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Recreating Research Capacity in Rwanda

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Introduction

Rwanda still bears the scars of its painful past characterized by political and ethnic violence which culminated in the genocide of Tutsis in 1994. Slowly but surely, the country is currently recovering from its injuries.

This contribution would like to examine the step already done in scientific research, considering in turn the institutions involved in this sector, the priorities put forward by the Government and the challenges it faces.

Restarting from zero

Everyone can still remember the war in Rwanda in 1990 and the genocide of Tutsis in 1994 that claimed over one million dead according to the political authorities of the country.

This tragedy has not only caused great loss of life, increased the number of people vulnerable, widespread emotional shock and deep trauma and forced half the population either in exile outside the frontiers or the inside displacements, but also and especially the destruction or paralysis of economic and social infrastructure. Indeed, schools and health centers were in ruins and had been looted, communications were inoperable, and the administrative systems devastated, and so on (N. Cantwell, 1997).

Reconciliation and reconstruction seemed very difficult, but Rwandans had still necessary spirits to quickly build up speed again on the path of peaceful coexistence and economic development.

On the political level, a transition period was necessary to put the country on the path of democratization. It ended in 2003 with the adoption of a new constitution by referendum, presidential and parliamentary elections by universal suffrage.

Over the past decade, Rwanda has made significant progress in economic and enjoys the confidence of donors both multilateral and bilateral. Since 2003 it has

recorded excellent results and its annual growth rate remains over 6% (World Bank, 2004).

In many respects, Rwanda appears to many analysts as a dynamic country that is promised bright future in the East African Community, where it has enrolled and where it will soon emerge..

Scientific research institutions

The current organization of the scientific research in Rwanda is tributary of the Belgian colonial heritage. It is done mainly in specialized research institutes subsidized by the Government and in the higher education institutions

In Rwanda, four institutes were created to do research in a professional manner. In order of their foundation, we have:

- 1 The Institute of Scientific and Technological Research (IRST) which deals with fundamental and applied research in various fields ranging from sciences known as natural to humanities et social sciences,
- 2 The Institut des Sciences Agronomiques du Rwanda (ISAR) which focuses on research destined both for ensuring food security to the country and transformation of subsistence agriculture into an agriculture open outwards, and competitive on international markets,
- 3 The Karisoke Research Centre (KRC), which focuses on the protection of mountain gorillas in danger of extinction in the region of the Virunga volcanoes in the north,
- 4 The Institute for Research and Dialogue for Peace (IRDP), whose primary focus is to find solutions to the challenges and obstacles to peace.

Scientific research is also in all higher education institutions, whose number has increased very much over the past ten years. In fact, they increased from six in 1986 to in 2006 (J.Rugengande, 2004).

In principle, all lecturers in their work must not only ensure high quality science, but also conduct research to improve their knowledge, that of the students and the

community. Although their career depends largely on their scientific output, many academics are reporting a worrying weakness in the field of publications for various reasons on which we shall return below. They cite the fact that their teaching and administrative duties make high demands on their time.

If lecturers are generally not very much interested in research, they are, however, very much fond of consultancies in which they intervene a lot and where they earn a lot of money. Their low wages make them hunters of services that often do not often go within their institutions whose structures and equipment they use, however.

This large capacity of expertise that is often sought by international agencies, foreign cooperation and the Rwandan Government could contribute to self-finance their respective institutions.

Revitalize the scientific research sector

For some time, Rwanda has undertaken actions to revitalize scientific research, creating a Ministry for Science, Technology and Scientific Research and giving in a very clear manner priorities in this area.

Recognizing the need to effectively promote scientific research, the Presidency of the Republic of Rwanda since 2006 has set up in itself a Ministry for Science, Technology and Scientific Research.

This is a sure sign: political authorities at the highest level are aware of the vital role of science, technology and research in the development of the country.

This new ministry has already set up two structures. We first have the Council for Science, Technology and Innovation (NCTSI) responsible for development, promotion and coordination of all matters related to science, technology and research in Rwanda. It is a body that acts as an independent councilor of departmental authorities for the organization of research, quality assurance and enhancement of human resources. Then the Sectoral Science and Technology Committees come composed of experts and representatives of ministries in charge of collaborative work on the one hand and establishment of links with the NCTSI on the other hand.

Indeed, each technical ministry is now invited to submit in its planning the actions to be conducted in relation with the research. It is in this way that, for example, the Ministry of Agriculture and Livestock (MINAGRI), through its Strategic Plan for transforming the sector, currently focuses on export crops, which are very competitive on foreign markets, such as coffee and tea, known worldwide for their quality. We can see there indeed, cooperation taking place among institutions of higher education, MINAGRI and the farmers producing these commodities.

A National Research Fund (NRF) is already functional. He receives an annual sum equivalent to 0.5% of the total budget of the State to conduct research relevant to the objectives of Vision 2020. It is also responsible for stimulating competition among researchers and research institutions including giving grants to innovative projects interesting and contribute to all strategies for the development of the country (S.Esau-Bailey, 2007).

Priorities in the matter of scientific research based largely on the Objectives of Development of the Millennium and Vision 2020 of the Government of Rwanda. The latter is a document developed in 2000 in the Presidency of the Republic after national consultations which had begun in 1998. This is an ambitious long-term development of the country which is based on six pillars (good governance and the rule of law, human resource development, an economy dominated by the private sector, development of infrastructure, productive and market-oriented agriculture, regional and international economic integration) and three cross-cutting areas (gender equality, environmental protection and sustainable management of natural resources, science and technology, especially new information and communication technologies).

It could not be otherwise as far as priorities are concerned: agriculture is indeed the most important sector of the economy because it employs more than 90% of the population, accounts for more than 47% in terms of Gross National Product (GNP) and represents 71% of exports.

The Government of Rwanda wants to transform its economy based on agriculture into a knowledge-based economy. To do so, given the current situation and the goals it set for the year 2020, the research must ensure that the population engaged in agriculture increases from 90 % to 50%, that the land cultivated in a modernized way rises from 3% to 50%, that the funding allocated to agriculture amounts from 1% to 20%

and that non-agricultural jobs increased from 200,000 to 1400,000 (Republic of Rwanda, 2005: 40).

It also needs to transform and modernize agriculture to make it more competitive, develop entrepreneurship by closely associating the private sector. Strategies have been adopted to preserve food security, natural resources management, conservation of water and soil, the appropriate use of marshlands, the design of new technologies in irrigation.

Three main institutions involved in conducting research on agriculture: ISAR, the Institute of Agriculture and Animal Husbandry (ISAE) and the National University of Rwanda (UNR). The latter has included in its priority development projects and conservation of soil and water, production and plant protection for animals, processing of agricultural products, biotechnology and forest resources. Since some time ago, it opened two Master's Degrees which are in line with the priorities in the strategic plan of the Ministry having research within its remit. There are Master's Degrees in Water and Environmental Resource Management and Agro-Forestry and Soil Management. These two streams may eventually provide professionals and researchers that the country needs in the field of agriculture.

Human resource development is the second priority. Having practically no mineral and plant resources on which it could rely, Rwanda is aware that it needs to develop competent and competitive human resources in the Great Lakes. The Strategic Plan Sector for Education 2006-2010, in addition to its willingness to train citizens freed from all kinds of discrimination, in love with values of justice, peace, tolerance, respect for human rights, stresses heavily on the transformation of the population into a human capital which distinguishes itself by its knowledge.

The Government of Rwanda also wishes that research be undertaken so that there is a more effective partnership among the State authorities, parents, grassroots communities, non-governmental organizations (NGOs), the private sector and the civil society.

Two factors deserve attention in all levels of education, from primary up to higher education: gender issue and new information technologies and communication.

Regarding the first concern, Rwanda can be proud of its very good policy for the mainstreaming of women. Its constitution of 2003 says that primary education is free

and compulsory for all, and an Organic Law of Education was passed to make it a reality. This meets the international obligations that the country has signed, such as the Convention on Elimination of Discrimination against Women, the Convention on the Rights of the Child, etc...

The Government encourages research geared towards promoting gender equality in education, action to increase the number of qualified female teachers and improve physical and environmental conditions to host girls in schools.

Concerning information and communication technology (ICT), Rwandan authorities say they are like the key to development. Rwanda would like to draw its inspiration from the example of Singapore which has developed over the last thirty years by choosing to adopt an economy based on knowledge and the new ICTs to start its growth.

That is why they are considered a cross-cutting issue of Vision 2020. The Rwandan Government has already set up two bodies for the implementation of its policy: the National Information Technology Commission (NITC), which is a kind of steering committee of all ongoing activities and the Rwanda Information Technology Authority (RITA) in charge both of training necessary qualified human resources and ensuring the link between upstream policy makers and grassroots communities downstream (B. Harrison, 2005: 8)

Rwanda Terracom, a private company that has been operating in the country since 2002 has already finished laying the optical fibers that connect the largest cities of the country between them, allowing more than 400 schools to have a very fast access to Internet. . The Kigali Institute of Science and Technology (KIST) is training students in Computer Engineering and Electrical Engineering who will be entrepreneurs in ICT in the coming years. This institution aims at becoming a regional centre of excellence of the Africa of the Great Lakes in training and research in ICT.

The international community recognizes that Rwanda has become a leader in ICT in African countries south of Sahara. It is in the process of catching South Africa, which has much larger resources though. For this reason, beginning in October 2008, the World Bank has granted 24 million U.S. dollars to support its policy of broadcasting throughout its territory Internet network, of which over 700 be institutions such as schools, health centers, offices of local administration, etc. will benefit from it.

Scientific research in the medical world is the third priority of Rwandan authorities. It is the policy of the Ministry of Health in collaboration with partners such as higher education institutions (UNR), Kigali Health Institute (KHI), NGOs, civil society, etc. It currently affects a variety of fields, such that the quality of services in health centers and district hospitals, the use of latrines in households, malnutrition, and so on.

But a particular emphasis is put on maternal and child health, family planning, malaria, infectious diseases, especially HIV / AIDS, as suggested by the MDGs. To combat this scourge in particular, the Treatment and Research AIDS Center (TRAC) has since 2004 undertaken studies on this disease, its prevention and treatment. It is also deals with conducting voluntary tests for those who wish to take them offers advice to patients and cares for their support.

Environmental protection and sustainable management of natural resources is the third cross-cutting issue of Vision 2020 after gender and ICT. Therefore, current government policy in matters of Science, Technology and Scientific Research of Rwanda is at the forefront of action to prevent land degradation and vegetation, and to preserve bio-diversity of ecosystems.

That is why the Rwandan Parliament passed in 2005 an organic law that determines the terms of protection, conservation and promotion of environment in Rwanda. In article 2 it states that environment is a common national heritage, which itself is an integral part of universal heritage (Republic of Rwanda, 2005). Shortly after, they set up a body in charge of legislating on environmental management and research: Rwanda Environment Management Authority (REMA). It takes steps to help the government to legislate and take measures for environmental management at local, national, regional and international levels. It initiates studies and research, publishes and disseminates their results on the state of the environment of the country. It offers programs and courses to be taught at all levels in the fields of environment in order to have the necessary human resources.

This body has all the powers of supervision, monitoring and evaluation of all projects and activities relating to the environment. For example, it may suspend temporarily or permanently those it deems not in compliance with legislation in force throughout the national space.

As Rwanda has opted for quality tourism, very respectful of the environment,

REMA is working closely with the Office of Rwanda Tourism and National Parks (ORTPN) and the Karisoke Research Centre (KRC), specializing in research on mountain gorillas.

In the priority research programs supported by the Ministry of Science, Technology and Scientific Research, would social sciences and humanities be in the course of being excluded? Here as everywhere else, they seem not to draw genuine attention. This is noticeable particularly in research institutions sponsored by the State like UNR and TSRI.

It is true that the UNR research projects on social science are being conducted in terms of political and social changes, history and culture, genocide and dimensions of the Rwandan conflict, journalism and communication, laws and governance. but they remain relatively marginal compared to those regarding sciences known as "positive". The same is true with TSRI where the cultural dimension of development is not measured sufficiently enough, and where funds are directed more towards the departments of fundamental and applied sciences, phyto- medicine and life sciences.

Only IRDP has understood that without a political and social life, any development whatsoever is compromised. Its research in history, the genocide of 1994, economy, democracy, etc. are as useful to the country as those conducted in sectors that involve 'positive' sciences.

The challenges

Rwanda, like most African countries has huge gaps and weaknesses in scientific research. A study conducted in 2007 shows that the number of publications in that year does not exceed one thousand (S. Esau - Bailey, 2007). Many factors explain this.

First, it is worth mentioning the lack of human resources. To restart the higher education, Rwanda has had to rely on expatriate personnel from the Great Lakes region, which still dominates research institutions and higher education. Nationals are still young and lack the necessary experience to complete projects and large-scale programs. If we add to this the lack of time often rightly mentioned by the teachers who fail to achieve their educational and administrative duties, we understand that research

is relegated to second place. In addition, the teaching-research has become unattractive: therefore young talent prefer to go to offer their services to organizations that provide better working conditions such as NGOs and UN agencies. Finally, we must denounce the isolation of researchers who continue to work in a vacuum. It is imperative to quickly stimulate the emergence of a community of researchers recognized for their skills and expertise and working under a collaborative research and shared at the national, regional and international

Secondly, scientific research faces a shortage of funds. Almost all institutions of research and higher education are funded at more than 90% by the Government: they can only paltry resources to research, given that the priorities in their budget breakdowns are to pay the salaries, social infrastructure and operating costs. This dependence vis-à-vis the state limits their activities.

Thirdly, it should be noted the lack of real research infrastructures: the few university libraries meaningful range of books and magazines obsolete, essential materials needed to laboratories lacking, access to electronic resources is not guaranteed .

Conclusion

Like all other sectors of socio-cultural development, scientific research has been much affected by the disaster that befell Rwanda in 1994.

The revival of this activity has benefited from genuine willingness by the Government to make the sector a springboard for economic development. Political authorities continue to declare their firm intention to convert their short-term agricultural economy into a knowledge-based economy.

Priority areas to retain the necessary attention have been identified and are reflected in policy documents such as Vision 2020 and the Economic development and poverty reduction strategy (EDPRS).

The new Ministry for the Presidency particularly in charge of Science, Technology and Scientific Research has therefore a lot of work. It will have as quickly as possible to meet a number of challenges, the most important ones being the lack of

human resources, inadequate financial resources and the infrastructure necessary for research.

Despite this, we can say that Rwanda is currently making quickly a place in the sun for itself in the Great Lakes region and in the African community. Two of its higher education institutions, National University of Rwanda and the Kigali Institute of Science and Technology acknowledged for its performance in applied research and technology transfer by the Association of African Universities (AAUs) is consistently ranked among the best universities of the African continent.

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