

Towards minimizing research inequities in Africa: Lessons from the ARISE programme

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Abstract: Through an ambitious development blueprint called Agenda 2063, Africa is on a mission to creating the 'Africa We Want' by the year 2063, centred on science, technology, and innovation. While the 2063 development agenda portends attainment of socio-economic development and prosperity in Africa, it brings with it an enormous need for strategic investment in research to ensure that no one is left behind. This paper presents insights from the African Research Initiative for Scientific Excellence (ARISE) programme on inclusive research capacity strengthening investment in Africa. The insights are drawn from a comprehensive candidate selection process for ARISE, from which 45 researchers (from a pool of 929 applicants) are recruited for ARISE Fellowships. The 45 early-to-mid-career researchers, 37% of which are women, are hosted in 45 institutions of higher learning located in 38 countries across Africa, conducting 5-year research fellowships with grants of up to €500,000 each. The insights from the ARISE programme contribute to the debate on effective approaches to programme scoping, design, and delivery, underscoring the need for consideration of scientific excellence in the context of diversity in research support capacity and investments across Africa.

Keywords: ARISE; research funding; early-career research support; African research; research for development

1. Introduction

In 2013, Africa embarked on an ambitious journey towards actualizing the Pan African Vision of "an integrated, prosperous, and peaceful Africa, driven by its own citizens, representing a dynamic force in the international arena", through Agenda 2063¹. Here, Africa identified key Flagship Programmes² that would boost its economic growth and development and deliver the Pan African Vision. This Pan African Vision was soon followed by the adoption of the United Nations Resolution on "Transforming our world: the 2030 Agenda for Sustainable Development"³, hereinafter SDGs. The adoption of the SDGs boosted Africa's efforts towards the realization of Agenda 2063 which, if successfully implemented, has the potential to attain socio-economic development and prosperity for Africa (Nwozor et al., 2021; Vedaste & Hannah, 2018).

Through the African Union Science, Technology, and Innovation Strategy for Africa 2024 (STISA-2024⁴), science, technology, and innovation have been placed at the centre of Africa's socio-economic growth and development to which some progress has been made (Jackson et al., 2022; Simpkin et al., 2019). However, Africa has a long way to go towards achieving SDG targets - without leaving anyone behind. For instance, sub-Saharan Africa's investment in research and development, as a share of its gross domestic product (GDP), 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

¹ <https://au.int/en/agenda2063/overview>

² <https://au.int/en/agenda2063/flagship-projects>

³ <https://daccess-ods.un.org/tmp/3824207.18669891.html>

⁴ <https://bit.ly/33SKApp>

researchers per million inhabitants compared to the world average of 1,245 and 1,368 in 2014 and 2018, respectively (Schneegans et al. 2021). In 2018, sub-Saharan Africa had 14% of the world population but 0.7% of world researchers – highlighting the need for Africa to double down on its efforts if it were to transform into a knowledge-based and innovation-led continent.

Further, the African research landscape is faced with a myriad of challenges resulting in a very unequal continent in terms of research and research capacity (Chigudu, 2018; Conradie et al., 2018; Okeke et al., 2017). Some of the challenges include varying commitment by countries to enhance their national research capacity (Amadu et al., 2021). The unavailability of adequate research equipment, unreliable procurement systems, and insufficient capacity enhancement opportunities for researchers and research assistants also add to the prevailing challenges facing researchers in Africa (el Hajj et al., 2020). Consequently, research strengths and activities tend to concentrate on a few countries and/or regions such as South Africa (Sobratee & Slotow, 2019) - corresponding to national investments in research (Schneegans et al. 2021). A similar trend is seen in the research funding space in Africa. For instance, a study by Overland et al. (2022) established that Kenya (15.9%), South Africa (15.2%), Tanzania (6.3%), Zambia (6%), Ghana (5.9%), and Ethiopia (5.9%) accounted for more than 55% of climate-change-related research funding in Africa between 1990 and 2020. Hence, deliberate efforts should be made to address the prevailing vast research and development inequalities across Africa (Simpkin et al., 2019) and, ultimately, boost chances of achieving equitable development in Africa.

It is against this background that the *African Research Initiative for Scientific Excellence* (ARISE⁵) programme was conceptualized. ARISE is a seven-year programme working towards the promotion of science, technology, and innovation as critical drivers of development and sustainability. The programme supports African researchers from all fields of scholarship ranging from STEM⁶ to Social Sciences, Humanities, and Arts, with an emphasis on transdisciplinary research. With the strategic guidance of the European Union (EU) and the African Union (AU), ARISE aims at boosting, and further unlocking, Africa's potential for innovation by supporting the next generation of scientific leaders, as envisioned in the AU-EU High Level Policy Dialogue (HLPD) on Science, Technology, and Innovation⁷. The programme is implemented by the African Academy of Sciences⁸ (AAS) with a financial support from the European Union. This paper highlights key programme learning drawn from the candidate selection phase that culminated in an award of 45 research grants (from a pool of 929 applicants), hosted in 38 African countries.

2. Methods

A review of programme documents and processes is done to identify and highlight activities that may have resulted in specific outcomes – intended or otherwise. Specifically, the paper looks at the design of the ARISE programme model, the composition and functioning of implementation, advisory, and oversight organs of the programme, and key programme learning obtained from the project planning and initialization stage. Additionally, a literature review is done to compare programme learnings with lessons from similar programmes implemented in Africa and elsewhere.

3. Designing a robust candidate selection process

Aware of the pivotal role played by advisory committees in programme implementation (Slade et al., 2010), a robust programme management and governance for ARISE was established. At the helm of ARISE programme implementation is a Scientific Advisory Committee (SAC) comprised of renown scholars drawn from Africa and Europe. The

⁵ https://ec.europa.eu/international-partnerships/news/arise-programme-open-applications_en

⁶ Science, Technology, Engineering, and Mathematics

⁷ <https://bit.ly/3SX4C8Z>

⁸ <https://www.aasciences.africa/>

SAC members are research field experts, providing scientific guidance to the programme implementation team at the AAS and the Strategic Steering Committee (SSC). The SSC - comprises of representatives of the European Commission, African Union Commission, and the AAS – provides overall strategic direction on the implementation of the ARISE programme.

A review panel comprising of at least 400 subject-area experts was mobilised to review and process the 929 applications for ARISE fellowships, under the leadership of the SAC. The applications were reviewed based on three aspects broadly categorised into the (1) scientific excellence of the proposed work, (2) research leadership potential of the candidate, and (3) the potential for capacity strengthening. Here, reviewers assessed the extent to which the proposed work demonstrated novelty, quality in methodology, and potential to address relevant scientific questions and contribute to knowledge. Additionally, reviewers assessed the candidate's research leadership track record and the potential for the proposed work to contribute to building capacity in the host institution and country and, ultimately, strengthen the capacity of the field of research in Africa.

One of the main highlights of the candidate selection process for ARISE was the ability to manage the numerical advantage enjoyed by only a few countries with relatively strong research support systems. Out of the 929 preliminary applications submitted for ARISE grants, 214 applied to be hosted in South Africa, 116 in Nigeria, and 98 in Kenya – representing 46% of applications received. To ensure a good geographical distribution of grants across Africa, an innovative candidate selection process was developed. Here, eligible applications were expert-reviewed after which candidates with a minimum score of 50% were grouped into respective host countries. The top five candidates per host country (with flexibility in case of equal scores) were invited to submit full applications, resulting in a 'short-list' of 154 candidates from 38 host countries across Africa. The full applications were expert-reviewed after which the top three candidates per host country were shortlisted for interviews. Shortlisting top three candidates per host country, irrespective of the number of candidates per host country, provided an equitable opportunity for all participating countries, boosting chances of a wider spread of the ARISE support across the continent. At the end of the process, the top candidate in each of the 38 host countries, and a 2nd candidate in 7 of the 38 host countries (considering cases with equal scores, gender, and research field distribution, among other factors) were selected – provided that the candidate satisfied the criteria for scientific excellence resulting in 45 ARISE fellowship awards.

4. Incorporating a multi-faceted research capacity strengthening approach

Some of the urgent needs for early-career researchers in Africa include training on research leadership and opportunities for collaboration and networking (Kumwenda et al., 2017). In response, the ARISE programme is designed to promote a targeted and effective brokering, knowledge management, and learning for achievement of a greater programme impact (Jones et al., 2018). Here, the Principal Investigator (PI) is supported with a research grant of up-to €500,000 to set up and run a research project for up-to five years, at an African institution of their choice. The grant provides for procurement of research equipment, software, collaborations, research visits, and networking opportunities as part of the support package. Additionally, the PIs are sponsored to attend relevant scientific meetings for purposes of knowledge sharing and networking as well as training on topical issues such as research leadership; community and public engagement; and science communication. Ultimately, the ARISE program works towards equipping the PIs with requisite skills and support for individual research capacity strengthening to accelerate research excellence, nurture innovation, and promote research leadership in Africa (Mtwisha et al., 2021).

For purposes of capacity building, the PIs are required to train at least two PhD candidates and four master's students, culminating in cohort of about 90 PhD candidates and 180 Master's students to be trained across Africa. The postgraduate students, whose recruitment and involvement in ARISE will be monitored by the ARISE Programme Team

at the AAS, are engaged as research assistants in the ARISE project, exposing them to research implementation processes and, ultimately, preparing them to become researchers of the future. Collectively, the ARISE research teams are expected to make a significant contribution to Africa's socio-economic development through the generation of cutting-edge knowledge products and solutions in response to Africa's development challenges and priorities.

Host institutions for researchers play a pivotal role in effective individual research capacity strengthening (Fowler et al., 2009; Malekzadeh et al., 2020). Hence, investment in institutional capacity strengthening is imperative to boost the provision of an enabling environment for research to thrive (Fowler et al., 2009; Mtwisha et al., 2021). All host institutions for ARISE grants have been assessed against the Good Financial Grant Practice (GFGP⁹) Standard. The GFGP Standard is an effective tool used to identify and address key organizational risks as well as enhance grant and financial management capacity for institutions (Harste et al., 2021). Gaps identified through the GFGP process are used to inform management actions and, ultimately, enhance the research management capacity of participating institutions. At the end of the ARISE programme, about 45 institutions in 38 countries in Africa are expected to emerge as centres of excellence in terms of research management.

Further, the inter-, multi-, and trans-disciplinary nature of ARISE projects is expected to accelerate the potential for a greater impact of the research products. Intra-Africa and intra-discipline collaborations are strongly encouraged. Ultimately, the ARISE model for research capacity strengthening portends significant potential for the ARISE researchers, participating host institutions, and Africa in general.

5. Conclusions

While some progress has been made in Africa towards achievement of Sustainable Development Goals (SDG) and "Leaving No One Behind", there is no shortage of challenges (Aheisibwe et al., 2020). The ARISE Programme model serves as a good example on equitable research investment across Africa with a co-benefit of preserving the African intellectual capital by (1) providing an incentive for African researchers to remain and work primarily within the African continent and (2) attracting African researchers in the diaspora to shift their research base to Africa. We believe our insights from the ARISE program set a good pace in the match towards equity and equality for Africa research funding. The dialogue, to which we invite the research community to participate, on effective methodologies for programme scoping, design, and delivery continues.

Data availability: No data are associated with this article.

Acknowledgments: This paper has been produced with the financial assistance of the European Union (Grant no. DCI-PANAF/2020/420-028). The contents of this document are the sole responsibility of the authors and can under no circumstances be regarded as reflecting the position of the European Union or the African Academy of Sciences. All stakeholders of the ARISE programme are acknowledged and appreciated for their contribution to the generation and availability of the programme information used in this article.

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⁹ <https://www.globalgrantcommunity.com/>

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