

COUNTRY PROFILE



Photo: © ShoP Architects

Harnessing Botswana’s development success to promote science, technology and innovation

Botswana is a development success, growing from being among the world’s poorest countries at independence in 1966 to a middle-income country. The reclassification by the World Bank to middle income status in 2007 has brought challenges of accessing international funding for its researchers, particularly as most funding is targeted at developing countries. The upgrade also poses challenges to researchers’ access to scientific journals. They now have to pay for journals that they previously accessed for free or at a discounted rate when the country had low-income status. HINARI, which was created by the World Health Organization to give scientists in developing countries access to major collections of biomedical and health articles, now excludes Botswana, for example, yet the challenges the country faces require that its researchers be well resourced to produce solutions. The government has been instrumental in revolutionising the sector, contributing the vast majority of the 0.43 % of its GDP allocated to science, technology and innovation (STI), implementing an economic diversification strategy whose centrepiece is the development of innovation hubs and adopting a National Policy on Research, Science and Technology in 2011.

Botswana will need partnerships to enable its STI sector to continue this growth path and to ensure that its researchers are adequately funded in the face of declining international grants and to increase the research funding from \$37.8 per capita or \$110,000 per researcher.

The African Academy of Sciences is keen to see an Africa-led and Africa-centred approach to the development of STI. Increased support from African public, private, philanthropic sectors will promote ownership and ensure an Africa-driven science agenda. As such, the AAS is committed to partner with Botswana to drive this vision. This will be particularly important as the SADC Protocol on Science, Technology and Innovation that Botswana ratified in 2015 promotes intra-regional collaboration.

Botswana

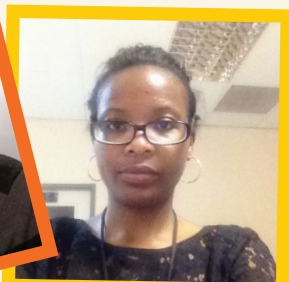
Some of the young African scholars being trained through the AAS’ programmes



Baitshapi Mokaleng, MPhil Trainee



Kaelo Seatla, PhD Trainee



Lucy Mupfumi, PhD Trainee



Leabaneng Tawe, MPhil Trainee.



Dorcas Maruapula, MPhil Trainee

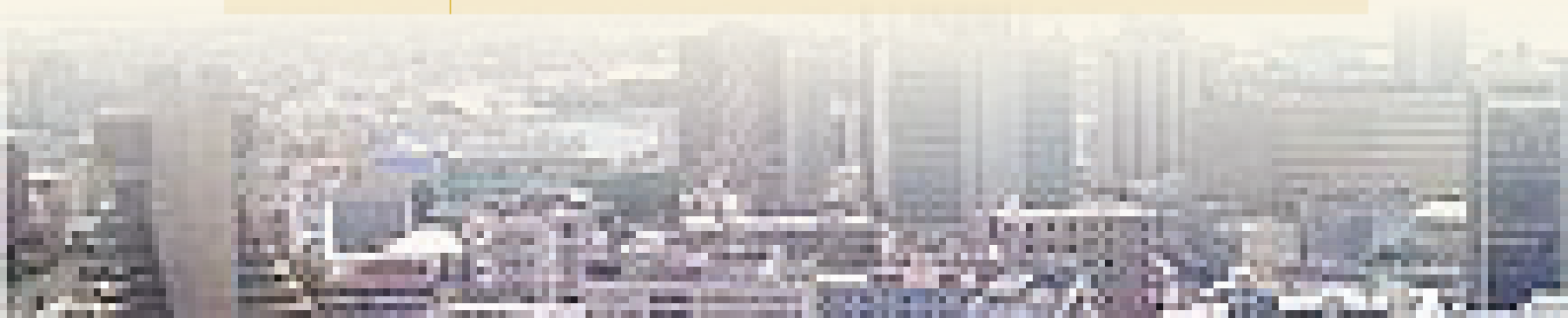


Kesaobaka Molebatsi, PhD Trainee

Building a synergistic relationship between Botswana and the AAS

Botswana's Vision 2036 sets out four development priorities, namely sustainable economic development, human and social development, sustainable development, and governance, peace and security for the southern African country and underpinned by investments in research and innovation. Botswana can exploit its synergies with the AAS to achieve its socio-economic targets or priorities.

Botswana's development priorities	Synergies with the AAS
Sustainable economic development	<p>Sustainable development underpinned by a knowledge based economy, diversification and achieving the Sustainable Development Goals is at the core for Botswana. Similarly, the AAS' mandate centres on providing the expertise and evidence for African countries to promote evidence-based policymaking and creating knowledge economies. The AAS is also producing a report on how science can be harnessed to achieve SDGs. These commonalities create opportunities for collaboration that will enable Botswana to access the expertise and the Academy's pan African focus.</p> <p>The AAS has also built grant management capacities that have positioned it to be Africa's foremost grant making body. We are currently managing funding \$150 M invested by our partners through the Alliance for Accelerating Excellence in Science in Africa (AESAs), a funding and agenda setting platform that the AAS created in partnership with the NEPAD Agency. Botswana can leverage this expertise to build its grant making and research coordinating capacities.</p>
Human and social development	<p>With 344 researchers per million, Botswana is looking to build its complement of scientists and particularly increase the number of women researchers from the current 27 percent. Our programmes train scientists, help them develop their careers, and provide the infrastructure they need to conduct quality research. We also seek to build R&D environments that support a vibrant research culture and leadership development over the long-term. Botswana can use this expertise to strengthen its research ecosystems.</p> <p>The AAS is implementing interventions to attract more women into science, which has seen our programmes recruit a ratio of 50 % women as master's, PhD and postdoctoral Fellows. The AAS' programmes are a platform for the country to train its future women scientific leaders and promote gender equity in the scientific sector.</p> <p>We are also launching Africa Open, an open source publication, which would provide a platform for Botswana researchers to publish their research and increasing their scientific production.</p>
Sustainable development	<p>The AAS' climate change programme, Climate Impact Research Capacity and Leadership Enhancement (CIRCLE), is training a future generation of African climate scientists and generating knowledge for the continent to effectively tackle climate change. Climate change has increased some countries in southern Africa's susceptibility to droughts, including Botswana. CIRCLE and the Botswana Institute for Technology Research and Innovation (BITRI) provide a training model for Botswana to replicate and invest in to generate the evidence it will need to reduce the impact of climate change on agricultural productivity, ensuring food security and environmentally friendly production methods.</p>



Exploiting the synergy

The AAS is aggressively building partnerships with African countries to ensure Africa-led investment of R&D. Countries which are collaborating with the AAS include:

- Nigeria, which provided US\$5 M to an AAS Endowment Fund.
- South Africa, which invested close to US\$1 M to support innovative health technologies through the Grand Challenges Africa programme.

South Africa's funding is managed by the AAS but supports its local innovators to collaborate with peers in other African countries, a partnership model that can be replicated between the Academy and Botswana.

Benefits of investing in research

The benefits for Botswana include:

- Increased STI funding for Botswana researchers' enabling them to grow their research output and making the country globally competitive.
- Building capacity locally to ensure home grown solutions for achieving strategic goals of Vision 2036.
- Promoting intra-African collaboration, which is necessary to maximise impact.
- Transforming Botswana to a knowledge based economy that will spur socio-economic growth.

Next steps

The University of Botswana and the Botswana Harvard Aids Institute are two institutions involved in programmes implemented by the AAS or in which the Academy is involved. These are namely, Human Heredity and Health in Africa (H3Africa) and the Developing Excellence in Leadership, Training and Science (DELTA) Africa. DELTA Africa is a programme led by AESA to develop world-class researchers and scientific leaders to conduct cutting-edge health research in infectious diseases, non-communicable diseases (NCDs), population and public health. H3Africa programmes are focused on infectious diseases and NCDs including kidney disease, sickle cell anaemia, diabetes, hypertension, heart disease and stroke to lay the foundation for precision and genomic medicine in Africa.

By ploughing more investment into these programmes, Botswana will enable its researchers to scale up their research and maximise impact.

Other areas in which Botswana can invest in by exploring the partnership model that the AAS has with countries like Nigeria and South Africa, Botswana are:

1. Grand Challenges Africa, which promotes Africa-led scientific innovations to help countries better achieve the Sustainable Development Goals by awarding seed and full grants to the continent's most impressive innovators. Current priorities include maternal, neonatal and child health, antimicrobial resistance, biomedical engineering and key areas of infectious diseases and NCDs.

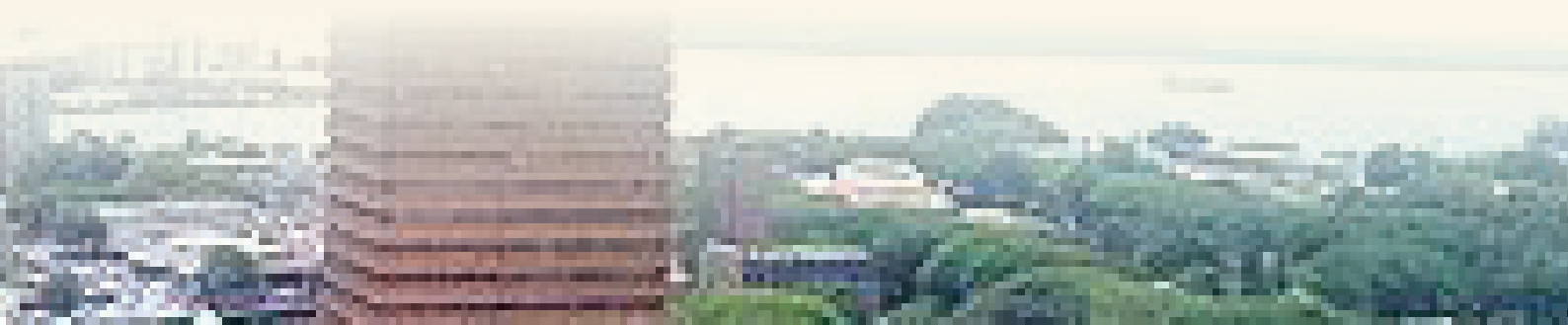




Photo: © SANTHE

2. AESA Postdoctoral Fellowship Programmes-through AESA, the AAS is implementing postdoctoral programmes to support early career researchers: the CIRCLE programme develops skills and research experience for early career African researchers in the field of climate change in five thematic areas of health, agriculture, water, energy and policy. The AESA-RISE postdoctoral programme will support postdoctoral training and research to produce leaders in areas that include material sciences, engineering, water resource management, marine biology and natural products.
3. STEM Education where Science, Technology, Engineering and Mathematics (STEM) education focused on capacity building, mentorship and networking are promoted in ways that foster scientific research and ensure that higher education systems are equipped to meet the demands for emerging knowledge based economies.
4. Research Management and Good Financial Grants Practice Research thrives in environments with good research and financial management capacities. The Good Financial Grant Practice (GFGP) was established as an innovative tool for standardising, simplifying and strengthening financial governance, providing a specification for both grantors and grantees of what is good practice for financial management throughout the grant life cycle.
5. Policy and Advocacy, which provides horizon scanning of the scientific landscape, promotes research uptake, production of policy papers and convenes stakeholder forums.

African Academy of Sciences

8 Miotoni Lane, Karen, P.O. Box 24916-00502 Nairobi, Kenya
Tel: +254 20 240 5150 +254 736 888 001 | Email: communication@aasciences.ac.ke
www.aasciences.ac.ke | Twitter: [aasciences](https://twitter.com/aasciences) | Facebook: [aasciences](https://www.facebook.com/aasciences)

