About the Regional Initiative in Science and Education (RISE)

RISE aims to strengthen higher education in sub-Saharan Africa by increasing the population of qualified faculty teaching in Africa’s universities. RISE supports PhD- and MSc-level scientists and engineers through university-based research and training networks in selected disciplines. RISE networks provide comprehensive graduate training programs, where students and faculty seeking advanced degrees can take advantage of the complementary instruction, research opportunities and laboratory facilities available at each institution within their network. The network structure benefits the universities as well, as each gains capacity through affiliation with the others. In the words of one of the successful applicants, “The principle to be employed is to exploit the respective strengths of individual partner institutions for the collective benefit to build capacity.”

The core mission of RISE is to prepare scientists and engineers to staff and strengthen Africa’s universities, with the broader goal of building capacity in science, technology and innovation as a key to economic development in sub-Saharan Africa. Since the project was launched in 2008, 21 women and 50 men have earned their degrees through RISE, and the majority of them are employed in academic positions at African universities, working on science and engineering projects relevant to African development.

RISE is supported by grants totaling over $15.4 million from Carnegie Corporation of New York and administered by the Science Initiative Group (SIG) at the Institute for Advanced Study in Princeton, NJ, USA.

The RISE Networks

AMSEN: African Materials Science and Engineering Network
AMSEN is based on the premise that increased skills in materials science and engineering are needed in southern Africa to develop and add value to the extensive mineral deposits of the region. AMSEN benefits from existing collaborations, including the DST/NRF Centre of Excellence in Strong Materials established at Wits in 2004 and the Wits-Namibia Engineering Curriculum Development Program in nanotechnology, sponsored by Norway’s SANTED Programme. To reduce the brain drain in this field from academia to industry, AMSEN uses a retention strategy that includes supplementation from industry, allowing staff to consult for and be seconded to industry, and providing incentives for publishing in academic journals.

Nodes and Coordinators
University of the Witwatersrand, South Africa (Prof. L.A. Cornish, AMSEN Director)
University of Botswana (Prof. P.K. Jain)
University of Nairobi, Kenya (Prof. George Rading)
University of Namibia (Prof. F.P.L. Kavishe)
Federal University of Technology, Akure, Nigeria (Prof. J.O. Borode)
RISE-AFNNET: African Natural Products Network
In the face of rapid population growth, loss of agricultural lands, and insufficient human capacity, RISE-AFNNET works to develop Africa’s rich biodiversity into a natural products industry of social and economic significance. Building on an already active research network of 10 member countries called NAPRECA, RISE-AFNNET expands existing research programs and formalizes educational activities in such natural products (NP) fields as engineering, biochemistry, environmental science, pharmacology, economic development and nutrition. Students work on natural products research projects in the context of poverty alleviation, gender equity, and the Millennium Development Goals.

Nodes and Coordinators
Makerere University, Uganda (Prof. John David Kabasa, RISE-AFNNET Director)
University of Nairobi, Kenya (Dr. Stephen Kiama)
Sokoine University of Agriculture, Tanzania (Prof. Robinson Mdegela)

SABINA: Southern African Biochemistry and Informatics for Natural Products Network
Due to the great biodiversity of southern Africa, increased capacity in natural products research has the potential to increase food security, public health, and value-added exports. The SABINA network trains both PhD and MSc scientists through research on the biochemistry and chemistry of natural products, including bioinformatics as an essential tool for data management and the elucidation of structure and function. Research focuses on increasing the understanding of useful plants or fungi (such as mushrooms, seaweeds, and tea crops) through the study of screening assays, biosynthetic pathways, gene expression, modes of action, synthetic production and genetic diversity.

Nodes and Coordinators
Council for Scientific and Industrial Research (CSIR), South Africa (Dr. John Becker, SABINA Director)
University of Malawi (Prof. John D. Saka)
Tea Research Foundation of Central Africa, Malawi (Prof. Hastings Nyirenda)
University of Namibia (Prof. Martha Kandawa-Schulz)
University of Pretoria, South Africa (Prof. Zeno Apostolides)
University of the Witwatersrand, South Africa (Prof. Charles De Koning)
University of Dar es Salaam, Tanzania (Dr. Sylvester Lyantagaye & Dr. Quintino Mgani)

SSAWRN: Sub-Saharan Africa Water Resources Network
SSAWRN fits the RISE model by building on two existing networks—one that emphasizes research and another that promotes postgraduate education. It addresses the most pressing water issues of the region, including rising use, declining quality, insufficient research and teaching capacity, inadequate weather stations and the likelihood of increased variability of water supplies associated with future climates. The network assigns first priority to research projects that address practical issues and contribute to problem solving. Students are encouraged to share research experience with others and to participate in consultancy work. SSAWRN is working to develop a culture of multidisciplinary problem solving.

Nodes and Coordinators
Rhodes University, South Africa (Prof. Denis Hughes, SSAWRN Director)
University of Botswana (Prof. Wellington Masamba)
Eduardo Mondlane University, Mozambique (Prof. Elonio Muiuane)
Makerere University, Uganda (Prof. Michael Ocaido)
**WIO-RISE: Western Indian Ocean Regional Initiative**

WIO-RISE provides research and training in skills associated with the utilization of coastal and marine resources and protection of the coastal and marine environment. The network avails itself of the long experience of the IMS/UDSM, which has roots in the former East African Marine Fisheries Research Organization, and the affiliated Western Indian Ocean Marine Science Association based in Zanzibar. The School of Marine and Coastal Studies at Eduardo Mondlane University is strategically located near the Sofala Bank, a major fishery and aquaculture resource, and the University of Cape Town has the only department in southern Africa offering graduate training in physical oceanography, climate science, and atmospheric science.

**Nodes and Coordinators**

University of Dar es Salaam, Tanzania (Prof. Desiderius Masalu, WIO-RISE Director)
Eduardo Mondlane University, Mozambique (Prof. Antonio Hoguane)
University of Cape Town, South Africa (Prof. Chris Reason)
In the Words of RISE Scientists

RISE was founded on the premise that it is possible to attain high-quality, comprehensive graduate training in Africa by pooling the resources and talents available at multiple institutions, and given the successes of our graduates to date, this has proven to be true.

Professor Joseph Borode of the Federal University of Technology, Akure (Nigeria) node of AMSEN, based at the Department of Metallurgical and Materials Engineering, emphasizes the positive effect of RISE on department morale: “Prior to the advent of RISE/AMSEN, the department lacked adequate teaching and research facilities. The morale of the few staff in the department was at low ebb. Staff retention after postgraduate training was difficult due to lack of suitable working conditions. [...] At present, there has been a change of fortune of both the staff and the department. The international outlook of the department has been greatly enhanced. In the same vein, the staff mobility in the international arena has also been given a boost through attendance at international conferences, seminars and workshops. It is believed that through this avenue, members of staff have been able to establish new partnerships through which they can advance their academic careers.”

AFNNET universities have enjoyed the benefits of participating in information and material exchange, as well as in scientific consultation and collaborative research. [Students have] learned to coordinate multi-cultural and multi-national research networks.

Professor John David Kabasa of AFNNET applauds the network approach as “a driver of many changes in university education processes, information sharing, and capacity sharing, as well as [having opened] scientific boundaries which had previously clogged the traditional university systems. AFNNET universities have enjoyed the benefits of participating in information and material exchange, as well as in scientific consultation and collaborative research. [AFNNET students have] learned to coordinate multi-cultural and multi-national research networks [...] and to mentor local young scientists who report results at workshops and conferences. Students have been exposed to various opportunities, [discovered] and recommended by SIG, and they have travelled widely as they disseminate their research work.”

Professor Denis Hughes of SSAWRN has observed a trend whereby student and staff activities bring benefits to projects outside of academia: “Most of the student projects supported by SSAWRN are aligned to applied research and address solutions to identified socio-economic problems affecting various countries, thus creating a bridge between academia and society.”
Opportunities for Collaboration

As science becomes an ever more international enterprise, RISE students and graduates will gain a richer educational experience by pursuing opportunities for research collaborations beyond Africa. RISE is seeking to build its international network of collaborators and is currently pursuing the development of new partnerships with universities in the United States, Canada, and Europe. International university collaborations could involve research visits by RISE PhD or MSc students and graduates for periods ranging from a month to an academic year; or short courses lasting 1-4 weeks at RISE universities given by visiting professors from U.S., Canadian and European universities in subjects relevant to the network but in which it lacks expertise.

To date, some of the RISE students and graduates have participated in South-South fellowship programs through our partner organization The World Academy of Sciences (TWAS). In addition, a few of our students and graduates have had successful research visits of 2-5 months at Princeton and Duke Universities. The arrangements to date have been ad hoc, based on informal partnerships with these two universities; typically SIG covers travel and visa costs, and the host university covers local costs, but the specifics vary. Justin Omolo, our first RISE PhD graduate, is currently a visiting scholar at Duke University. RISE and the Duke Africa Initiative jointly organized a three-month visit for him to meet and work with scientists interested in similar subjects and to network with colleagues in his field. With the help of RISE’s UK ally Planet Earth Institute, a partnership with Oxford University is currently underway. We are excited to expand opportunities for RISE students and graduates, and we encourage universities interested in scientific collaboration with RISE scientists to contact us.

For further information, please contact:

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