

Addressing Equipment Challenges in Development-related Scientific Research in Africa

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Summary

What is this about?

The issue of equipment is but one of the challenges faced by African and other scientists, and where IFS aims to be helpful. Given the urgency of the task facing today's scientists in Africa and across the developing world, we will continue to support the scientists of tomorrow who contribute to securing affordable food, water and energy for a rising population, where their scope for action is constrained by the urgent challenge of environmental sustainability. In the next decade, the new IFS strategy aims to enable early-career scientists to contribute to a global research community that is reducing poverty and supporting sustainable development.

Read this if ...

You would benefit from guidance drawn from experiences of **Procurement, Installation, Service, Maintenance and Use of Scientific Equipment**.

It involves:

- The context of the problem with getting and using equipment for scientific research.
- An IFS-AAS conference on **Getting and Using Equipment for Scientific Research in Africa**.
- The learning captured from a four-year project, a 40-year old grant programme, a centralized biotechnology facility, and experiences of conference participants.

Ensure that an equipment strategy is planned by all relevant persons. Consider long-term needs, suitable infrastructure, installation, calibration and training, operation, maintenance and upgrade paths. Encourage collaboration, and consider centralized laboratory facilities.

The Briefing

Scientists, technicians and their institutions across Africa confront many common problems associated with infrastructure. To enable the continent to pull together and efficiently use its precious human and infrastructural resources, the [African Union \(AU\) Commission](#) and the [New Partnership for Africa's Development \(NEPAD\)](#) Office of Science and Technology Policy aims to find new ways to facilitate infrastructure, to promote networking and to establish centres of excellence, so that through a combination of these efforts, scientific productivity and innovation may be significantly increased.

In line with this, the International Foundation for Science, with the [African Academy of Sciences](#), hosted a timely conference tackling issues in **Getting and Using Equipment for Scientific Research in Africa**. The conference discussed access to critical scientific equipment including procurement, servicing and maintenance. Eighty-seven participants from across Africa attending the event from 13 countries contributed and heard presentations from:

The IFS Procurement, Installation, Service, Maintenance and Use of Scientific Equipment (PRISM) Project, a four-year pilot project funded by the MacArthur Foundation.

Project partners from Nigeria, Madagascar and IFS presented their experiences and learning. An independent project review highlighted that the project success lies in creating and supporting an environment where all key stakeholders (university administrators, researchers, technologists and technicians, and equipment suppliers) can agree needs, optimal organisation and sustained utilization of scientific research equipment.

The [IFS Small Grants Programme](#), in its 40th year and more popular than ever, empowering early-career scientists.

IFS highlighted how vital small grants are to early-career scientists, and that the grants, mostly used for equipment, are offered on a strongly competitive basis. These often allow researchers to return to their countries after postgraduate study to conduct valuable research and eventually to become established as research scientists.

The [Biosciences eastern and central Africa \(Beca\) Hub](#), developed

within the framework of Centres of Excellence for Science and Technology in Africa, hosted and managed by the International Livestock Research Institute (ILRI) in Nairobi.

BecA highlighted how the development of high calibre centralised laboratory provision can increase access to affordable, world-class research facilities, and create and strengthen human resources in biosciences and related disciplines in Africa.

The Nairobi conference captured the following key 'learning' when *taking equipment issues seriously*:

- **There is no 'one size fits all' in equipment provision**, but a number of useful directions.
- **Participatory planning** of procurement, use and maintenance is highly beneficial.
- Developing a **strategy for equipment procurement** is vital, including: the assessment of need, identifying the right equipment, ensuring trained manpower, understanding the requirements (and expense) of operating environments, chemicals and inputs, and maintenance, and streamlining stakeholder engagement. Develop a good relationship with donors and with suppliers. 'Sell' your equipment idea, develop a compelling, brief, jargon-free concept note. Define and explain needs, users, outputs, impacts, and plans for management and sustainability.
- **Use proper clearing and forwarding agents and lobby for simplified procedures for importing and forwarding scientific equipment.** Between-country logistics (exports and imports), customs duties, and formalities are time-consuming tasks needing professional specialist support. Where national procedures negatively impact important equipment imports, collective lobbying for change is necessary.
- **Face-to-face meetings** are best to understand long-term needs and equipment upgrade paths. Site inspection should ensure suitable infrastructure, and installation, calibration, and use and maintenance training on arrival are essential.
- Develop 'standard procedures' for efficient use, since **burdensome paperwork and regulation** in institutes and university can limit the use of installed equipment.
- **Centralization** enables pooling of resources, efficient management, adequate security, infrastructure, utilities including water and electricity, and an environment conducive to the operation and use of expensive, highly sensitive equipment including good lighting and effective control of heat, humidity and dust. A professional or a committee should oversee finances, and formulate and implement sustainable development policies.
- Negotiate **collaboration** around expensive equipment within a country or region. It can be useful to categorize equipment into 'daily-use' which one should have, and 'occasional use' which one might share. Mapping and sharing equipment availability amongst universities and institutions can serve both research and training purposes. Scientists need to share their skills as well as their equipment. The networking of department heads is critical to collaboration and to the best use of equipment.
- Discourage '**personalization**' of equipment (the opposite of collaboration). Resistance to sharing can occur when small grants go to individuals or where repair and maintenance tends to be undertaken by individuals for the sake of efficiency.

Links or references to other documents and information sources on this topic:

- Proceedings of the [Getting and Using Equipment for Scientific Research in Africa: A Conference at The African Academy of Sciences](#), Karen, Nairobi, Kenya, 30-31 May 2012, IFS.
- [EVALUATION OF THE PRISM \(Procurement, Installation, Service, Maintenance and Use of Scientific Equipment\) PROJECT IN NIGERIA](#), Final Report Prepared by George Abalu, Daniel Ugwu and Robbie Gregorowski, May 2012, ITAD UK.

This document:

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