

# Preface

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*Popularisation of Science and Technology Education: Some Case Studies from Africa* completes a series of publications sponsored by the Commonwealth Secretariat. The publication was developed jointly with the African Forum for Children's Literacy in Science and Technology, a pan-African organisation that, since 1989, has done much to promote a public understanding of science and technology throughout sub-Saharan Africa.

The vision of popularising science and technology is broader than using traditional and modern mass media to promote a better public understanding of their role in development. AFCLIST believes that:

- ◆ It is as much the creativity and problem-solving processes of science and technology that are needed by people at all levels of society, whether or not they are in science and technology-related occupations, as the knowledge produced by science. It further believes that such a mindset is a sound preparation for an active participation in the democratic process.
- ◆ The bulk of people in Africa hold non-scientific beliefs because these have worked for them for countless generations, just as people in industrialised countries believe in science and technology because science and technology have worked for them in their context. In neither case is the belief based on reasoned evidence or an understanding of the respective belief systems. AFCLIST argues that both are acts of faith. On this basis, AFCLIST contends that science-based projects that clearly demonstrate their immediate impact on the quality of people's lives do much to promote public support for, and an understanding of, science and technology.
- ◆ Since the countries of sub-Saharan Africa lack the extensive networks of modern mass media of industrialised countries, they must develop creative ways to use formal educational systems to target the general public as well as enrolled students.

*Popularisation of Science and Technology Education: Some Case Studies from Africa* is based on these beliefs.

Part I sets the context as it examines the history, present-day practices and challenges of science and technology, and of science and technology education, in the countries of sub-Saharan Africa. In Chapter 1, 'Issues and Realities', Prem Naidoo and Mike Savage provide an overview, arguing that science and technology have not yet realised the hopes that leaders and professionals throughout the continent have had for the disciplines; they

propose a differently defined science and technology that is more orientated towards solving problems, together with a vigorous approach for its popularisation. In Chapter 2, 'The Contribution of Science and Technology', Naidoo and Savage examine what type of science and technology is needed by the countries of sub-Saharan Africa at both the popular and specialist levels, and argue that ways are needed to redirect their development. In Chapter 3, 'Choosing Good Science in a Developing Country', Robert Adams suggests ways in which African countries can develop research portfolios more relevant to Africa's needs.

Africa produces a significant percentage of the world's oil. Nigeria alone is the twelfth largest producer, and promisingly rich fields have recently been discovered in the Gulf of Guinea and off the coast of Angola. Africa's reserves of diamonds and other precious stones are well known, as is the richness of its gold deposits. Equally valuable, but less known, are Africa's deposits of other minerals. The continent produces 97 per cent of the world's stocks of chrome, 50 per cent of its platinum and many other minerals much needed by industrialised countries, without adding value by their processing into manufactured and secondary products. Indeed, UNECA estimates that Africa contributes only 2 per cent of the world's industrial output. Furthermore, the extraordinarily rich biodiversity of Africa's rain forests and ecosystems, such as those found in the southern Cape and Madagascar, has so far been exploited only for the benefit of multinationals and other interests outside the continent. Spirulina harvested by the peoples living on Lake Chad, and a new slimming drug based on the extensive knowledge of the peoples of the Kalahari that will soon be released by Pfizer, are but two of many examples. It is no secret that the bulk of the profits made from Africa's unique tourist opportunities never reach the continent.

Part II, therefore, focuses on how science and technology is being and can be used to exploit this rich resource base for economic and social transformation within the continent. In Chapter 4, 'University Science and Technology Education and Economic Development', Emmanuel Fabiano in Malawi, and Keto Mshigeni and Osmund Mwandemele in Namibia, describe university projects where research at the highest level has popularised science and technology by dramatically demonstrating how they can transform both local and national economies. In Chapter 5, 'Small-scale Industries in the Popularisation of Science and Technology in Ghana', Jesse Amuah examines the role of popularising science and technology in Ghana in transforming the small-scale industrial sector. In Chapter 6, 'The Suame Magazine', Henry Brown-Acquaye uses another Ghanaian example to show how university researchers have established a consultancy service on which the formal and

informal sectors of the economy have become dependent. In Chapter 7, 'Indigenous Knowledge Systems and their Economic Potential in South Africa', Otsile Ntsoane examines the potential of indigenous knowledge systems for economic development. Michael Kahn discusses how regional co-operation could strengthen both science and technology and science and technology education in Chapter 8, 'Promoting Co-operation in Science and Technology in the SADC Region'. In Chapter 9, 'Regional Co-operation for Capacity Building in Science and Technology', J.G.M. Massaquoi and Mike Savage describe two effective research networks that have strengthened scientific culture in the eyes of the masses through work that demonstrably leads to improvements in their quality of life.

Part III uses case studies to examine current practices in popularising science and technology. Chapter 10, by Jane Mulemwa, and Chapter 11, by Mike Savage, address issues common to all African countries, namely women's participation and performance and the effective use of the media. Chapters 12–17 are case studies of projects in Malawi and Zanzibar (Mike Savage), Malawi (Matthew Chilambo), Swaziland (Bongile Putsoa), Ghana (Jophus Anamuah-Mensah), South Africa (Botlhale Tema, Kebogile Dilotsotlhe and Jaap Kuiper) and Sierra Leone (Sonia Spencer). In Chapter 18 Marian Addy uses an example from Ghana to show how television can be used to popularise an understanding of science and technology.

In Part IV, Chapter 19, 'A Synthesis', Prem Naidoo summarises the ideas put forward in the previous chapters about ways of popularising science and technology and a way forward is discussed. Finally, in Chapter 20, 'Towards a Theory of Change: A Postscript for Policy-makers', Mike Savage summarises the AFCLIST experience and develops tentative policy guidelines for consideration by those responsible for developing and implementing effective ways of popularising an understanding of science and technology.