

## INTELLECTUAL DIASPORA IN COLOMBIA

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### INTRODUCTION

In 1968 the entity we know today as the Instituto Colombiano para el Desarrollo de la Ciencia y la Tecnología, (Colombian Institute for Science and Technology Development), Colciencias, was created in Colombia. However, it was only at the end of the 1980s, that the country began to recognise the importance of science and technology for socio-economic development.

Among the key events of this recognition process, the following could be mentioned: the declaration of the period 1988 - 1989 as the National Year of Science and Technology, the creation of the Misión de Ciencia y Tecnología (Science and Technology Mission)<sup>2</sup>; elaboration of legislation on science and technology during 1990 and 1991, especially the promulgation of Law 29 of 1990 which institutionalized the National Science and Technology System, SNCT; Colciencias' transfer from the Education Ministry to the National Planning Department in 1991; and the inclusion of several articles on science and technology in the National Constitution promulgated in 1991.

Unfortunately the achievements in the institutional and legislative fields have not had a good response in terms of sustained increase in investment in this field, despite the Misión de Ciencia y Tecnología's recommendation for this to reach 1% of GNP for science and technology investment at the end of 1998, and 2% in 2004, which is low compared to the 3% spent in industrialized countries. However, the budget, instead of increasing, has gone through a notable reduction in the last few years. A clear example of this trend is 1999, when Colciencias approved a budget of \$29.000 million pesos (18 million US dollars), which represents less than a third of the budget in dollars in 1996.

Although there are more than 500 grant holders studying doctorates in sciences outside the country, not all professionals emigrate in order to perfect their knowledge. A large part of them make up what has internationally begun to be known as the "intellectual diaspora", or, a significant group of highly-qualified compatriots that have left the country searching for work and research opportunities.

There are no up-to-date figures on emigration of Colombian professionals. However, data from Bogotá shows a marked decrease in the number of heads of household with a postgraduate diploma or doctorate. While in 1998, there was a total of 5.9%, in 1999, the figure lowered to 4%. In addition, the number of heads of household with completed higher education decreased from 14% in 1998 to 13% in 1999.

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<sup>2</sup> Commission made up of notable personalities in the Colombian science sphere, that revised the progress achieved in this field and issued a series of recommendations that were included in the 1994-1998 Development Plan.

Considering that a person with 15 years of education represents an investment of approximately 40 million pesos, people who have 20 and more years of education represent an investment of 55 million pesos. Taking these figures into account, it is thought that Colombian professionals leaving the country has cost the country 2200 million dollars.

## EMIGRATION ORIGIN

Among the factors that have contributed to generating the migratory process figure:

- National grants for postgraduate courses abroad.
- International grants for the same reason.
- Own resources for undergraduate and postgraduate studies.

In the first case, there is a defined commitment to return, and for this reason, definitive emigration is less frequent. This case is especially evident with the scholarships granted by Colciencias and Colfuturo. In the second case, the commitment is not as clear, and therefore, more definitive emigration occurs. According to figures estimated by the Red Caldas<sup>3</sup>, it is thought there are more than 2000 Colombian scientists in stable positions abroad, some of whom are in fairly important positions like Llinás, Parada, Llano, Esguerra, Maury, Hermann, Moreno, Stühmer and Sánchez, amongst others.

Based on exactly this reality, the Asociación Colombiana para el Avance de la Ciencia, ACAC, created two chapters abroad, one in Miami (USA) and one in France, with the aim of grouping Colombian scientists resident in these countries, and linking them to researchers who remain in Colombia. Although there was a lot of initial enthusiasm, the project did not prosper because of lack of financial support, and infrastructure.

At the end of 1990, Colombian students of the European Organization for Nuclear Research, CERN, began to establish links by electronic media, and in 1992 Colciencias created the Red Caldas with nodes in different countries. The challenge Colciencias has set itself is to link Colombian scientists resident abroad to projects which are being carried out in Colombia. Within this framework, several specific projects have been generated with financing in the majority of cases from Colciencias, and a few have obtained resources abroad. However, the success of this initiative is very linked to the dedication of Colombian scientists abroad, their connections, and finding a good partner in Colombia. Although the Internet is a very powerful tool for this goal, in general the Red Caldas lost impulse because of lack of financing for projects, and the general science and technology crisis in the country. There are, however, some cases of this kind of cooperation that have lasted and achieved important results. Successful examples are the cooperation between the École Polytechnique de Lausanne, EPFL (Switzerland) and the Universidad del Valle; and the Centro Internacional de Física and its work with the École Normale Supérieure de France and the Max Planck Institute in Germany.

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<sup>3</sup> The Red Caldas (Caldas Network) is a virtual network promoted by Colciencias since 1992 to give incentives to exchange between Colombian researchers resident abroad and the national scientific community. Its restructuring began in 2001, aiming at qualification.

As a result of the International Fair held in the year 2000 in Hannover, under the slogan "Man, Nature and Technology", Germany is working on a new example of cooperation. On Colciencias' initiative, joint projects between Colombian and German research groups have been prepared, which are being submitted to Colciencias and German entities for financing. Around 50 projects have been prepared on health, biotechnology, natural and social sciences, which have a high chance of financing.

## STRATEGIES FOR LINKING NATIONAL SCIENTISTS RESIDENT ABROAD

It is very important to be creative in generating strategies to link Colombian scientists abroad. Three options to create opportunities are:

- **Grant holders with a commitment to returning, but who wish to do a post doctorate.** In this case, it is best not to oblige these professionals to return very quickly, because current conditions in the country do not offer them many possibilities. A better alternative is to establish an agreement between the foreign entity where they are going to do the post doctorate, and a Colombian entity that works in the same area. In this way, the researcher can collaborate officially with the group in Colombia through consultancies, short courses, bibliography sending, etc. In addition, a lot of work can be carried out by Internet, including virtual research group building.
- **Researchers already settled abroad, with no intention of returning.** In this case, it would be important to establish a concrete research project, as in the case with Germany, co-financed by the two countries. An essential aspect of this kind of collaboration is that it is set up as a true collaboration project, in equal conditions.
- **Collaboration of a Colombian researcher abroad with a Colombian group.** In this case, there is no need to develop a research project, but a small amount of financing to facilitate the operation is important.

Finally, it should be remembered that industry can offer opportunities for scientific research development through:

- **Development of projects of interest to foreign industry.** This could allow for foreign companies to contract research in Colombia, as there is qualified and much cheaper labour. In addition, there are also tariff benefits that facilitate this option's development.
- **Subcontracting production of goods in Colombia for foreign companies in high technology sectors.** This option could attract companies, because, as in the previous case, qualified labour is cheaper, and there are tariff advantages.

## GENERAL RECOMMENDATIONS

- Increase investment in science and technology to reach 1% of GNP in the next four years, and 2% of GNP in the next 10 years.

- Promote high level researcher training until reaching one per thousand of population in the next 10 years.
- Direct international technical cooperation towards strengthening of the national ability to produce knowledge, especially through establishing national doctorates.
- Consolidate scientific and technological cooperation in Latin America.
- Strengthen researcher networks. Consolidating network nodes is even more important.