Global Practice in Incubation
Policy Development and Implementation

Brazil Incubation
Country Case Study
Global Good Practice in Incubation Policy Development and Implementation

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1. **INTRODUCTION**

The study was conducted using desk research and in-country visits to meet some of the key players involved in incubator development, including government officials and incubators manager.

With a well-developed incubation ecosystem and over 400 incubators Brazil has one of the most dynamic and successful incubation movements in Latin America and the developing world. Brazilian incubation is very much a bottom up process with universities acting as a key catalyst and facilitator, ensuring an emphasis on innovation while adapting incubator models to suit indigenous needs. Multiple levels of government and a diverse coalition of partners from various spheres in the main population centres and cities are involved in supporting incubators. This has ensured widespread adoption of the concept but not yet full national coverage. The government has clearly made incubators a policy priority as demonstrated by the range of initiatives to support incubators, incubatees, innovation and enterprise development alike. The policy emphasis in Brazil focuses on the “softer” services such as project funding and networking, relative to the actual provision of physical space and management of hard incubation infrastructure. The latter is primarily undertaken by the universities which supply the physical space and staff to manage incubators.

2. **OBJECTIVES AND BROADER STRATEGIC PUBLIC POLICY FRAMEWORK OF INCUBATION ACTIVITIES**

2.1 **Characteristics and Obstacles of the Environment**

Brazil ranks 8th in the world economy with a population of 190 million of people, a dynamic economy and a per capita income of US$ 8,310 pro capita, the country is also recognised as a fast growing market being ranked as the forth business incubation market.

The latest GEM (Global Entrepreneurship Monitor) country report for Brazil (Empreendedorismo no Brasil, 2007, http://www.gemconsortium.org/about.aspx? page=pub_gem_global_report) indicates that Brazil is still one of the world’s most entrepreneurial countries, with a TEA (early-stage entrepreneurial activities) index of 12.7%, which means that almost 13 out of 100 active people are somehow involved in a start-up business.

This index has been rather stable since it was first measured by GEM in 2001 and, although other countries developed faster in the early 2000’s, Brazil still ranks 9th among the countries observed by GEM with respect to the entrepreneurial attitude of its people, mainly due to the fact that one out of five workers is an early stage entrepreneur or an established owner.

As for barriers in starting a business, the GEM reports consistently outline that the major difficulties reported by entrepreneurs are related to financial constraints and bureaucracy.

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1 According to Ary Płonski, president of ANPROTEC, the Brazilian movement of incubators of innovative enterprises has developed in the past decade at an average ratio of 25% per year.

2 IPEADATA

3 Approaches to Business Incubation: A Comparative Study of the United States, China and Brazil - Aruna Chandra - Indiana State University - School of Business - November 2007.
Financial constraints are a strong barrier to start-ups. According to GEM, in 2007 66% of entrepreneurs started their businesses with less than R$ 10,000.00 and 30% of them with less than R$ 2,000.00. Only 14% of new enterprises are investing more than R$ 30,000.00 to start up. Moreover, Brazil has the second lowest rate of informal investors (0.9%) measured by GEM in 2009. Most informal investors (65% of total) are close relatives. 77% of informal investors invested less than R$ 10,000.00.

As for bureaucratic interference, one incubator manager in Rio reported:

“Brazil has the 3rd or 4th highest tax rates in the world both for individuals and corporations, lower only than the Nordic countries, but without their welfare system. If you want to open a company in New York, it would take 2 days, but in Brazil just to open a company will take 6 months. Registration is a long and nightmarish process, since you have to deal with the bureaucracy and learn how to navigate it.”

Similarly, a recent survey of Brazil in The Economist points out that the average firm in Brazil takes 2,600 hours to process its taxes and opening a business requires 17 procedures and 152 days, putting Brazil in 115th place for the ease of doing business in a league of 175 countries (The Economist, 2007).

The Doing Business survey 2010 ranks Brazil 129th out of 183 countries for the overall ease of doing business, see http://www.doingbusiness.org/ExploreEconomies/?economyid=2. One of the most critical indicators is the number of procedures for the start-up of a business, which in Brazil are 16 against an average of 9.5 in Latin America and Caribbean and 5.7 in the OECD countries.

A third barrier mentioned in the GEM report differs according to the stage of businesses. Among those at an early-stage, difficult access to physical infrastructure is acutely felt. This could indicate a lack of awareness of the incubator as a support mechanism despite the existence of nearly 400 incubators in the country. As for established owners the main issue is to conquer new customers.

While the costs of forming and running enterprises are clearly discouraging to entrepreneurs, there are initiatives aimed at improving the business environment.

To facilitate the process of new business creation, the Brazilian legislature has passed laws, such as FACIL (The Easy One), which simplifies laws to open and register a business and SIMPLES (The Simple One) – a single tax rate for small business to reduce the tax burden on small businesses under the Statute of Micro and Small Enterprises (SEBRAE, 2007).

Academics have further contributed to the spread of a culture of entrepreneurship by developing entrepreneurial courses that have resulted in increasing interest and demand.

Recently Brazil has experienced extensive changes in its institutional and financial infrastructures, especially in terms of market development by opening up to global competition, and deregulating many of its markets thereby reducing the predominant role of the State. Chandra (2007) states however, that the retreat of the state could potentially lead to a variety of market failures in a context where financial intermediaries, such as venture capitalists, banks and stock markets are either weak, or not fully evolved. This increases the transaction costs of doing
business in general, while creating unique hardships for new businesses that are the most vulnerable to these market failures. In the experience of SEBRAE (Brazilian Micro and Small Business Support Service) micro and small enterprises in Brazil have a marked informality with ten million informal enterprises⁴ and five million formal micro and small enterprises⁴ (2009). They have a high mortality rate with failure experienced by 49.4% in two years, 56.4% in three years and 59.9% in four years. This is compounded by low competitiveness where only 2.4% of the Brazilian industrial firms export.

2.2 Innovation Culture and Support

The launch in 2005 of a regulatory framework for business development and innovation was a policy watershed indicating a sea change in innovation policy. Passing the “Positive Law” modified and simplified regulatory frameworks and fiscal incentives (i.e. 160% tax exemption on RD&I expenditures) and added/amended legislation that allowed the creation of complementary mechanisms to implement some of the main provisions of the Innovation Law.

The new Innovation Law passed in 2005 legalises the act of a researcher at a federal university setting up a company in his/her name. The most innovative element of the law is the possibility of using money from the government to support companies. Under the law FINEP (Financing Agency for Projects and Studies), a government agency, is authorized to provide federal grants to companies for specific research. These research grants aim to foster innovation and are probably the most innovative aspect of the law.

In the past few years there has been a dramatic increase in the volume of resources and mix of policies and programmes to support innovation transfer to and innovation within SMEs. The current federal programmes⁵ to support innovation that can be accessed include:

⁵ On top of these federal programmes there are many state support programmes and some municipal ones that are also
### Policy Area

**Support for creation and growth of new technology-based firms.**

- Inovar Project (Inovar);
- Seed Capital Project (Inovar Semente);
- Technological Incubator as Lever of Regional Development (ITPDR);
- Program for Support of Technological Parks and Incubators (PNI);
- Innovation Law;
- Program for Promotion of Research and Technological Research
- Program for Innovation Human Resources;
- Law of Fiscal Incentives and Regulatory Framework for Technological Innovation – Positive Law (Lei do Bem);
- Programme for Cooperation of Enterprises with S&T Institutions / universities (COOPERA);
- Zero Interest Rate Programme (Juro Zero);
- Program of Economic Subsidy for Innovation in Enterprises (Subvenção Econômica);
- Program to Support (SME) Enterprise Research (Pappe-Subvenção)
- Seed Capital Program (Criatec)

**Expand the size, scale and scope of innovation effort by existing firms**

- Pro-Innovation Programme (Pro-Inovação);
- Innovation Law;
- Law of Fiscal Incentives and Regulatory Framework for Technological Innovation – Positive Law (Lei do Bem);
- Innovation Development Programme (PDI);
- Production Innovation Program (PIP);
- Programme for Cooperation of Enterprises with S&T Institutions / universities (COOPERA);
- Technological Fund (FUNTEC);
- Program of Economic Subsidy for Innovation in Enterprises (Subvenção Econômica);
- Program for Hiring of Masters and Doctors in Enterprise.

**Extend, strengthen and consolidate geographic decentralisation and sector priority focus into innovation policy while refining and enhancing incentives for the various partners of the innovation chain.**

- Seed Capital Project (Inovar Semente);
- Technological Incubator as Lever of Regional Development (ITPDR);
- Program for Support of Technological Parks and Incubators (PNI);
- Programme for Cooperation of Enterprises with S&T Institutions / universities (COOPERA);
- Zero Interest Rate Programme (Juro Zero);
- Program to Support (SME) Enterprise Research (Pappe-Subvenção);
- Program for Hiring of Masters and Doctors in Enterprise.

The above programs indicate the diversity and extent of innovation support in Brazil. The diverse mechanisms and priorities set in the various innovation support programs have generated high expectations on the part of enterprises, particularly micro and small enterprises. However, the lack of specific detailed information on each program’s purpose and the lack of published clear rules governing applications and program management have also generated some confusion amongst potential enterprises.
These initial implementation problems led to the design and launch of the Pro-Inova programme. Pro-Inova was conceived to raise awareness among enterprises about the benefits of innovation and about opportunities available to promote innovation.

The Pro-Inova program foresees dissemination and awareness raising initiatives as well as workshops and seminars to divulge information on the innovation infrastructure in Brazil and the innovation tools available. It is managed through the Forum Pro-Inova which involves all main promoting and funding institutions in the field of innovation and enterprise support, thus improving coordination among initiatives as well as ensuring that the information provided is accurate and complete. The next step will be to design and structure initiatives that cater to the staged growth needs of technology based small firms and start-ups and in particular their non-financial managerial and other expertise needs.

2.3 **Science, Technology and Innovation Action Plan 2007-2010**

The STI Action Plan (*Plano de Ação 2007-2010: Ciência, Tecnologia e Inovação para o Desenvolvimento Nacional*) foresees that during the plan period R$ 41 billion (about 20 billion US$) will be invested across all S&T areas. Funds will come mainly from the Ministry of Science and Technology’s (MCT) own budget, but other financial resources from other ministries will also be important sources of funding for the Plan, such as the ministries of Mining and Energy (through the giant state oil and gas company Petrobrás), Agriculture (through its Agricultural Research Enterprise EMBRAPA), Defence (through its network of research institutes), Education (through its agency for support of graduate education CAPES) and Health (through its health research institution FIOCRUZ).

The four strategic priorities of the STI Action Plan are defined as:

1- Expansion and Consolidation of the ST&I Nacional System (human resources qualification and training, R&D laboratory infrastructure, international cooperation)
2- Promotion of Technological Innovation in Enterprises
3- R&D&I in Strategic Areas (biotechnology, health, nanotechnology, ICT, space, nuclear energy, defence, renewable energy and biofuels, agriculture, biodiversity)
4- ST&I for Social Development

One major challenge was cited by the Ministry of Science and Technology at the time of the plan’s announcement: to make Brazilian enterprises to do more research, development and innovation.  

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6 “Comparing Brazilian data with those from other BRICS countries (Brazil, Russia, India, China and South Africa) and OECD member countries, several interesting conclusions can be drawn from the article. The first is R&D’s low intensity in Brazil: 1.02% in 2006, compared with the OECD average of 2.26%. China, which competes for attraction of FDI with Brazil, expanded its R&D intensity from 0.93%, in 2001, to 1.42%, in 2006, and its goal is to reach 2% of GDP in 2010. Brazil’s goal established in the GAP for science, technology and innovation is 1.5%. The report cites some of the obstacles encountered by companies to generate innovation ... (cost, economic risk and shortage of qualified personnel) and underscores that the enactment of the Innovation Law should help resolve these problems and consequently expand investments in innovative activities”. Innovation in Brazil: Public Policies and Business Strategies - Ricardo Sennes, July 2009
The plan's main priorities are enlargement of business innovation and consolidation of the national STI system. In order to meet these, the plan has established 4 strategic priorities composed of 21 action lines and 88 programmes and policy initiatives. Furthermore, the plan will integrate its actions with the industrial policy and the corresponding development plans of the health, education and agriculture areas.

2.4 **The PRIME Initiative**

The program PRIME (*Primeira Empresa Inovadora*), launched in 2009, represents the most recent milestone in the path towards increased support for innovative SMEs. PRIME will distribute as much as R$ 1.3 billion in the next four years to foster the emergence of micro and small enterprises with a strong focus on innovation. The average financing for each enterprise should be in the region of R$ 240,000.

Seventeen incubators\(^7\) have been selected to facilitate the implementation of the programme, to promote the participation by eligible enterprises and to select the most promising projects. PRIME is the result of a synergy between the Ministry of Science and Technology and FINEP. It is targeted at some 5,000 SMEs that have great potential for growth with a clear focus on technology, research and innovation.

The first call for projects, published in March 2009, has already proved successful, both for the quality and quantity of applications received. Never has innovation received such bold and well-structured support in Brazil. PRIME is therefore expected to become another watershed in the national support policy for entrepreneurship and innovation, and it is going to be implemented at a moment when there is a special need for more innovation and more investments for an accelerated exit from the crisis.

2.5 **Business Incubation Policy Framework**

The Brazilian incubator movement did not start as a top-down process driven by government mandate; it was very much a bottom-up product of multi-polar initiatives by key individuals primarily in academia as well as in industry and government.

During the military era, innovation happened within a hierarchical, centrally planned system by central government, which directed resources to selected industries related to national security. At that time, the private sector primarily sought technologies from foreign sources in lieu of home-grown R&D (*Coutinho and Ferraz 1995*). Incubators emerged with the end of the military regime in the mid 1980s as a movement that included individuals from several sectors of society, particularly from universities, where there was a strong interest in transferring innovation to new businesses.

By 1986, following the collapse of the military regime in 1985, the National Research Council (CNPq) had already created a few technology parks and two incubators, one in Sao Paulo with the support of the state government and one with the Federal University of Santa Catarina.

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\(^7\) Originally eighteen were selected, but one did not sign the contractual agreement
But most of them were not functioning properly because of the top-down approach that was alienating the collaboration of local players. Since then, having learnt the lesson, the nexus of innovation shifted from a top-down approach to a bottom-up grass roots approach, with an incubator often playing a key role in facilitating new venture creation at a local or regional level (Etzkowitz et al 2005).

The coalition of partners that supported incubators (and incubatees specifically) continuously changed over time, adapting to specific needs and the business environment. These coalitions enabled more effective co-ordination of the plethora of support instruments and contributed to overcome the bottlenecks in business development and innovation that existed within the business environment of Brazil. Examples of such alliances include the partnerships between public universities and research organisations (ROs) as the basis for cooperation and support in strategic alliances with firms that demonstrate flexibility in infrastructure and integration with new partners. Such coalitions help the partners to make sense of the wide range of incentives, and mitigate the problems of public bureaucratic inflexibility, and the shortage of investment finance that challenge business formation and growth in Brazil.

A major player in the incubation support system has been, and still is, FINEP ( Financing Agency for Projects & Studies - Financiadora de Estudos e Projetos), also known at times as the Brazilian Innovation Agency. FINEP is a publicly owned company subordinated to the Ministry of Science and Technology, founded in 1967 with the purpose of financing scientific and technological research and graduate courses in Brazilian universities and research institutions, as well as research and development in companies. In 1971, FINEP became the Executive Secretary of the newly created Fundo Nacional de Desenvolvimento Científico e Tecnológico - FNDCT (Funding for Scientific and Technological Development).

Since its foundation, FINEP has had a double role: it provides grants to non-profit institutions, such as universities and research centres, and it lends money to companies at preferential conditions. FINEP has encouraged intense mobilisation in scientific and business circles, funding the implementation of new research groups, the creation of specific programs, the growth of science and technology infrastructure, and the institutional consolidation of postgraduate activities. It has also stimulated the increase in supply and demand for technology, by mobilising universities, research centres, consulting firms and contractors of services, products, and processes.

In recent years, FNDCT was reinvigorated with new sources of funding from the so-called Science and Technology Sectorial Funds. The ability to finance the entire Science, Technology, and Innovation – S,T&I system – by combining reimbursable and non-reimbursable funds, as well as fiscal incentives, has afforded FINEP a great capacity for inducing activities aimed at increasing the Brazilian manufacturing industry’s competitive edge and its innovation capacity.

Most importantly to our discussion, in 1999 FINEP was assigned the task of designing the first National Incubation Support Programme (PNI) to support incubation creation and expand initiatives resulting from the bottom-up process and the pivotal role of universities. The objective was to further promote the growth of innovative enterprises that could boost the competitiveness of Brazilian economy.
The PNI was conceived to coordinate and consolidate existing efforts and policies in supporting incubation in order to develop fruitful synergies among institutions involved in incubator establishment and management. As a result, it was decided to have the program implemented by a wide coalition of government, industry and incubator associations including the Ministry of Science and Technology, the CNPq (National Council for Scientific and Technological Development), FINEP itself, SEBRAE (Brazilian Micro and Small Business Support Service) and ANPROTEC (National Association of Incubators and Science Parks).

Since its early growth, the incubation movement has diversified to incorporate different public policies of business creation at different government levels or other specific characteristics. Often incubators have also been adjusted to reflect other policy priorities, like tackling unemployment, supporting the development of particular redevelopment areas, target groups (i.e. women) and cultural activities (art incubation).

Moreover, a wide range of incubation initiatives have been promoted by individual states and local authorities as a result of local and regional strategies. As an example, the case of the city of Santa Rita do Sapucai in the state of MG can be cited. The incubator there (part of an R&D institution called INATEL (which has been in existence for more than 40 years), has been enormously important, leading and shaping rapid economic development of the city/region. (Abranches, 2008)

As the concept has become more widely known the funding possibilities have similarly developed into multiple government and non-government sources. For example, SEBRAE (Brazilian Micro and Small Business Support Service) is a non-profit public-private entity managing several programs supporting incubator and small business development, which is financed through a mix of funds from government payroll taxes and private sources.

The business incubation landscape in Brazil is now varied and complex with a plethora of incubation models, some of which have evolved in response to specific local needs. Regional and national incubator networks are highly evolved and play a significant role in influencing government policy directed at the growth of business incubators. A multitude of government organisations at the federal, state and local levels are involved in assisting incubation within the support to small business development efforts.

Presently, there are nearly 400 business incubators in Brazil.

Innovation and technology development is still the main feature of the movement as can be seen in the following classification, where technological characteristics refers to incubators hosting companies with technology focus and traditional incubators are connected to traditional sectors, while incubators with other characteristics belong to the social and cultural typology:
As the concept has become better known and support mechanisms have grown the number of incubators in Brazil has increased rapidly.

2009 is the year that actually marks the start of the new federal policy for incubation, known as the new PNI - National Programme to support Incubators and Technology Parks. The programme launched by the Ministry of Science and Technology foresees the establishment of new incubators and the enhancement of existing ones as well as the development of technology parks in different regions of the country. The rationale of the programme lies in the acknowledgement of the capacity of incubators to improve the survival rate of SMEs and the willingness to further strengthen the SMEs competitiveness through the establishment of an efficient innovation and technology transfer infrastructure.

The implementation strategy for this program includes an improved coordination among key institutions, better harmonisation of existing policies in the field of SME support and innovation and technology transfer, a wide awareness campaign to build up the capacities of stakeholders.
involved, monitoring and evaluation of program activities, dissemination of relevant information and of results achieved, financing instruments for specific initiatives (feasibility studies, setting-up of new incubators, creation of technology parks, capacity building activities, R&D projects, management skills improvement, networking, etc).

The PNI is managed by a Steering Committee whose task is to monitor the implementation of the program and continuously improve its strategy. All main institutions involved in SME support, incubation and research activities are represented in the PNI Steering Committee, including:

- Secretaria de Desenvolvimento Tecnológico e Inovação [Secretariat for Technology Development and Innovation] - SETEC/ MCT (Coordinating Body);
- Financiadora de Estudos e Projetos [Financing Agency for Studies and Projects] - FINEP/ MCT;
- Conselho Nacional de Desenvolvimento Científico e Tecnológico [National Council for S&T Development] - CNPq/ MCT;
- Banco Nacional de Desenvolvimento Econômico e Social [National Bank for Economic and Social Development] - BNDES;
- Serviço Brasileiro de Apoio às Micro e Pequenas Empresas [Brazilian Service for SME Support] - SEBRAE;
- Confederação Nacional da Indústria [National Confederation of Industry] - CNI;
- Fórum Nacional de Secretários e Dirigentes Municipais de Ciência, Tecnologia e Inovação [Forum of Municipal Secretaries and Executive Officers in charge of S&T and Innovation].

Obviously PNI is strictly interlinked with, and actually descends from the STI Action Plan 2007-2010 of the Ministry of Sciences and Technology, particularly from its Action Line No. 6 – Incentive to the creation and consolidation of technology-based enterprises, which is divided into three specific actions:

6.1. PNI - National Programme to support Incubators and Technology Parks (of which PRIME is a part)
6.2. INOVAR – support of the creation and consolidation of the venture capital industry in Brazil
6.3. Financing resources to stimulate innovation development in technology-focused enterprises
3. INSTITUTIONAL ENVIRONMENT

As mentioned previously government, universities and industry work together to support business incubation efforts in Brazil. Along with the triple helix key institutions, there are a number of other organisations involved in the incubation process, among which the three most relevant are: FINEP, SEBRAE and ANPROTEC, whose short presentations are included in the attachments to this report.

3.1 The Triple Helix

Government

The two major objectives of the government, with reference to the incubation policy, are technology development and social development (ANPROTEC interview, Brasilia, 2006).

The role of the federal government has essentially become to develop the technical infrastructure, policy framework and initial finance, to help catalyse the venture capital creation process with a specific focus on innovative companies in the sectors that are considered strategically important for the country. This has resulted firstly in the launch of the National Incubation support programme (PNI) in 1999 and more recently in the National Programme to support Incubators and Technology Parks (also known as PNI).

Along with federal initiatives, individual states and local authorities at municipal level support incubation financially as part of their development strategies.

Private Sector

A major feature of incubation in Brazil is the degree of involvement of the private sector – particularly through the business associations – in the consortiums establishing incubators. There are several examples where private sector associations are active partners rather than passive supporters, as is often found in other countries where the public institutions are often the only true engine of the incubation process.

There are a few good practices in Brazil where the private sector assists incubators through mentoring, in-kind support, ‘patrons club’ membership subscriptions, and sub-contracts with incubatees or with the incubator as a whole. Some business associations have even run incubators directly in the past, as for instance the Federation of Industries of the State of Sao Paulo (FIESP) that had founded and managed several incubators in the region, but has completely and abruptly abandoned any involvement in the incubation industry since October 2007.

In other cases some incubators attract resources from large corporations that invest as part of wider social responsibility expenditure, or to link their activities with important innovation developments.
Some of the major national corporations, as for example Petrobras (which however is a state-controlled public company operating under private rules), support focused incubators, or their incubatees directly, that operate in sectors related to their technology cluster. Recently Petrobras has even announced its intention to invest large amounts of money in the establishment of a technology park specialising in the oil and gas industry. This initiative aims to create a thematic network with some of the major universities of the country (Federal University of Rio de Janeiro – UFRJ, Schlumberger, and others) to promote research and innovation in the energy sector, high-tech spin-offs, entrepreneurship among students and points of excellence for the transfer of technology into enterprise sector.

Academia

Historically, universities have played a pivotal role in the creation of incubators in Brazil. Universities typically support incubators by providing buildings, staff and the use of laboratories.

The technical universities and technological research institutes constitute the knowledge base for many incubators and in the supply of formative technical skills and innovations. Professional networking and community involvement supplied by these institutions also provides the underpinning support for innovative incubators. (Lalkaka)

Universities and incubators in Rio de Janeiro and São Paulo are active in promoting connections between promising ventures and angel investors, who typically make small amounts of risk capital available for early-stage ventures. The Genesis incubator in Rio de Janeiro works with the Gavea Angel Network, named after a wealthy neighbourhood in Rio that adjoins a favela. Gavea Angels are able to identify promising micro-businesses from the social incubator located in Genesis to invest their time, resources and expertise (Genesis interview, Rio de Janeiro, 2006)\(^8\).

3.2. Incubators’ Associations and Networks

A key role in the incubation movement is also played by the incubator associations and networks.

Many organisations and consultants are involved in these networks, assisting thousands of private entrepreneurs and small businesses directly or through structured programmes, technology centres or incubators. Under the umbrella of ANPROTEC (the National Associations of Incubators and Science Parks, founded in 1987) Brazil has networks of business incubators that serve multiple roles at different levels. Incubators facilitate networking among their clients as well as clients of other incubators through formal and informal networks that allow for resource and knowledge transfers. ANPROTEC plays a disseminating and linking role by encouraging participation from universities and research institutes while persuading different entities to support incubators.

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\(^8\) Chandra (2009)
ANPROTEC offers training courses, organises meetings that facilitate knowledge exchange and lobbies for public support. It encouraged incubators in each State to create regional networks (such as RMI – the Network of Incubators in Mina Gerais), gain university support and help voice incubator concerns to policy makers.

SEBRAE, which utilises a network of over 4,000 employees and 9,000 consultants, is associated with 400 incubators, Technology and Innovation Centres, financial institutions and many other enterprise support organisations. SEBRAE could thus develop a range of “technology support” tools, products and services for small businesses, which now represent a model for other developing countries that want to design effective technology and incubation support interventions.

There are also other organisations specialising in networking between different players, bringing together complementary actors that collectively provide solutions. The REDETEC (http://redetec.org.b). Technology Network is of special interest as it is a highly structured networking (match-making) organisation that connects the Rio de Janeiro Network of Incubators with 46 among Universities Research Centres and Development Agencies in the region.

3.3 Integration between Central and Regional Level

At a macro-level, interaction and synergy amongst university-industry-government, along with strong incubation associations, helped catalyse the growth of incubators and resulted in several innovative and timely initiatives from different levels of government to facilitate an enabling environment for new business creation. At national level we can mention the Innovation Law passed in 2005, which was the result of collaboration between all the stakeholders.

An example at state level is the CIETEC incubator created in 1998 and housed in IPEN, the Nuclear and Energy Research Institute, although it cannot be really representative of other smaller initiatives because of its size (121 incubators and 86 graduated firms). Another example is CIETEC (http://www.cietec.org.br), a technology based incubator centre that was created as a partnership between the MCT (Ministry of Science and Technology), SCTDE (Science, Technology and Economic Development Secretary of the State of São Paulo), USP (University of São Paulo), IPEN (Nuclear and Energy Research Institute), IPT (Institute of Technological Research) and SEBRAE (Brazilian Support Service for Micro and Small Business) along with support from CNPq (National Council for Scientific and Technological Development), FAPESP (Research Support Foundation of the State of São Paulo) and FINEP (Financing Agency for Projects and Studies).

Brazil has thus evolved with an integrated approach to project development, combining stakeholders as required.

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9 17 regional incubators networks currently exist.
Chandra\textsuperscript{10} indicates that the interaction between the incubators and elements of the triple helix could be responsible for some of the innovative approaches developed by some incubators for incubating new firms. A technology incubator in Belo Horizonte described their approach as demand-oriented incubation, which is aimed at creating companies based on cluster needs. Qualified professionals with industry experience are used to conduct market analysis along with expert panels that identify products based on the market analysis of industry need. Technological entrepreneurs were then assisted to establish enterprises to deliver these products with the incubator providing technological advice by linking to research bodies and providing access to finance through promotion to sources of funds i.e. venture capital. A successful example of the approach is given for the development of RFID (Radio Frequency Identification) software. (Chandra, 2007).

4. INCUBATION MODELS\textsuperscript{11}

4.1 PNI Official Classification

Brazil offers a plurality of incubation models, which have evolved in response to local needs and are very much context sensitive. The new PNI makes reference to a rather old and extremely simplified classification of incubators into: (i) traditional; (ii) technology-based; (iii) others (i.e. social and cultural) and (iv) mixed. This classification has scarce scientific significance, but is enlightens the reader to the different policy objectives that are pursued in Brazil through the incubation movement.

**Traditional incubators.** Traditional incubators are those created to support and promote new firms in traditional industry sectors of a specific region (e.g. shoes, furniture, fashion, mechanics, etc). Usually, the traditional incubation process has been aimed at addressing high rates of unemployment with the goal of regional and local development but was also conceived to introduce innovative approaches in products, processes and services within traditional sectors. Traditional incubators were launched by partnerships including private sector associations (e.g. FIESP in Sao Paulo) and various levels of government, including municipal governments.

**Technology incubators.** Technology-focused incubators were primarily associated with and supported by the universities, federal/state governments and related industries, with students and academic staff as key founders of businesses. Technology incubators are further specialised by area, such as biotechnology (Biominas) or software (FUMSOFT). Some of these technology incubators are funded by private venture capital funds.

**Social incubators.** Social incubators were designed to face the unemployment problems resulting from the opening to foreign competition after 1990. They were promoted and funded by universities and state and municipal governments with the main goal of creating jobs and growth through the creation of an entrepreneurial environment in economically disadvantaged communities. For instance the Technological Incubator of Popular Cooperatives affiliated with the Federal University of Rio de Janiero supports the Vegetable Oil Recycling Programme (PROVE) for the production of biodiesel with the reuse of vegetable oil. Entrepreneurs involved are supported with counselling and advice on how to run their businesses within PROVE.

\textsuperscript{10} ANPROTEC Interview by Chandra, 2007

\textsuperscript{11} Business Incubation Brazil: creating an environment for new ventures—Chandra (2009)
Social Incubators represent a peculiarity of Brazil that can be considered by other countries that want to combat poverty and social unease through innovative models for socio-economic inclusion of marginalized communities. They not only incubate profitable organizations, such as companies and cooperatives, but also non-profitable organizations, together with their own civil society and its social movements. Their objective is set in the longer-term: to form entrepreneurs and innovative enterprises based on the local identity of a community and using social technology. The concept of “Community Incubation” is central to the discourse of Social Incubators, as they aim at creating the conditions for endogenous development and a more pro-active attitude in disadvantaged groups.

**Cultural incubators.** Love of music, arts, sculpture, photography, cinema among others has resulted in cultural incubation. Universities and state and federal government are oriented to promote local culture and artistic heritage and support entrepreneurship in these sectors through incubation. University of Brasilia and one of the Genesis incubators in Rio de Janeiro belong to the cultural model.

**Mixed Incubators.** Mixed incubators include enterprises from both traditionally and technologically focused sectors and/or have characteristics of two or more of the incubator types described above. As an example, some of the larger incubators such as the Genesis Institute of PUC-Rio, an incubator affiliated with the Catholic University of Rio de Janeiro, is a multi-sector incubator that houses technology, cultural and social incubators under one umbrella brand.

### 4.2 The Service Mix

The service mix offered by incubators varies, depending on the incubator’s sponsorship, government involvement and strategic focus. However, there is increasing recognition in the literature that the incubator is much more than a provider of space and administrative support services. The incubator is viewed as a network of individuals and organisations, including the incubator managers and support staff, incubatee firms and employees, local universities, industry cluster contacts, professional service providers (accountants, lawyers, consultants, marketing specialists), sources of government grants and loan finance, venture capitalists and business angel investors.

Increasingly, the importance of networking over the provision of physical space is being seen as a key determinant of successful incubation in Brazil. Some studies have pointed out that this shift in focus to more intangible services (i.e. access to competencies, learning, networking, and synergies) provides critical higher added value to the incubation process (Chandra, 2007).

Incubators usually have fiduciary boards and a senior manager that ensure both strategic input and management in accordance with good corporate conduct. The composition of the board depends on the main sponsors and can vary widely. Due to the close relationship with Universities a large number of incubators are situated on or close to university campuses and are, in many cases, managed by a representative/employee of the university.

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According to a 2004 survey by ANPROTEC, about half of the Brazilian incubators have a capacity of between 6 to 15 tenant companies. Only 8 percent of incubators could host more than 25 companies. The average level of occupancy was 74%. Real estate is in most cases at a premium and the area made available to companies at university based incubators is very small, typically 2–3 square meters. Monthly tenant rents generally range from R$ 100 to 200 (US$ 60 to 120). Only 19% paid more than R$ 300. Services provided by incubators to tenants included business orientation, general assistance, shared facilities, financial consulting, legal consulting and information systems/technical facilities. Annual operational costs of incubators were mainly between R$ 50,000 to R$ 150,000, but 32% had costs exceeding R$ 151,000.

The rent paid by tenants covered only an average 19% of operational costs, with an average 56% coming instead from the managing organisation (university, corporations etc.) and the balance from other sources including grants and external service charges.

The average incubation time for most Brazilian tenant companies is between two and three years. Only 5 percent of all incubated companies are incubated for more than 5 years. Incubators currently host 1,030 residing enterprises, an average of 7.4 per incubator. Total number of employees of tenants is 6,100, 61% of which are shareholders or partners in the businesses.

4.3 Funding Sources

Incubators in Brazil are generally funded by a coalition of partners from the public and private sectors.

An important source of funds is SEBRAE, which supports incubator and small business development by utilising a mix of funds from government payroll taxes and private sources. With 27 branches in Brazil, SEBRAE has invested around R$50 million to stimulate the creation, development and consolidation of incubators. Initially, SEBRAE has provided infrastructure funding for many incubators in the first round and is now focused more on providing start up funding and training to new ventures. The dynamic and context sensitive nature of SEBRAE funding is evident from the fact that this organisation is constantly reinventing its funding focus, appropriate to the evolving nature of incubation. Incubators receive funds on a competitive basis for cluster development and are able to indirectly support new businesses in the specific cluster, with these funds.

Funds are given through competitive grants and this helps select the best incubators ideas thus ensuring a better survival rate of the initiatives funded. Nevertheless, the calls for proposals and their competitive nature encourage innovative proposals and active networking thereby creating incentives for knowledge transfer, resource sharing and best practice transfer.

At the federal level, the Ministry of Science and Technology is playing a key role in the incubation policy. It has just approved the new National Programme for Incubators and Technology Parks, which however is more a coordinating platform among agencies and does not make any funds available.
In addition to the above-mentioned federal agencies, most Brazilian incubators receive matching support from local, state and city governments, as well as sometimes from the social responsibility budget of major corporations.

Public sector finance for incubation and industrial parks, according to ANPROTEC in their 20th anniversary publication, amounted to approximately R$150 million over the last twenty years. This represents about 35% of the “total cost” of raised finance. For this investment it is estimated that, annually, about R$400 million is now generated in tax revenues by incubated companies. In the case of CIETEC13, for instance, in its latest annual report estimates that for each R$ (real) invested in CIETEC in 2008, R$ 6.72 have been recovered in tax revenues.

With an average of 1/3 of income coming from various government sources, a further 1/3 raised from other sources (universities, R&D centres, sponsors, etc), often including an element of “in-kind” support, i.e. manager and staff salaries, the balancing 1/3 funding comes from “own resources”, i.e. rental and service charges. Rental fees accounted in average (2004) for 19% of income. Other “own resources” income is generated by consulting, the supply of other services and training initiatives.

Some incubators, especially those with a clear technology focus, are now showing interest in discussing royalty arrangements with their clients. The mechanism is to invest in the early stage of the incubated companies, particularly in free services or even through small equity instruments, in return for a royalty that companies will pay when they are generating income. This is facilitated by the improved legal environment created by the 2004 Law on Innovation, however the mechanism is not specific only to incubators. Indeed, universities have long experience of patent agreements with students and researchers, for instance the University of São Paulo has such agreements in place since 1988, while the State University of Campinas was offering support to students and researchers for developing patents in return for a royalty14 of between 2% and 9% on income. This led to a record of 9 such agreements stipulated in the first six months of the program, involving the development of 22 patents.

4.4 Financial Services and Investor Support Environment

Incubators facilitate access to a range of financial services for their incubatees by serving as an intermediary in discussions with financial sources. Very few have private resources to make direct investments in their incubatee firms. This is primarily accomplished by the initiative of specific projects and measures, such as the recent PRIME program. This indicates that in the early stages of incubatees’ development government funds are needed to address the market failure by stepping in with some form of support for early stage start-ups, since Brazil, like most other countries, has a lack of risk capital for early stage firms.

The gaps in the capital market for early stage funding is a typical situation because firms have little or no track record, nor collateral to seek funding from the banks. Capital scarcity, the lack of a developed VC market and the shortage of private investment have been noted as some of the major shortcomings in Brazilian SME development and clearly affect the incubation potential.

13 CIETEC - Centro de Inovação, Empreendedorismo e Tecnologia, is a private non-for-profit organisation active in the region of São Paulo on issues related to Innovation, Entrepreneurship and Technology.

14 Rosana Ceron Di Giorgio, University Technology Transfer Practices in Latin America, LES International Conference 2005
Availability of capital, as well as the structure of financial markets is a key determinant of growth of innovation ventures. Gaps in financing, particularly for early stage ventures, can be a major deterrent to new business creation and often lead to the early demise of the most promising start-ups.

Significant government finance is indirectly available in Brazil to support innovative SMEs through the federal agency FINEP, which provides grants to Universities or research institutes for projects undertaken within a company framework (Chandra, 2007). Direct finance is available from FINEP, which provides 0% interest loans as a seed fund for new start-ups and then loans to stimulate SME growth in the early stages.

A specific venture capital program, called INOVAR, can be called on at later stages of incubated firms’ development. Furthermore BNDES (the Brazilian National Bank for Economic and Social Development), which used to support only big companies, now has a support program for micro-enterprises. Outside these public sources, commercial bank loans do not yet appear to be a feasible alternative for small companies in Brazil, since interest rates are very high and it is difficult for micro-enterprises to borrow money without significant collateral (Chandra, 2007).

Venture capital and angel networks are still in their budding stages in Brazil, again with strong initiatives from multiple actors to promote the concept. Universities in Rio de Janeiro and Sao Paulo are active in promoting connections between promising ventures and angel groups, as for instance the Gavea Angel Network in Rio de Janeiro. Many other interesting cases are developing outside the Rio de Janeiro and Sao Paulo axis.

It is relatively rare for an incubator to invest its own money in one of its client firms, though some incubators are experimenting with this approach in terms of equity and royalty agreements. One incubator manager discussed the intent of moving from a service model where the incubator offered services, infrastructure and management services in return for rental fee to a partnership model where the incubator takes a financial stake in the firm in lieu of rent and the payoff for the incubator comes in the form of profit sharing (Belo Horizonte Interview). One of his colleagues in Rio de Janeiro pointed out that they currently do not invest in their incubatees, but are discussing the possibility of being a member of a seed fund that would be funded by a coalition of public and private partners (Chandra, 2007). Another very promising experience is underway in the ICT incubator located within the Recife Porto Digital. However, currently, most Brazilian incubators still follow a more conservative model of linking client firms to potential investors. The INOVAR Project led by FINEP is a consortium of local and foreign VC firms for establishing an institutional structure for promoting the capacity and culture of venture capital. The goal is to set up a $200 million fund for tech based ventures, a website for information and virtual matchmaking, a Venture Forum and network to support high potential entrepreneurs (Lalkaka). INOVAR is considered to be the pilot for the creation of a venture capital market in Brazil.
5. **MONITORING & EVALUATION**

According to ANPROTEC in their 20th anniversary publication more than 40% of the public universities in Brazil have at least one incubator while 33% of the technical/vocational (federal) schools (called CEFETs) also have an incubator. 88% of the incubators prioritise regional economic development as one of their main objectives. As another main objective 97% of incubators prioritise incentives to foster the entrepreneurial culture while 84% also prioritise job generation. 72% indicate that they give high priority to development of technologies. The average number of staff for an incubator in Brazil is five people and the average incubation period for a new company is four years.

Several surveys are published where the performance of incubation programs are monitored through various sets of indicators (number of graduated companies, survival rates, type of services, number of jobs created, sectors of activities, etc).

Anprotec, with support from PNI and in partnership with MCT, CNPq, FINEP and SEBRAE, has recently launched SAPI\(^5\) (Sistema de Acompanhamento de Parques Tecnológicos e Incubadoras de Empresas – Accompanying System for Technology Parks and Business Incubators) whose purpose is to define a set of indicators that measure the performance and the impact of Technology Parks and Business Incubators on the innovation of the Brazilian economy and enterprises. SAPI is producing frequent and standardised assessment reports to make the monitoring and evaluation process\(^6\) more effective and their findings more usable for decision-making.

A common finding of the available studies is that incubatees survival rates appear to be rather high in Brazil, consistently above 85%. For instance ANPROTEC’s statistics show that the mortality rate of Brazilian incubated companies in 2005 was around 7%, while – without incubation – about half of the Brazilian SMEs go out of business during their first year of operation\(^7\).

An example of good practice in this respect has been developed by the Minas Gerais Incubators Network (RMI - Rede Mineira de Inovação) with support from the World Bank, INATEL and the State Secretariat for S&T. They have tested and released a Web Management System for Measuring Incubator Performance, better known as Web-ADI, which is an information management system that elaborates various indicators related to an incubator and its incubated businesses, so as to provide information for strategic decision making. The tool requires that information be collected periodically and systematically from each incubator; this needs a cooperative and transparent attitude from the incubator managers.

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\(^{6}\) See the comments by Henry Etzkowitz, José Manoel Carvalho de Mello and Mariza Almeida states in a study: Towards “meta-innovation” in Brazil

\(^{7}\) João B. Oliveira, Dr. André C.M. Menck, PhD. - Universidade Federal de Uberlândia. XXV IASP World Conference 2008, Johannesburg, South Africa
Web-ADI gathers and processes data from the incubation system in Minas Gerais and has been used to monitor the performance of different support activities. Its main objective is to help incubators and their supporting organizations in identifying the practices and performances that are critical to the success of incubators and their clients. Also, it provides incubators with a tool that produces synthetic benchmark information to help enhance the management quality of the associated incubators.

There have been a small number of other studies on incubator effectiveness in Brazil, though these have focused on only a few ways of identifying effectiveness. For example, ANPROTEC in 2001 reviewed the number of business graduating from incubators, finding that they amounted to 450 units at the end of 2000 and 500 at the end of 2001. A survey of Brazilian graduated companies by the Ministry of Science and Technology and the Euvaldo Lodi Institute in 2001, focused on 392 graduated companies. This survey identified that only 39 out of the 392 companies contacted had gone out of business, a failure rate of just under 10%. The graduated companies had directly created over 5,000 jobs. Almost 200 had revenues exceeding R$500,000 per year and employed an average of 15 people in the service sector, and 20 people in the industrial sector.

6. CONCLUSION: STRENGTHS AND WEAKNESSES

6.1 Strengths and Recommendations

Networking. One of the main strengths of the Brazilian incubation movement is its extended networks. Not only amongst the incubators but also with state, provincial and local authorities, universities, business federations and industry. This ensures exchange of best practices, resource sharing and contributes to improved performance of incubators.

Innovative models. Brazil offers a wide range of incubation models which are the result of adaptation to local needs. The social model of incubation has developed in response to poverty alleviation and the need of job creation in depressed areas. This model is potentially applicable to other developing countries across the world.

Government support. The government has clearly made incubation a priority with the recent launch of the National Programme for Incubators and Technology Parks (PNI). The government, university, industry and incubators associations and networks work in concert to achieve common goals thus ensuring good coordination of the initiatives launched to support the business environment development. Brazilian government is open to change and has implemented extensive changes in its institutional and financial infrastructures, especially in terms of market development and deregulating markets.

Government, University and private sector synergy. All three stakeholders view incubators as a tool that has the potential to advance their objectives. This synchrony of objectives along with strong incubator associations has resulted in several innovative and timely initiatives from different levels of government to facilitate new business creation.
Capacity building programme for entrepreneurship. As a part of their incubation initiatives, several organisations implement capacity building programs to support entrepreneurship. SEBRAE has implemented EMPRETEC, which is an integrated capacity-building program of the United Nations Conference on Trade and Development (UNCTAD). Developing countries should explore the feasibility of implementing EMPRETEC to enhance the standard of entrepreneurship as this a key initiator of small business.

6.2 Weaknesses

There is the need to further ensure co-ordination of the plethora of support instruments and to address the lack of visibility of opportunities and tools available for SMEs. An existing problem is that potential entrepreneurs or established companies often do not know about incubator services or business incentives for innovation.

The business environment is still not considered business-friendly. Although many aspects have been addressed there are still issues regarding capital scarcity, high costs and bureaucratic interference, lack of coordinated and easily accessible information on entrepreneurial support systems/programs and an educational system that does not foster entrepreneurial spirit. Dependence on government for survival along with the weakness of the venture capital market for risk capital in the later stages of a new firm’s growth are also cited as major barriers.

The lack of a co-ordinated and frequent monitoring and evaluation programme is identified as a major weakness. A major lesson learnt is NOT to rush implementation of these programmes but ensure that the information gathering and processing are properly thought through, documented and tested before implementation. Incubators do have performance criteria but a systemised monitoring exercise is still lacking.

The National Programme for Incubators and Technology Parks will address the need for more coordination, visibility, monitoring and evaluation within the incubation movement.
Key Business Organizations

SEBRAE

The Mission of SEBRAE is to promote competitiveness and the sustainable development of micro and small enterprises and to foster entrepreneurship. SEBRAE is not a monolithic organisation, but rather a system of 28 different organizations operating under some common guidelines. It boasts 460 offices throughout Brazil in 26 states and Federal Districts, 4,300 employees and more than 9,000 consultants and trainers. Each year it delivers more than 4 million interventions. It supports SMEs in terms of market access, business training, technology access, support for innovation and access to financial services, etc. SEBRAE aims to build a more favourable environment for business, according to the General Law of SMEs. SEBRAE has a portfolio of 1,700 results-oriented projects of support to SMEs – for each real invested, 2.6 reals from partner organizations and SMEs are mobilized. It is active in approximately in 2,000 municipalities, more than 3,000 sectoral clusters, 170 Local Productive Systems (LPS) and 259 business incubators.

The SEBRAE Strategic Guidelines for 2009-2015 include ten strategic objectives (plus another three functional objectives related to internal efficiency, institutional visibility and performance standards):

- Promote innovation in MSE (Micro and Small Enterprises)
- Reinforce cooperation among MSE’s
- Help conquer and expand new markets
- Build the capacity to manage technology-related processes
- Raise the visibility
- Achieve excellence and transparency in the use of public resources
- Promote entrepreneurship and the entrepreneurial culture
- Articulate and reinforce networks of competences for the MSE sector
- Contribute to the territorial development of the regional economic systems, with focus on MSE
- Facilitate and wide the access of MSE to financial services
- Stimulate, improve and implement the public policies for the enterprise sector

Based on these strategic objectives and the in-depth discussions held with SEBRAE, it is evident that they have extensive “technology support” tools, products and services for small businesses, and developing countries will greatly benefit by exploring and adapting SEBRAE’s offerings for implementation of technology and incubation support interventions.
The Innovation and Technology Access Unit of SEBRAE illustrated SEBRAE’s interventions as follows:

- **Market Intelligence**

  SEBRAE’s head office in Brasilia has a market intelligence programme that provides data on market demand and opportunities for small businesses. They also have a programme for developing small business marketing skills, which entails the buying, selling and matchmaking aspects. SEBRAE arranges trade promotions and missions, national and international events for small businesses. They also arrange linkages between big buyers and small businesses.

- **Entrepreneurship Development:**

  EMPRETEC is an integrated capacity-building programme of the United Nations Conference on Trade and Development (UNCTAD) for SMEs and entrepreneurial skills promotion. It is dedicated to helping promising entrepreneurs put their ideas into action and fledgling businesses to grow. UNCTAD installs the program at the request of the beneficiary country and in cooperation with the national public and private sector organizations that are responsible for contributing to SME development in the country.

- **Providing Information and Knowledge**

  SEBRAE partners with many institutions and consultants that provide assistance to small businesses such as training, advice and technical information. SEBRAE pays 80% of these intervention costs and the entrepreneur pays the rest.

  SEBRAE provides technical information on the Internet regarding suppliers of equipment (off-the-shelf and specific), basic business information, and product and process development information. SEBRAE also produces a magazine that provides business and technology information.

  Technology transfer workshops are held with entrepreneurs assisting them to identify and locate the latest and most appropriate technology. Workshops are generally sector specific and the complete value chain is analysed.

  Group clinics are held with individuals or groups that discuss practical problems of the business implementation process. Technology evaluation, market survey, a working plan for the business and the technology needed, including equipment, and other practical problems are discussed. SEBRAE together with consultants (paid by SEBRAE) organise and conduct these clinics.

  SEBRAE arranges the transfer of technology developed at universities to small enterprises.

When small businesses need financing for their business and technology requirements, SEBRAE arranges this through other financial institutions, such as FINEP.
FINEP

The purpose of Financiadora de Estudos e Projetos - FINEP (Financing Agency for Projects and Studies), a government-owned agency under the Ministry of Science and Technology, is to promote technological development and innovation in Brazil. Its role is to foster support for companies and institutions investing in new products and processes, continuously striving for technological innovation and leadership. The mission of FINEP is to encourage and finance innovation and scientific and technological research in business, universities, institutes of technology, research centres, and other public or private institutions, mobilising funds and combining the instruments employed in the country’s economic and social development.

FINEP encourages and finances innovation and scientific and technological research, which might contribute to the extension of knowledge and/or generate positive impact on Brazilian social and economic development, with a view to: extending and improving the National S, T&I System, encouraging the production of knowledge and the improvement of scientific and technological skills in the country; stimulating and supporting activities that encourage the expansion of innovation; generating and adapting capacity in technological and scientific knowledge, for the production of goods and services; and cooperating towards the success of the targets established by the Federal Government’s public policies.

With an annual budget in the region of US$ 3 billion (taken from the US$ 60 billion budget of BNDES, the National Bank for Social Development) and approximately 600 employees they are able to make a substantial difference to small business development. Funding is focused on science and technology, providing support for new technology development and technology transfer. Approximately 250 analysts are used to evaluate and manage the projects in which FINEP invests. Many of these projects, due to the nature of the funding, are situated in the universities and thus funding also trickles indirectly to the incubators. Annual programme funding is received from the government to focus on specific sectors or industries which they have identified as important. The selection of these main sectors is then adopted by regions, depending on their regional strengths and focus. The result of this strategy is that regions with a specific focus or regional hubs of expertise and economic development are developed.

The funding programmes fall into two categories, refundable (30%) and non-refundable (70%). The non-refundable programmes are typically co-funded by the university or SME’s (60/40). “Consortiums” or “special purpose vehicles” are common for such projects and additional funding can also be received from industry partners, federal and state government, public banks and other funds that invest in companies or technology development (i.e. pension funds). Like most other enterprise development agencies (as is the case with incubators) there is increasing pressure to invest in refundable projects and programmes to retain funds and become less dependent on annual funding from government.

The investment projects are managed by the analysts and typically paid out chronologically on achievement of project milestones. Company owners are obliged to regularly and comprehensively report to the stakeholders on performance. Under- or non-performance can lead to suspension of the funding. The process for funding is typically a submission / application by the company, analysis of the project by the analysts, submission to the venture forum, creation of a SPV, project management and reporting. Stakeholder interests can be any varying
forms interest bearing, equity or royalty or combinations thereof. As in the rest of the world the hurdle of companies (young entrepreneurs) not wanting to part with their equity is common.

Brazil is struggling with the issue of whether FINEP should operate as a “bank” or as a “state agency”. The common feeling is that it should be a bank to operate within the country laws and regulations (FINEP, Camargo 2008).

ANPROTEC

ANPROTEC (Brazilian Association of Incubators and Science Parks) plays a disseminating and linking role by encouraging the participation of universities and research institutes while persuading different entities to support incubators. Founded in 1987, ANPROTEC’s members include institutions that manage the incubators of all categories, traditional, technology, social and private. ANPROTEC delivers training courses, organises meetings that facilitate knowledge exchange and lobbies for public support (Hoeser 2003). It encouraged incubators in each State to create regional networks, gained university support and participation for incubators and helped voice incubator concerns to policy makers at the national level.

In addition, there are 17 regional incubator networks in Brazil. For instance RMI (Rede Mineira de Incubadoras) or the Minas Gerais Incubator Network is the regional network for the State of Minas Gerais in Brazil. The RMI Incubators Network Information and Communication Technology Program is a not-for-profit organisation created in 1998 in the state of Minas Gerais. Its mission is to contribute to regional and national economic and social development by supporting organisations that promote technology-based companies in the state such as incubators and technology parks. RMI comprises 15 technology incubators in Minas Gerais, all not-for-profit organisations connected to public or private institutions including universities. (InfoDev Report).

The incubation and small business development environment in Brazil is largely driven by project-based initiatives. Even funding for small business projects are project orientated and managed. This enables the projects to source income and investment on a specific project. This is important knowledge. By way of example, the INOVAR PROJECT was launched in May 2000 as a strategic action of FINEP and its aim is to promote the development of small and medium-size businesses based on technology by designing instruments for their financing, especially venture capital. The development of small and medium-size technology-based companies depends on a technologically active environment that offers technical and human resources and providing room for business enterprise, promotes the entrepreneurial spirit and creates synergies to set up new companies. On the other hand, a financing system is also required to further the development of these companies.

The Brazilian innovation process, led by ANPROTEC as the association that gathers together all the major incubators, technology parks and science parks, operates in three stage of the innovation cycle:
1 **Pre-incubation**: the purpose of support for pre-incubation is to prepare the transformation of the project in a project that can be incubated. Approved projects receive resources allocated to the continuation of R&D efforts and to developing aspects relating to the economic feasibility of the proposed product, process or service (through consulting services and holding EVTEs [technical and economic feasibility studies], for example).

2 **Incubation**: the support for incubation intends to facilitate the economic use of products, processes or services arising from the development of new technologies. The funds invested are allocated to the final stages of the project's development and to the consolidation of the technology-based projects, by hiring advisory and business consulting services to update the business plan presented in the bid and the development of the marketing strategy of the product, process or service. For this purpose, the project should obligatorily plan to set up a new technology-based company and to have at least one member of the innovation group as a shareholder.

3 **Technology-based Innovation**: companies already incorporated can associate with projects proposed by research groups linked to universities and/or research institutions and the results of which will add technological content to the business. Non-reimbursable resources are added to the financial counterpart obligatorily offered by the interested company, thereby enabling the continuity of the research and development (R&D) work of the product, process or service, raising the production scale and training future users of the proposed technology, among other activities.
### STATISTICAL DATA

<table>
<thead>
<tr>
<th>Description</th>
<th>Value/Details</th>
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<tr>
<td>Number of Incubators (A)</td>
<td>Approximately 400</td>
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<tr>
<td>Number of SMEs (B)</td>
<td>4500</td>
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<tr>
<td>Ratio A:B</td>
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<tr>
<td>Jobs created every year</td>
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<td>Split the total number of incubators by type</td>
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<td>Technology Incubators</td>
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<td>Traditional Incubators</td>
<td>80</td>
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<tr>
<td>Cooperatives / Social incubators</td>
<td>50</td>
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<tr>
<td>Cultural Incubators</td>
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<tr>
<td>Private Incubators</td>
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<tr>
<td>Corporate Incubators</td>
<td>45</td>
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<tr>
<td>University based Incubators</td>
<td>60% of universities have incubators 80% of the incubators are associated/ on campuses</td>
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<tr>
<td>% of ICT related</td>
<td>30%</td>
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<td>% of incubators in growing sectors with a competitive advantage for the country</td>
<td>70%</td>
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<tr>
<td>AVERAGE Incubator space (sq meters)</td>
<td>3000 sq m</td>
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<td>AVERAGE occupancy rate (% of incubator space let to tenants)</td>
<td>74%</td>
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<tr>
<td>AVERAGE number of tenants</td>
<td>11</td>
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<tr>
<td>AVERAGE Incubators investment cost</td>
<td>Average USD 667000 each. R$430m (Reais) total investment. 1 Reais$ = 0.62 USD</td>
</tr>
<tr>
<td>Proportion of public funds in setting up</td>
<td>35%</td>
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<td>Ratio of public to private sector funding</td>
<td>33% and 40%</td>
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<td>Average duration of the incubation process (average time in the incubator)</td>
<td>4 years</td>
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<td>Average number of employees</td>
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<td>Average survival rate of graduates</td>
<td>85% or higher</td>
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<td>Survival rate of non-incubated companies</td>
<td>25%</td>
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<td>Percentage of graduated companies remaining in the local area</td>
<td>Very High</td>
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<td>% of tenants leaving the incubators every year</td>
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</table>
References

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**Note:**

This study has drawn upon the following sources:


About infoDev

infoDev is global development financing program among international development agencies, coordinated and served by an expert Secretariat housed at the World Bank Group, one of its key donors and founders. It acts as a neutral convener of dialogue, and as a coordinator of joint action among bilateral and multilateral donors—supporting global sharing of information on ICT for development (ICT4D), and helping to reduce duplication of efforts and investments. infoDev also forms partnerships with public and private-sector organizations who are innovators in the field of ICT4D. The infoDev Secretariat is housed in the Global ICT Department (GICT) of the World Bank Group.

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