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Supporting Young Scientists in Developing Countries. The IFS Model

by

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The Development Context

The international community has committed itself to try to reduce global poverty by half during the period 2000-2015. Development experts and policy makers often give priority to short-term projects trying to alleviate the immediate symptoms of poverty. In this context, science is often considered to be a luxury not deserving priority in the poor countries.

This paper claims the contrary — there will be no long-term sustainable development in the poor regions of the world without a considerable investment in science. Our point of departure is that knowledge is the basis of human progress. Accumulated knowledge is embodied in science and technology. Scientific research is the motor of knowledge accumulation.

This holds true also for the poor regions of the world. Examples can be taken from sub-Saharan Africa. Development indicators in this subcontinent paint a gravely worrying picture. Poverty and malnutrition are on their way up while life expectancy is on its way down. Moreover, global climate change impacts on Africa. More frequent and erratic episodes of heat and water stress, jeopardizing agricultural production, have been recorded. Food insecurity is expanding. It is assumed that the agricultural sector in the region must grow by 6 % per annum by 2015 to counter

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food insecurity. Climate change in Africa is even less understood than elsewhere. How the global changes will impact in various regions in Africa must be studied in the regions themselves.

Considering the above, it is no longer possible to rely on traditional farming systems and husbandry methods. The development challenges facing Africa cannot be addressed without a scientific understanding of the root causes of the problems and development of appropriate technology to address the issues.

The Scientific Landscape in Less Developed Countries

In the 1980s and 1990s most low income countries suffered from general economic decline while at the same time vastly growing cohorts of secondary school-leavers put pressure on the universities. Undergraduate training was prioritized while research dwindled. Research institutes saw their budgets severely cut. The number of research positions and scholarships were restricted. Researchers left their institutions and moved overseas or into consultancy and business.

As a result, the recruitment of research students went down and became wholly dependent on project funding from external donors. As the low income countries, and notably sub-Saharan Africa, enter the 21st century there is a glaring deficit of researchers in the age 25-35. In many African academic institutions most staff members are above the age of 40 and the majority above 50. Hence, African universities and research institutes are moving towards a generation shift. The present population of professors and senior researchers are a "greying" lot. The average age is high and many are close to retirement.

Who is going to generate the knowledge needed for development ? Sometimes it is claimed that poor countries should rely on expertise from centres of excellence in the North. We claim that Northern expertise can play a role, but it is limited. The scientific foundations for future sustainable development must be built, nurtured and reproduced in national institutions. The case can therefore be made for a general renewal of post-graduate research and research training at national institutions.

The Need for Research Funding

Studies undertaken by IFS have shown that the major complaint by scientists in developing countries is non-functioning laboratories and lack of scientific equipment, which reflect the general problem of the lack of research funding. Without having access to the tools of science, research-

ers tend to be motivated to leave their home institutions. Hence, the great challenge is to provide an enabling and meaningful environment for the young generation of university graduates in the less developed countries. If given the right support the new generation of scientists could provide the scientific underpinnings for sustainable development technologies while at the same time narrowing the global scientific gap.

The critical factor is to provide opportunities for funding for researchers in their early and mid-career, who are yet to become established. Unfortunately, national science councils and universities have very scarce funds for this category. There is thus a gap to be filled by international organizations devoted to scientific capacity building.

The IFS Model for Supporting Young Scientists in Less Developed Countries

IFS is an international non-profit organization founded in 1974. Its Secretariat is located in Stockholm, Sweden, and it is supported by twenty governmental and non-governmental donors. The IFS mandate is to strengthen the capacity of developing countries to conduct relevant and high-quality research.

IFS has thirty years of internationally recognized experience in operating a competitive research grant scheme for promising young scientists in more than 100 developing countries. Three thousand five hundred scientists, at the start of their research careers, have had the opportunity to pursue laboratory and field work in their home countries, in a research environment made more conducive for the young researcher through the support provided by IFS. This includes the research grant used to buy equipment and supplies required to carry out the project, as well as other types of support. A major outcome of this support is that researchers are given an opportunity to contribute to development-oriented research without having to move to academic institutions in the North.

IFS achieves its mission by identifying, through a careful selection process, promising young scientists from developing countries with potentials to become science leaders and leaders of science. To qualify for support, researchers should preferably be younger than 40 and should be citizens of a developing country and undertake their research in a developing country.

IFS thus functions as an international research council with Scientific Advisory Committees covering eight thematic areas (see below). Research

applications are received at the IFS Secretariat throughout the year. They are then pre-screened by IFS scientific staff, assessed by the IFS network of some 1,000 international Scientific Advisers, and prioritized by the Scientific Advisory Committees for final approval by the IFS Director. Decisions on funding are taken twice a year, in June and December.

In addition to the research grants, the grantees also have access to other services designed to assist them with their research. Selected grantees receive travel support every year to attend scientific meetings or for training visits to other institutions. Over the last 30 years some 200 scientific workshops and training courses have been organized for grantees. For the last five years, new grantees have had access to literature searches. A large proportion of grantees have benefited from a service to purchase and deliver equipment and supplies to their institution.

Knowledge accumulated from the IFS Impact Studies since 2000 (GAILLARD 2000, GAILLARD & FURO TULLBERG 2001, GAILLARD *et al.* 2001) shows that the IFS capacity building model, *i.e.* providing support to well-targeted young scientists at the beginning of their research careers, has proved to be successful in retaining them as active and productive members of their national scientific communities, thus reducing the likelihood of brain drain. Amongst the positive outcomes reported is the significant impact that IFS has had on the career development of many grantees; the fact that IFS grantees publish more frequently and more often in mainstream scientific journals; the internationalization of many grantee's careers; increased collaboration with other scientists; and more success in accessing additional research funding. Tanzania provides an example, where many of the 55 former IFS grantees have risen to positions such as Vice-Chancellor, Dean of Faculty, Head of Research Institute, Minister in the Government, Director General, General Manager, etc.

Historically, IFS has primarily supported scientists working in applied areas of the natural sciences (crop science, animal science, aquatic resources, forestry, food science and natural products chemistry). However, as of 2002, IFS has expanded its mandate to include research on water resources, and social science research related to the conservation, management and sustainable utilization of biological resources. The research areas are continuously changing according to scientific and social developments. Emphasis is placed on integrated solutions relating interdisciplinary and participatory research to social needs in developing countries and on research areas of emerging importance such as water resources, biodiversity and global change. The widely different scientific

capacities of individual developing countries is considered and IFS places the greatest emphasis on directing resources to those recipient countries with vulnerable research infrastructure.

As researchers in these institutions typically have less access to the Internet and are relatively marginalized from the international scientific discourse, they face difficulties when competing with researchers from developing countries with relatively strong scientific infrastructure. IFS has therefore initiated a series of supporting activities to enhance the competence of applicants from marginalized academic environments. Among these are workshops to conceptualize and prepare research proposals as well as different types of mentorship.

Many former grantees participate in IFS as Scientific Advisers and ambassadors for the IFS programme. IFS grantees have trained a new generation of scientists in southern universities, produced high-quality knowledge of relevance for the needs of developing countries and achieved senior national and international scientific and policy-making positions. Former grantees in the scientifically strong developing countries increasingly take on functions as mentors and advisors for their younger colleagues from neighbouring less developed countries.

IFS acts in collaboration with 126 affiliated organizations and other national, regional and international institutions, utilizing the complementary strengths of such partnerships. Examples of such collaborative partners include the Third World Academy of Sciences (TWAS), the African Academy of Sciences (AAS), the United Nations University (UNU) and the Organisation of Islamic Conference Standing Committee and Technological Cooperation (COMSTECH), and the Council for the Development of Social Science Research in Africa (CODESRIA).

In the coming years IFS will increasingly work in partnerships with regional scientific networks and national science authorities to facilitate improved research environments for young scientists doing research for development.

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