

Title

The Governance of the Colombian System of Science, Technology and Innovation: Challenges, threats and opportunities

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Introduction

The innovation system approach has been embraced by many developing countries to guide the policy-making and the institutional set-up (Arocena & Sutz, 1999). However, the concept has been underexploited to identify systemic failures and to build a truly systemic innovation policy (Salazar, 2005).

In the case of Colombia, for example, the model was applied when the system of innovation was formally launched in 1995, as part of the national system of science and technology (SNCyT by its acronym in Spanish). By then, an important number of support-innovation institutions were created, such as: technological development centres thought as intermediaries between the research system and the industry; technological parks and incubators to house start-ups and spin-offs; and venture capital funds. The Colombian government used the concept to guide the design of policies and instruments; to build and organize the system, in other words, to set up the infrastructure, with the final objective of facilitating the linkages between various actors (Consejo Nacional de Ciencia y Tecnología, 1995).

In the developed world, the expression 'innovation system' is more commonly used, since enterprises are the main users of knowledge¹ -and sometimes the main producers too- and funders of scientific, technological and innovative activities (Edquist, 2005; Lundvall, Johnson, Anderson, & Dalum, 2002). In developing countries, such as Colombia, universities and research and development institutes continue to be the main actors and are the producers of knowledge *par excellence*, so the use of the term 'science and technology system' may be more appropriate. For the purpose of this paper I will be making reference to the Colombian System of Science, Technology and Innovation, as it is known today.

Developing countries face more problems and challenges regarding innovation than developed nations; some of these are related to governance issues, and social and cultural factor that may not favour innovation, and greater gaps between regions, which makes the regional dimension of innovation much more important. By governance is understood the State's response to define their role in society, due to new demands and therefore the need to adapt to external changes and societal pressures. In this sense, developing countries have to be very creative to attend societal demands and pressures, in order of being capable of governing (good governance of) their innovation systems. Some of the variables that determine governance are: legitimacy (Linz, 1996), effectiveness and social support, all of which depend on specific social, institutional and historical contexts..

Colombia has a strength, regarding 'multi-level governance', because the country has the propensity to create 'systems' with the aim of contributing to the governance of different areas of action (such as STI, environment, competitiveness, etc.). These are a clear manifestation of the understanding of the complexity of public policy and action. It does not mean that these systems are entirely successful and operational, but certainly in the discussion spaces that have been created (Etzkowitz & Ranga, 2010), some public coordination and articulation happens, and in many cases also public-private articulation.

Objective

This paper describes the case of Colciencias, the Colombian agency in charge of research and innovation promotion and the National System of Science, Technology and Innovation (SNCTI by its acronym in Spanish). The objectives pursued are to identify the systemic failures of the SNCTI and if Colciencias has developed over the years good practices regarding the governance of the SNCTI, in particular, pointing to the opportunities, challenges and threats it faces taking into consideration the recent changes in institutions, policies, and funding of science, technology and innovation (STI).

¹ The Triple Helix model followers argue that universities are gaining again a major role in the advance of STI in developed countries.

Approach

At first we have a historical approach summarizing the results of the project "Colciencias between norms, legitimacy and practice: history and evolution of an organization of science and technology"², developed by researchers from the *Observatorio Colombiano de Ciencia y Tecnología*, *Universidad Nacional de Colombia* and *Universidad del Rosario*³.

Then, the current situation will be analyzed, looking at: i) the changes introduced by the Law 1286/2010 related to STI; and, ii) the new STI national fund created by the 10% of the royalties over non-renewable natural resources exploitation, moneys that are allocated to the departments and municipalities (sub-national politico-administrative subdivision in Colombia) according to their human development index, and whose execution will be done directly by them.

Expected results

In the research project we have found that the governance of the Colombian SNCTI has been based on: (i) building policy networks, as a mechanism of administration and intermediation; (ii) creating a social system that facilitates communication between actors, not increasing bureaucracy; and, (iii) facilitating public-private relationships. All these mechanisms rely on trust, transparency, legitimacy and participation of various actors in the administration of the system.

In the case of Colciencias some elements or mechanisms of governance were identified:

- Capability to think, design and implement policies. In the early years Colciencias was mainly a granting agency, developing a capability of STI policy-making due to a lack of another public agency in charge of it.
- International cooperation, especially the role played by multilateral agencies. In the early years the Organization of American States, the United Nations Educational Scientific and Cultural Organization (Unesco), and the International Development Research Centre of Canada were key; and more recently the Inter-American Development Bank and the World Bank.
- Legitimacy and social support, thanks to the international support and the openness and transparency of the organization. Several channels of communication with the communities have been deployed overtime.
- Efficacy, with little resources has done much. Colciencias' budget has been very low and unstable, despite of what it has been able to foster research capacities in universities and R&D centres.
- Access and diffusion of information has been central to the organization, creating various platforms for doing so. At present, Colciencias administers data bases of curriculum vitae of Colombian researchers, and research groups, as well as organizations.

The SNCTI developed in Colombia is very "complete" taking into consideration the number and variety of organizations that belong to it. However, in what it has failed, is in the design our own national endogenous model, according to the needs of the diverse actors. However, there is a lack of in-depth studies of the failures and the hollows of the system, which mean exploiting the analytical possibilities of the systems of innovation approach, overcoming the normative perspective.

² The project is funded by Colciencias, RC-058-2010.

³ The research project is the social and institutional history of Colciencias 1968-2008, especially studying the governance around three dimensions: norms, legitimacy and practice. The book product of the research is going to be published in 2013. I am the principal investigator of the project.

Due to the latest changes in the Colombian SCNTI, (the new STI law and the new royalty system), it will be difficult to make a balance of the effect of both in the SNCTI, but certainly it will be possible to identify challenges, threats and opportunities regarding the governance of the system, with the final objective of providing some policy recommendations to Colciencias.

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