RIO Country Report 2015: Brazil

Chapter:
4. Smart specialisation approaches

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2016
Abstract

RIO R&I International Country Reports analyse and assess the research and innovation system, including the main challenges, framework conditions, regional R&I systems, and international co-operation.
4. **Smart specialisation approaches**

4.1 **Governance and funding of regional R&I**

The Brazilian federated states are autonomous sub-national entities (self-government, self-legislation and self-collection) provided with own government and constitution which together form the Federative Republic of Brazil. The political and administrative organization of the Federative Republic of Brazil comprises the Union, the states, the Federal District and the municipalities.

As example of what happens at the level of the Federal Executive, the theme of science, technology and innovation (STI) is present within the State Executive, but out of the 26 states and Federal District, 20 define in their State Constitutions the percentage of tax revenue intended to fund for science and technology activities (S&T) and 6 establish this percentage in law or budget. Constitutionally, the highest percentage for the S&T is the from the State of Goiás (3%) and the lowest is the State of Pará (0.3%). Some State Constitutions define that resources are privately administered.

The National Council of State Research Foundations (Confap) is a non-profit organization whose goal better articulate the interests of state agencies for research. Officially established in 2006, the Council adds foundations of 25 states, including the Federal District.

The National Council of Secretaries for Science, Technology and Innovation Affairs (Consecti) is a private, non-profit organization founded in 2005 with the purpose of representing the Departments of Science, Technology and Innovation or related agencies in the States and the Federal District. The Consecti's mission is to coordinate and articulate the common interests of the State Departments of STI and contribute to the improvement of the National Policy of Science, Technology and Innovation. The majority of Brazilian States has a Secretariat of Science, Technology and Innovation. Though, in some States, the STI domain is under other Secretariats such as the economic development.

The establishment of Consecti in 2005 and Confap in 2006 as a private non-profit organizations enhance the important role of these institutions as interlocutors of the Ministry of Science, Technology and Innovation in the formulation and implementation of the National Policy for STI throughout Brazil.

A remarkable example of this dialogue took place in 2004, when the Confap and Consecti, then organized as forums, reached a consensus with the MCTIC, known as Letter of Salvador, related to the following assumptions: (i) regarding the STI actions, the preservation of the Federal Pact implies the implementation and consolidation of partnerships between States and the Union; and (ii) those partnerships should result in significant growth of resources for the area of STI throughout the national territory and constitute an instrument for gradual overcoming of regional inequalities. Based on these assumptions, criteria were adopted for definition of State counterparts to federal funding contributions, taking into consideration the disparities in gross domestic product and the scientific basis of the States.

The Letter of Salvador, also foresees hiring new agreements, especially as regards of the diversification of shares of national energy matrix; formation and establishment of advanced human resources; the technological development of Local Productive Arrangements; the establishment and consolidation of Technological Parks; the dissemination and popularization of science; the establishment of new business incubators and consolidation of existing ones; the generation of state indicators of Science and Technology.
4.2 Smart Specialisation approaches

In Brazil, the concept of smart specialisation is close to what is called Local Productive Arrangements (APLs). In other words they are: local innovation systems, local production systems, clusters, among others. These various denominations have in common the emphasis on the importance of local aspects of the development and competitiveness of enterprises.

More specifically, the Local Productive Arrangement is an agglomeration of companies, located in the same territory, which present productive specialisation and maintain links of coordination, interaction, cooperation and learning from each other and with other stakeholders, such as government, business associations as well as credit, education and research institutions.

In the 50s and 60s, there were specific policies aimed at encouraging the development of such arrangements in less developed State capitals. These agglomerations usually attract industries from all sectors in pursuit of tax incentives, consumer markets, good logistics conditions, good access to services and infrastructure, skilled labour, among others. These policies were related at the national level with industrial policies that encouraged rapid industrialization, mainly through import-substitution policies and support for sectors with export potential.

Thus, from the national point of view, these policies were designed mainly to import-substitution and increased external competitiveness of certain industrial chains. From a regional point of view, these policies were intended primarily to develop backward regions that had great competitive potential by having good sources of inputs and other logistical advantages.

The formalization concretely occurred from 1999 under the Ministry of Science and Technology (MCT). In partnership with the States of the Federation clusters in which were supported cooperation projects between research institutes and companies have been identified, aiming to improve products and processes. During the period, it was also included for the first time an action on Local Productive Arrangements (APLs) in the Multi-Year Government Plan (PPA 2000-2003).

In the first half of 2003 was created the interministerial group of APLs, to integrate existing and implementation actions. The group was coordinated by the Ministry of Development, Industry and Trade (MDIC) and had the participation of 21 agencies working at the federal level. This group was formalized in August 2004, with the name of the Permanent Working Group for APLs (GTP), going to involve these and other governmental and non-governmental actors. The first goal was to coordinate, articulate and integrate the different actors, policies and promotion of APLs, at the federal level, carried out by public and private bodies.

In the Multi-Year Plan (PPA) of the Brazilian federal government (2004-2007 and 2008-2011) set out the APLs as axes of industrial policy and regional development. In the PPA 2016-2019, there is a recommendation to support the Local Productive Arrangements for the consolidation of national production chains. Another line of action is linked to the National Integration Routes seeking joint production chains and strengthening of Local Productive Arrangements (APLs), aiming at technological improvement and increased sales of goods produced in these spaces.

In a Local Productive Arrangement two different types of cooperation are identified. The first is the productive cooperation, in order to obtain economies of scale and scope, and improving quality and productivity indexes. The second is innovative cooperation, which results in decreased risk, cost, time, and especially in interactive learning, fostering the innovative potential of Local Productive Arrangement.

There are three types of APLs according to their stage of development:
Incipient arrangements: disarticulated, lacking legitimate leaders. Lack of integration between companies, public authorities and the private sector and a broader vision for the business. There are no research centres or professional training that could help develop and implement new production processes.

Arrangements in development: important for local development, for attracting new businesses and encourage entrepreneurs to invest in competitiveness as a condition for its survival. There is a concern about the other links in the production chain, with a direct impact on the quality of their products. Leaders are more empowered and legitimized by organizing themselves in unions, defending regional interests rather than individuals. They present an incipient integration between government and business.

Developed arrangements: productive arrangements whose interdependence, articulation and consistent links result in interaction, cooperation and learning, enabling product, organizational and processes innovation and generating greater business competitiveness and social empowerment.

Main supporting institutions to APLs:

- The Research Network Systems of Local Productive Arrangements (RedeSist)\(^1\) is an interdisciplinary research network, formalized since 1997, based in the Economics Institute of the Federal University of Rio de Janeiro, and with the participation of several universities and research institutes in Brazil, and maintains partnerships with other institutions in Latin America, Europe and Asia. Among its activities are: research; postgraduate and specialisation courses; coordination and debate among institutions and experts from Brazil, Mercosur, Latin America and other parts of the world.

- The National Research Council (CNPq) also supports the development of APLs through public calls for proposals to support training projects, training and technological research and innovation.

- FINEP also objectively supports the development of APLs is through public calls for funding of research projects, innovation, modernization.

The articulation of SMEs with State character supporting institutions such as Brazil's Support Service for Micro and Small Enterprises (Sebrae), the National Industry Service (Senai), Technology Research Institutes (IPTs) and the Brazilian Agricultural Research Corporation (Embrapa) is relevant and enables clustered companies to have access to infrastructures such as: i) support the improvement of quality (standardization bodies, testing laboratories and quality control and research centres); ii) training of human resources (training and professional specialisation); and iii) dissemination of management techniques and technologies (courses and lectures directed to the development of intellectual capital, access to technical information, production and market).

### 4.3 Regional linkages to economic competitiveness

In such a huge country the decline of regional inequalities is a challenge since all territory must be engaged in the efforts of promoting the national development process.

\(^1\) [http://www.redesist.ie.ufrj.br/](http://www.redesist.ie.ufrj.br/)
in order to enhance regional diversity and to overcome the low economic dynamism. Production systems, therefore, involve many actors with strong relationships in pursuit of common goals that as a result could contribute to the improvement of the indicators of income, employment and quality of life. In addition, they can provide better regional development to all the territory.

It is possible to say that depending on the development stage of the arrangement the competitiveness gain can be noticed. For example in the arrangements in development, an intermediate phase, some assessments show that these APLs become more competitive in the national market. As regard of the developed arrangements, it is also detected a more competitive behaviour and possibilities even internationally.

As a local example, a series of industrial clusters (Arranjos Produtivos Locais) for small and medium enterprises have received public support in the state of São Paulo since 2004. These are co-ordinated by the Federation of Industries of S. Paulo State and the local SME promotion agency, with financing from the Inter-American Development Bank (IDB). Empirical evidence suggests that these policies have increased exports by participant firms, which may be the result of productivity improvements, but no evidence exists on how these improvements can be compared to the cost of the programme.

### 4.4 Assessment

In the set of productive development policies, APLs assume an auxiliary function to various initiatives focusing on different industries or production systems. Among the systems for which local production arrangements represent an important role include some considered knowledge-intensive (aviation industry), large-scale (shipbuilding) and traditional (textiles and clothing, leather, footwear and artifacts; wood and furniture, agribusiness).

The local systemic perspective is thus, an opportunity to promote greater coordination within production networks and to promote processes of generation and dissemination of knowledge and technology. In this dimension, the APLs are also focused on STI policy programmes.

The wide range of studies conducted by RedeSist highlighted as one of the main obstacles / challenges: access to credit. This is a key factor for companies in APLs can expand their productive and innovative capabilities, taking advantage of opportunities and enhancing their competitiveness. This is especially relevant in the case of micro and small businesses and in the case of innovative projects with less certainty about the results.

Under the Sector Dialogue Support Facility 8th call there is a supported action between DG Regio and the Brazilian ministry of Integration with the aim to define the a technical cooperation pilot project for implementation of a "regional innovation system" (SRI) in the state of Pernambuco, in northeastern Brazil, whose vectors are regional development, technology and innovation in support of increased local productivity and strengthening competitiveness of priority areas of Brazilian and European regional policy.