from the 'Climate impact research capacity leadership enhancement' project

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Abstract

Climate Change research plays a pivotal role in Africa's sustainable development by providing the required scientific evidence to inform the design of Africa's development priorities. The need for enhanced climate research is heightened by the fact that Africa is one of the regions likely to be most affected by the impacts of global warming and climate change. This paper highlights some key lessons learnt from the provision of climate research support in Africa under the Climate Impact Research Capacity Leadership Enhancement (CIRCLE) project implemented by the African Academy of Sciences and the Association of Commonwealth Universities in partnership with the United Kingdom's Foreign, Commonwealth, and Development Office, Vitae, and the University of Greenwich's Natural Resources Institute. The paper discusses the early-career research support landscape in Africa, the place of institutional strengthening in climate research programming, and the need for a well-coordinated community and public engagement in the climate research projects. Lessons from the CIRCLE programme provide useful insights for future climate research programme design and early-career research support initiatives in Africa.

Keywords CIRCLE · Institutional Strengthening · Research Funding · Capacity Strengthening · Climate Change

Introduction

Sub-Saharan Africa (SSA) has been identified as a region particularly vulnerable to the impacts of climate change (Serdeczny et al., 2017). Here, a myriad of interconnected changes in the climate system are expected to have a significant and disproportionate impact on livelihoods and ecosystems under different anthropogenic emission scenarios.

Consequently, localised research capacity¹ is essential for providing relevant and appropriate information for decision-making (Mubaya & Mafongoya, 2017; Naess, 2013).

Cognisant of the pivotal role played by higher education and research in addressing societal issues, various interventions have been made to strengthen Africa's research capacity as a means of ensuring effective and appropriate climate mitigation and adaptation. However, more needs to be done to overcome inherent challenges that research capacity strengthening in SSA faces (Blicharska et al., 2017) and deliver a higher impact (Jones et al. 2018). For instance, sub-Saharan Africa's investment in research and development, as a share of its gross domestic product, was approximately 0.49% in 2014 and 0.51% in 2018 –compared to the world's 1.73% and 1.79%, respectively. At the same period, the region had 102 and 124 full-time researchers per million inhabitants compared to the world average of 1245 and 1368 in 2014 and 2018, respectively (Schneegans et al. 2021). Consequently, researchers in SSA remain

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¹ The capacity to do, manage, share, and apply research as defined in <https://bit.ly/3BZQ94I>

significantly under-represented in development research output compared to their counterparts from the global north (Liverpool, 2021).

The Climate Impact Research Capacity Leadership Enhancement (CIRCLE) programme is a recent example of an investment designed to strengthen climate research capacity in Africa. This paper presents a brief description of CIRCLE and highlights key learnings pertaining to both individual- and institutional-level research capacity-strengthening approaches within this context. Based on these key learnings and the authors' in-depth experience in climate research programme management, conclusions and recommendations are made to inform future climate research capacity strengthening initiatives.

Overview of the CIRCLE programme

CIRCLE was a £4.85 million programme co-implemented by the Association of Commonwealth Universities² (ACU) and the African Academy of Sciences (AAS³) in partnership with Vitae⁴ and the University of Greenwich's Natural Resources Institute⁵ — funded by the United Kingdom's Foreign, Commonwealth, and Development Office. Implemented from 2013 to 2021, CIRCLE sought to strengthen the capacity of Early Career Researchers in climate change in Africa and research institutions to undertake and use research on climate change and its local impacts on development. The programme was originally planned to be implemented for 5 years but was later extended to 8 years to enable completion of additional complementary programme activities.

Reflecting the individual and institutional level targets, the programme initiated two concurrent strands of activity: an academic fellowship programme and an institutional strengthening programme. CIRCLE offered two categories of fellowships for early-career researchers: Post-Masters and Post-PhD. The Post-Masters category of fellowships was designed to cater for a sizeable group of lecturers or researchers in several institutions in Africa who did not hold PhD degrees yet (Breier et al., 2020; Gyampoh, 2018).

The individual research capacity strengthening component of CIRCLE was implemented through an intra-Africa research fellowship scheme that resulted in the award of 100 CIRCLE Visiting Fellowships across sub-Saharan Africa. The CIRCLE Visiting Fellows (CVFs), drawn from participating CIRCLE home institutions, were supported to

undertake a 12-month academic fellowship at a participating CIRCLE host institution. The CVFs were provided with adequate resources, infrastructure, protected time, training, and funding to conduct research in their chosen area of interest. One of the main highlights of the fellowships was a tripartite academic support mechanism provided to the CVFs. Here, the CVFs were matched with a supervisor at the host institution (with matching expertise) and a mentor based at the fellow's home institution for career and professional development support. Additionally, the CVFs had access to specialist advisors for purposes of academic output support. The technical support coupled with research communication and dissemination support (in form of support for publications and community and public engagement) culminated in a cohort of 97⁶ emerging climate research leaders across Africa.

The second component of CIRCLE focused on institutional capacity strengthening referred to as the Institutional Strengthening Programme (ISP). The ISP aimed at creating a pool of vibrant centres of excellence across Africa from which climate research would thrive. This programme was compulsory for the fellows' home institutions but optional for host institutions. Under the leadership of Vitae, thirty-one (31) African institutions were taken through a programme to (1) identify institutional ISP leads and cross-organisational implementation groups,; (2) conduct an institutional gap analysis,; and (3) prepare and implement an action plan to address the identified gaps. Here, the 'train-the-trainer' approach was used to enhance the institution's research support capacity including aspects such as mentorship and community and public engagement following the criteria defined in the Researcher Development Framework.⁷ Action Plans and reports were submitted annually, with annual workshops held for ISP leads, and small seed grants provided as a stimulus for wider institutional engagement.

Lessons for enhanced Early-Career Researcher (ECR) support in Africa

Analysis of key CIRCLE programme documents is undertaken to inform programme learning highlights. Specifically, ninety-seven (97) fellowship reports submitted by CIRCLE Visiting Fellows, three annual independent CIRCLE programme review reports commissioned by the funder (FCDO), and a post-grant impact assessment survey report (conducted by the AAS in September 2021) were reviewed

² <https://www.acu.ac.uk/>

³ <https://www.aasciences.africa/>

⁴ <https://www.vitae.ac.uk/about-us>

⁵ <https://www.nri.org/>

⁶ Three fellowships were not completed for various personal and administrative reasons.

⁷ <https://bit.ly/3KfyOr9>

from which the overarching messages and recommendations are presented. The survey was conducted using semi-structured questionnaires and administered to all the fellows grouped into their respective cohorts.

A review of the progress reports showed that 92% of the CVFs contributed to research papers that had either been published in peer-reviewed journals, books, or cited in policy documents. Eighty percent (80%) of the CVFs had co-authored research papers that had been presented in climate conferences and 57 CVFs (cumulatively) had been involved in successful grant applications exceeding USD 10 million. At least 400 articles had been published in peer-review journals and over 300 conference presentations made in at least 36 countries across the globe. These statistics imply that, despite the relatively short fellowship period, a well-thought through, coordinated, and implemented early-career support programme can yield discernible research capacity enhancement outcomes. More importantly, the requirement to conduct Fellowships from a host institution (mostly in another country) afforded the early career CVFs protected time to focus on their research. Otherwise, the workload and other responsibilities at the home institutions would make it difficult for the fellows to focus on the fellowship — in such a relatively short fellowship period (1 year).

In a post-fellowship impact assessment survey conducted in September 2021, the fellows reported promotions at work (70%), secured additional funding (68%), and received recognition for their work (67%) as some of the notable potentially attributable impact of the CIRCLE fellowship in their professional career. Notably, most had only won relatively small grants possibly due to their limited capacity to attract large funding and/or the general unavailability of large grants in Africa (Omungo, 2018). Nevertheless, the small grants are expected to help enhance research capacity of fellows and potentially lead to attraction of bigger funding.

Initially, the CVFs were not directly supported to implement research uptake activities in their fellowship. The support was provided at a later stage, resulting in enhanced research communication and dissemination activities. Here, most fellows (82% of the respondents) reported that their research outputs were mostly used within the academic community. Fewer respondents (40%) reported knowledge of their research outputs being used in the policy-making space and even fewer (5%) in other sectors of the society. This observation highlights the need for a well-planned, funded, and coordinated community and public engagement component in the early-career research support programmes (Mtwisha et al., 2021). The targeted community and public engagement support is likely to enhance the translation of academic knowledge products into products that can be readily consumed by the other segments of society (Hickey et al., 2022; O'Mara-Eves et al., 2015).

Lessons from institutional research capacity strengthening as a catalyst for enhanced early-career research support

An independent review report conducted in 2017 to assess the implementation of CIRCLE deduced that while the fellowships part of the programme had been successful, the effectiveness and impact of the institutional strengthening component of CIRCLE could not be adequately quantified. Accordingly, CIRCLE spent an additional 2 years to consolidate and implement the support provided to ISP implementation teams at the various institutions and conduct further programme monitoring, evaluation, and learning) activities.

A critical lesson learnt during the implementation of ISP activities for CIRCLE was that for institutional research capacity strengthening to be effective and sustainable, the ISP activities had to be embedded within institution-wide systems and structures. Drawing from outcomes of the provision of best practice frameworks and resources, tailored consultations, training workshops, and train-the-trainer workshops, participating institutions were required to set and pursue their own capacity strengthening objectives. This was done through institution-led needs assessments and the development of institutional ISP action plans. Additionally, participating institutions were required to identify and engage senior leadership representatives (hereinafter ISP Champions) in ISP activities. Consequently, the implementation of the ISP component of CIRCLE was contextualised and on track towards sustainability given the role played by ISP Champions in embedding ISP activities at the institutional level through, inter alia, inclusion in annual budgets and resourcing.

A follow-up independent review on CIRCLE focused on the ISP component was done in 2021 following the OECD/DAC framework for assessing development programmes.⁸ The review report⁹ showed that following the ISP activities, participating institutions had now prioritised enhancement of training and support packages for their early-career researchers through a holistic approach to researcher development by focusing on both technical and 'soft' skills for research. ISP institutions had also actioned the development, strengthening, and formalisation of academic mentoring schemes to provide additional support to the early-career researchers. Intergenerational mentoring within academia has been identified as a key enabler of research capacity strengthening in sub-Saharan Africa (Schriever and Grainger 2019). In the context of CIRCLE, participating institutions showed a greater appreciation of the importance of mentoring shifting from a traditional supervision model to a more

⁸ <https://bit.ly/36pTVsJ>

⁹ <https://bit.ly/3xSuThk>

formalised mentoring process. This implies that for meaningful and effective mentorship to happen in research institutions, well-planned, coordinated, and resourced mentorship schemes ought to be institutionalised.

Additionally, the report noted that several ISP institutions had developed institutional policies and frameworks to facilitate the recruitment, development, and progression of researchers and provide a coherent institutional approach to researcher career progression pathways that could be implemented, monitored, and evaluated across departments. These include policies on research ethics, diversity/gender, mentorship, promotion, and induction/orientation — ostensibly bridging an important policy gap for participating institutions. Other notable contributions of the ISP on participating institutions include enhanced institutional structures and enhanced climate change research, curricula, and teaching.

In the context of CIRCLE's institutional capacity strengthening component, senior leadership in the ISP institutions helped in driving strategic thinking about the areas of focus of the institution in relation to climate change research and the institutional structures necessary to effectively deliver on these focal areas. The strategic thinking helped in ensuring that efforts went beyond specific individual research interests and, instead, followed a strategic decision-making process that examines the desired contribution of the institution to local and national needs and priorities. Additionally, the senior leadership facilitated the development of climate change research strategy or the inclusion of climate change within the research strategy of the institutions involved in the ISP process. This implies that effective and sustainable institutional capacity strengthening was contingent on (1) senior leadership engagement and support, (2) opportunities for inter-institutional learning, and (3) resourcing — the main enablers of institutional change.

One of the most valued aspects of the CIRCLE programme was the opportunity for individuals within ISP teams to network and learn with, and from, colleagues going through similar processes. Through the workshops, individuals co-explored approaches to training development, mentorship, policy development, and implementation. While ISP teams had achieved commendable progress towards institutional research support capacity strengthening, limitations in available resources hindered upscaling and sustenance of ISP activities. Hence, adequate resourcing should be availed for the training programmes, mentorship, and policy development, implementation, and improvement. The need for adequate resource allocation is particularly important given that most countries in Africa invest less than 0.5% of their gross domestic product in research and development (Schneegans et al 2021). Additionally, researchers need protected time for research — reducing their teaching and administration requirements. Most importantly, a balance between the funding available to institutions and the expectations of the scale of change needs to be made in future programmes.

Programme monitoring, evaluation, and learning

CIRCLE proved to be a complex intervention to address a complex issue. Consequently, the programme faced significant challenges in quantifying and documenting programme monitoring, evaluation, and learning (MEL). One of the main issues that stood out is the realisation that standard MEL frameworks, such as those that utilise numerical indicators, do not adequately capture the depth of data needed to demonstrate and understand changes happening at the institutional level. Moreover, the diversity of institutions participating in the programme, coupled with the needs-based approach, meant that there was no standard definition of 'strengthened capacity' that could be tracked and measured consistently across institutions. The evaluation framework adopted for the endline evaluation¹⁰ of the CIRCLE programme provides a good example of how to capture comprehensive data to assess programme achievements and challenges, including at the outcome level. This approach could be adopted for future programmes seeking to facilitate institutional change, ideally with evaluations conducted at baseline, midline, endline, and postline.

A second challenge was how to effectively monitor, evaluate, and learn from the connection between the programmatic strands. As mentioned above, research capacity strengthening can be targeted at individual, institutional, and system levels, and these are inherently connected, and targeting any one level will impact the other. CIRCLE directly targeted individual and institutional strengthening activities in a concurrent and connected way, primarily through the involvement of fellows in Institutional Strengthening Programme implementation groups to strengthen the environment for early-career researcher development. The endline evaluation noted a strong complementarity between the ISP and fellows' elements of the programme. Here, fellows strongly contributed to the success of the Institutional Strengthening Programme through being key resources and, in some cases, the driving force. In return, the fellows' involvement in the programme gave them visibility, experience on the process of change enactment, and exposure to leadership skills.

Ultimately, the CIRCLE programme underscored the need for a system that can adequately monitor, evaluate, and learn from the relationship between concurrent strands of activities for improved adaptive programme management and enhanced potential programme impact. The challenges discussed in this section, coupled with the fact that the impact of institutional strengthening activities often manifest long after project implementation, underscore the need for intensified investment in programme monitoring, evaluation, and learning activities during and after the programmatic interventions.

¹⁰ <https://bit.ly/3xSuThk>

Conclusion and Recommendations

CIRCLE implemented an innovative model of research capacity strengthening that targeted individual and institutional capacity strengthening, concurrently. The primary targets for capacity strengthening were impact and sustainability. Conceptually, research capacity is seen at individual, institutional, and system levels and these are inevitably interconnected. Hence, an intervention that targets all three levels would be ideal.

In conclusion, it is established that institutional strengthening plays a pivotal role in the provision of effective early-career research support in Africa. Specifically, senior leadership engagement and support, opportunities for inter-institutional learning, and adequate resourcing were identified as the main enablers of institutional change. In a continent where less than 0.5% of the mean Gross Domestic Product is invested in research and development, a balance must be made between the funding available to institutions and the expectations of the scale of change. Lastly, targeted community and public engagement support is required to enhance the translation of academic knowledge products into products that can be readily consumed by the other segments of society.

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Declarations

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