
**Introduction to the Special Issue on
'Innovation for Sustainability'**

Britta Rennkamp* and Mammo Muchie**

This special issue of the African Journal of Science, Technology, Innovation and Development (AJSTID) is a result from the South African-German Dialogue on Science for Sustainability. This policy dialogue addresses the questions how technological innovation can contribute to more sustainable development paths and how international cooperation can help to solve conflicts between economic growth and the depletion of natural resources.

Government officials from South Africa and Germany discussed with scientists from natural and social sciences, representatives from non-governmental Organizations (NGOs) and businesses in two conferences in Bonn and Tshwane/Pretoria how development, environmental and scientific-technological cooperation lines can be better linked.

It is now acknowledged that the way nations industrialised in the North was by exploiting and injuring nature. Human induced climate change is one of the results. Economic development has been driven as a process that is both polluting and energy intensive. The IPCC reports identify growing GDP as the main sources of carbon emission. A nature nurturing rather than hurting path of economic development has not been created yet. The dilemma is that there is a need for a shared responsibility to protect nature

* German Development Institute, Tulpenfeld 6, 53113 Bonn.
Email: britta.rennkamp@die-gdi.de

** DST/NRF Research Professor of Science, Technology, Innovation and Development, IERI, Tshwane University of Technology, Pretoria, South Africa; Professor, Aalborg University; and Senior Research Associate, SLPMTD, Department of International Development, Queen Elizabeth House, Oxford University.
Emails: mammo@ihis.aau.dk; MuchieM@tut.ac.za.

by all, and a desire by each nation in the world not to be deprived from the right to grow and develop as the major northern economies have done. The problem of winning those that wish to develop yet to share responsibility for nature and those that have already industrialised to share responsibility for both nature and poverty eradication has been challenging.

About 20% of the world's population live in the industrialized North and occupy about 80 % of the world environment and economic space. Governments have to acknowledge that their contribution to carbon emission is not the same and that therefore the financial burden cannot be shared equally.

The on going economic crisis seems to create a renewed challenge to deal with both poverty and climate change as a priority. Many nations are now concerned to deal with getting their economies on track. Naturally, economic growth and reducing emissions are two different priorities in public policy. Aid to reduce poverty will be cut as carbon emission targets too. They both fall at the bottom of the political agendas, as coming out of the economic down turn comes first. For their part, developing countries prioritize growth and poverty reduction with urgency. The conflict is obvious, the solutions are not.

One area that can be utilized to bring the divergent interests to converge is finding an agreed application of technological innovation. Technological innovation and diffusion can be part of the solution. Technologies to mitigate emissions are mostly available in the industrialized countries. In the developing worlds, climate change impacts are mostly agricultural, and despite the mitigation, adaptation technologies are highly demanded. The other part of the solution is a shared and comprehensive division of the costs of these technologies.

For the concept of shared responsibility to have any meaning, there must be the willingness to think beyond self-interest, to open the future to long-term perspectives- to think not only for this and tomorrows' generations but for all generations that can beat the fear of time.

The papers in this special issue result from the South African - German dialogue on science for sustainability. They bring together contributions mainly from European and African scientists. These include a reprint of a scientific paper by Mammo Muchie, "The Uptake of Environmentally Sensitive Innovation to Transform Production Systems in Sub-Saharan Africa", which was originally published as a book chapter in 2003. The paper examines empirically the degree to which firms in Tanzania and Zimbabwe have experience with environmentally sensitive technology uptake. Among the other papers: Patrick Bond discusses the 'Climate Debt Owed to Africa' by the 'Global North' and highlights the importance of the role of African states in supporting the concept; Mark Swilling argues that growth models have

not emphasized the need for decoupling growth rates from rates of resource consumption and associated declining quality of the environmental systems and advocates the importance of reversing this trend; Klaus Rennings, Peter Markewitz and Stefan Vögele present the case of technological change in German coal-fired power plants to show 'why radical innovations fail'; Martina Schäfer, Dörte Ohlhorst, Susanne Schön and Sylvia Kruse discuss the challenges and methods for transdisciplinary sustainability research in the future; and Rainer Walz analyses whether 'Green Markets of the Future' provides an economic opportunity also for the newly industrializing countries and South Africa.

The research notes/ commentary section carries the personal reflections of the Nobel laureate Wangari Maathai on the conflict between economic development and environmental security. It also includes: Andrew Jamison's paper presenting arguments for 'a cognitive approach to sustainable development' and towards 'search for green knowledge'; an article by Britta Rennkamp that discusses the role of multilateral and bilateral scientific and technological cooperation for sustainable development; and an overview about the purpose and experiences of the South African-German Dialogue on Science for Sustainability with views from authors representing the Department of Science and Technology (DST), South Africa and the Federal Ministry of Education and Research (BMBF), Germany.

The book reviews section includes: a review by Blessing J. Karumbidza on '*Governing Africa's Forests in a Globalised World?*,' edited by Laura A. German, Alain Karsenty and Anne-Marrie Tiani; and another review by Geci Karuri-Sebina on '*The Challenge for Africa: A New Vision*,' authored by Wangari Maathai.

In general, science policy dialogues are useful platforms for interaction between researchers, practitioners and government officials. It is one way of how sciences enter the policy domain. Where formal multilateral cooperation stagnates, less formal bilateral exercises can be fruitful additions. It would be useful if the German and South Africa Science for Sustainability Dialogue brings about a new model of cooperation on a bilateral level to be replicated by other countries and even feed into the international forums. We appreciate, welcome and encourage both governments in Germany and South Africa to sustain and extend the dialogue on science for sustainability including more African countries and generally work to find a functioning, practicable and productive model- relationship between the South and North.