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Global Good Practice in Incubation Policy Development and Implementation

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**Global Good Practice in
Incubation Policy Development
and Implementation**

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List of Acronyms

9MP	Ninth Malaysian Plan	Malaysia
AABI	Asian Association of Business Incubation	
AIDS	Acquired Immune Deficiency Syndrome	
AIN	African Incubation Network	
ANPROTEC	National Association of Incubators and Science Parks	Brazil
ASGI-SA	Accelerated and Shared Growth Initiative of South Africa	South Africa
BAS	Business Advisory Services	
BBBEE	Broad Based Black Economic Empowerment	South Africa
BIC	Business Innovation Centre	
BNDES	Banco Nacional de Desenvolvimento Econômico e Social [National Bank for Economic and Social Development]	Brazil
BRICS	Brazil, Russia, India, China and South Africa	
CAPES	Agency for support of graduate education	Brazil
CDC	Canterbury Development Corporation	New Zealand
CEO	Chief Operating Officer	
CFC	Centre for Research and Consulting on Management	Vietnam
CIETEC	Centro Incubador de Empresas Tecnológicas [Incubation Centre for Technology-based Enterprises]	Brazil
CII	Canterbury Innovation Incubator	New Zealand
CITI	Cape Information Technology Initiative	South Africa
CMC	CMC Limited, a subsidiary of the Tata Group	New Zealand
CMCTEC	CMC Technology Export Centre as a joint venture with	New Zealand
CNC	Computer Numerical Control	
CNI	Confederação Nacional da Indústria [National Confederation of Industry]	Brazil
CNPq	National Research Council	Brazil
CONSECTI	Conselho Nacional de Secretários Estaduais para assuntos de CT&I [National Council of the Secretariat for Science, Technology & Innovation]	Brazil
CPPP	Community Public Private Partnership Programme	South Africa
CRI	National Business Incubation Association	New Zealand
CSES	Centre for Strategy and Evaluation Services	UK
CSIR	Council for Scientific and Industrial Research	South Africa
DBKL	Kuala Lumpur City Hall	Malaysia
DG	Directorate General	EU
DST	Department of Science and Technology	South Africa
DTBI	Demonstration and Training Business Incubator	South Africa
DTI	Department of Trade and Industry	South Africa
EDAs	Economic Development Agencies	
ELSBC	East London Small Business Centre	UK
EPU	Economic Planning Unit	Malaysia
EU	European Union	
EVTES	Technical and Economic Feasibility Studies	Brazil
FAPEMIG	Minas Gerais State Agency for Science and Technology	Brazil
FAPESP	Research Support Foundation of the State of São Paulo	Brazil
FDI	Foreign Direct Investments	
FIESP	Federation of Industries of the State of Sao Paulo	Brazil
FINEP	Financing Agency for Projects and Studies	Brazil
FNDCT	Fundo Nacional de Desenvolvimento Científico e Tecnológico [Fund for Scientific and Technological Development]	Brazil
FRST	Foundation for Research, Science and Technology	New Zealand
FTEs	Full-time Equivalent Employees	
FUNTEC	Technological Fund	Brazil
GBIN	Global Network of Networks for Incubators	
GDP	Gross Domestic Product	

GDS	Gauteng Development Strategy	South Africa
GEM	Global Entrepreneurship Monitor	
GNI	Gross National Income	
GPG	Gauteng Provincial Government	South Africa
HEA	High-growth expectations early stage entrepreneurial activity index	
HR	Human Resources	
HRD	Human Resource Development	
IAB	Inter American Bank	
IASP	International Association of Science Parks	
ICT	Information & Communication Technology	
IDU	Incubator Development Unit	New Zealand
IF	Innovation Fund	South Africa
IMS	Integrated Manufacturing Strategy	South Africa
INATEL	Instituto Nacional de Telecomunicações	Brazil
INZ	Incubators New Zealand	New Zealand
IP	Intellectual Property	
IPEN	Nuclear and Energy Research Institute	Brazil
IPO	Initial Public Offering	
IPT	Institute of Technological Research	Brazil
ISC	Innovation Support Centre	
ISP	Incubator Support Programme	New Zealand
ITCP	Technological Incubator of Popular Cooperatives of the Federal University of Rio de Janeiro	Brazil
ITPDR	Technological Incubator as Lever of Regional Development (program)	Brazil
JICA	Japan International Cooperation Agency	
KHTP	Kulim Hi-Tech Park	Malaysia
LPS	Local Productive Systems	
M&E	Monitoring and Evaluation	
MACs	Manufacturing Advice Centres	South Africa
MAD	Mobile Application Development (incubator)	Malaysia
MARA	Majlis Amanah Rakyat	Malaysia
MARDI	Malaysian Agriculture Research and Development Institute	Malaysia
MAVCAP	Malaysia Venture Capital Management	Malaysia
MCT	Ministry of Science and Technology	Brazil
MDeC	Multimedia Development Corporation	Malaysia
MDIC	Ministério do Desenvolvimento, Indústria e Comércio Exterior [Ministry of Development, Industry and Foreign Trade]	Brazil
MEIA	Monitoring and Evaluation Impact assessment (infoDev)	
MG	Minas Gerais	Brazil
MIRC	MCA ICT Resource Centre	Malaysia
MOHE	Ministry of Higher Education	Malaysia
MOSTI	Ministry of Science, Technology and Innovation	Malaysia
MSC	Multimedia Super Corridor	Malaysia
MTDC	Malaysia Technology Development Corporation	Malaysia
MYR	Malaysian Ringgit	Malaysia
NAMAC	National Manufacturing Advisory Centre	South Africa
NBIA	National Business Incubation Association	USA
NIDP	National Incubator Development Programme	Malaysia

NINA	National Incubator Network Association	Malaysia
NSI	National System of Innovation	South Africa
NSTEDB	National Science & Technology Entrepreneurship Development Board	India
NTTC	National Technology Transfer Centre	South Africa
NUS	National University of Singapore	
NZ	New Zealand	
NZD	New Zealand Dollar	New Zealand
NZTE	New Zealand Trade and Enterprise	New Zealand
NZVIF	New Zealand Venture Investment Fund	New Zealand
OECD	Organisation for Economic Co-operation and Development	
PDI	Innovation Development Programme	Brazil
PNI	Programme for Support of Technological Parks and Incubators	Brazil
PNI	National Incubation Support Programme	Brazil
PPP	Public-Private Partnership	
PRIME	Primeira Empresa Inovadora (programme)	Brazil
PROVE	Vegetable Oil Recycling Programme	Brazil
PUC	Pontificia Universidade Católica	Brazil
PVL	powerHouse Ventures Limited	New Zealand
QMS	Quality Management Services	
R	South African Rand	South Africa
R\$	Brazilian Real	Brazil
R&D	Research and Development	
RD&I	Research Development and Innovation	Brazil
RFID	Radio Frequency Identification	
RMI	Rede Mineira de Inovação	Brazil
RO	Research Organisation	
SA	South Africa	
SABTIA	Southern African Business and Technology Incubation Association	South Africa
SAPI	Sistema de Acompanhamento de Parques Tecnológicos e Incubadoras de Empresas	
	[Accompanying System for Technology Parks and Business Incubators]	Brazil
SAQI	SME support activities of the South African Quality Institute	South Africa
SCTDE	Science, Technology and Economic Development Secretary of the State of São Paulo	Brazil
SEBRAE	Brazilian Micro and Small Business Support Service	Brazil
SEDA	Small Enterprise Development Agency	South Africa
SET	Science, Engineering and Technology	
SETEC	Secretaria de Desenvolvimento Tecnológico e Inovação [Secretariat for Technology Development and Innovation]	Brazil
SIRIM	Standard and Research Institute of Malaysia	Malaysia
SMART	Specific Measurable Attainable Realistic Timely	
SME	Small and Medium-sized Enterprise	
SMIDEC	Small and Medium Industries Development Corporation	Malaysia
SMME	Small Micro and Medium Enterprise	
SOHO	Small Office / Home Office (sector)	
SPII	Sector Partnership for Industrial Innovation	South Africa
SPV	Special Purpose Vehicle	
SSI	Small Scale Industrial (sector)	
STI	Science, Technology and Innovation	
STP	SEDA Technology Programme	South Africa
TAC	Technology Advisory Centre	South Africa
TBC	Technology Business Centre	

TDC	Technology Development Cluster (program)	Malaysia
TDC	Technology Demonstration Centre	
TESIP	Tertiary Education Satellite Incubation Programme	South Africa
TI	Technology Incubator	
TIH	The Innovation Hub	South Africa
TOPIC64	Training Online Programme on Information Technology for Communities (project)	Vietnam
TPM	Technology Park Malaysia	Malaysia
TWIB	Technology for Women in Business Programme	South Africa
UFRJ	Federal University of Rio de Janeiro	Brazil
UKBI	United Kingdom Business Incubation	UK
UNCTAD	United Nations Conference on Trade and Development	
UNDP	United Nations Development Programme	
US / USA	United States of America	
USD	United States Dollars	
USP	University of São Paulo	Brazil
VC	Venture Capital	
Web-ADI	Web Management System for Measuring Incubator Performance	Brazil

1. Executive Summary

This paper was based on a desk review of the literature relating to best practice in public policy supporting business incubation, supplemented by four national case studies covering Brazil, Malaysia, New Zealand and South Africa. These country studies were prepared through engagement of stakeholders, site visits and other sources of primary and secondary information collection.

In the context of the study, we focused on best practice in policy development, meaning that public bodies should identify clear objectives and goals to be achieved within the resources available and take steps to measure and assess what has actually been achieved, allowing changes to overcome unexpected barriers, as well as to identify and disseminate best practices to improve overall performance.

The paper sets out a clear definition of business incubation and locates it as one of several potential initiatives to provide direct support services to businesses. In addition the impact of all types of SME support services is affected by the wider environment for business development which is influenced in part by legislative and administrative policies of government. While incubators can be used to help overcome some of the environmental barriers (i.e. overcoming bureaucratic hurdles) and can act as pioneers in improving the business environment, they are no substitute for necessary wider change to the system that governments are expected to undertake.

The services available within business incubators vary in relation to the specific objectives of their establishment, the resources available, and the wider environment. Within this caveat we offer a description of pre-incubation, incubation services and post incubation support to enable the reader to clearly understand how incubation is differentiated from other SME support programs. The definition indicates the high cost of providing incubator services and suggests this is only justifiable in relation to the incubator helping to achieve high growth businesses with low failure rates, unless there are strong social objectives that have to be taken into account (i.e. helping socially excluded groups to launch businesses).

Governments have used incubation as part of a range of objectives to bring about change. Evidence suggests that achieving objectives is only likely to happen if business incubation is part of a wider transformation program. Within this context we give examples of incubation used to encourage transfer of research and development into innovative new production, to introduce ICT based activities to raise productivity in targeted sectors, to tackle industrial restructuring; to enable new industries to be created or existing industries to be reinvigorated, and as part of measures to include deprived communities into the mainstream of new business opportunities.

We review the funding approaches to business incubation, suggesting that it is more effective to provide less than 100% of funding needs, especially after an initial launch period, ensuring some commercial income and matching money from other sources.

As for clients funding needs, in some cases shortage of finance is a significant drag on an enterprises potential to succeed and grow rapidly. In many cases incubators have established with public finance seed capital funds, guarantee funds and/or build significant networks with business angels and venture capital funds to help overcome the financing problems of their clients. However, often the problem lies in a mismatch between the supply and demand side and the need to improve their interaction, which can be promoted by the incubator.

In most cases direct ownership by government ministry or a university has not proved to be a successful approach. Whereas mixed ownership structures (public, private) encourage incubators to make riskier direct investment in their clients and thus have proved to be more efficient. A strong business mindset and/or disciplines for a public benefit with good networking of the incubator and its clients are then important considerations in selecting the governance model.

Having specified the policy objectives of supporting business incubators it is critical that a good monitoring and appraisal system is established to ensure that these relatively expensive facilities achieve results that justify their support in relation to alternative methods of SME development support. The systems should not only enable this cost-benefit analysis to take place, they should also enable best practice to be identified and disseminated within the business incubation network, and identify critical unexpected barriers to be overcome to achieve success.

2. Best Practice in Public Policy Development

The purpose of this report is to inform the debate about the relevance of Business Incubation to the public policies of support to small and medium sized business (SME), which in turn is part of public approaches to raising the performance of their economies. The issues we raise here are relevant to national, regional and local government and those seeking to influence their policy programs.

Specifically in this paper we address the policy objectives behind public sector support for business incubation, exploring the different ways in which the concept has been used to achieve different outcomes and identify from this the current best practice in policy formulation and implementation for the different objectives of public policy.

In framing this paper we are seeking to identify the key issues in a “best practice” approach to policy making in business incubation and SME development more widely. Increasingly best practice is being used to guide public policy making. This term is used to refer to two different definitions of public policy development. For some it is defined as “results oriented decision making based upon empirical evidence¹.” For others “The term best practices relates to successful initiatives or model projects that make an outstanding, sustainable, and innovative contribution to the issue at hand².” These two definitions of best practice are related to how government monitors and evaluates the impacts different policies achieve, relying on “high quality objective evidence about what works (Canon and Kilburn, 2003).” Other evaluations of impacts achieved are more impressionistic and rely on experiential knowledge as well as on more rigorous evaluations³.

¹ Cannon, Jill S. and M. Rebecca Kilburn, 2003. “Meeting Decision Makers’ Needs for Evidence-Based Information on Child and Family Policy,” *Journal of Policy Analysis and Management*, 22 (4): 665-668

² Bendixsen, Synnøve & Paul de Guchteniere. 2003. “Best Practices in Immigration Services Planning.” *Journal of Policy Analysis & Management*. 22(4): 677-682.

³ Schorr, Lisbeth & Patricia Auspos. 2003. “Usable Information About What Works: Building a Broader and Deeper Knowledge Base.” *Journal of Policy Analysis & Management*. 22(4): 669-676.

In reality both approaches have their place and need to be balanced in identifying the impacts achieved by public policy initiatives and learning how to improve them. This theme will surface again in the final section of the paper on monitoring and appraisal. For both approaches it is key to have a clear definition of **what** a particular policy is to achieve, **why** it is important, how it will be implemented and **when** it will take place (the initial period of public funding). The activity is then monitored to measuring what was actually achieved (quantitatively and qualitatively), with this information then used to improve the impacts being achieved.

3. What is Incubation?

According to the EU Centre for Strategy & Evaluation Services: “A business incubator is an organization that accelerates and systematizes the process of creating successful enterprises by providing them with a comprehensive and integrated range of support, including: incubator space, business support services, and clustering and networking opportunities ...[and]... a successful business incubator will generate a steady flow of new businesses with above average job and wealth creation potential ...”⁴

The UKBI (UK Business Incubation) definition states that: “Incubation is a unique and highly flexible combination of business development **processes**, infrastructure and people, designed to nurture and grow new and small businesses by supporting them through early stages of development and change”

Finally, if we consider the NBIA (National Business Incubation Association), “business incubation is a business support **process** that accelerates the successful development of start-up and fledgling companies by providing entrepreneurs with an array of targeted resources and services. These services are usually developed or orchestrated by incubator management and offered both in the business incubator and through its network of contacts. A business incubator’s main goal is to produce successful firms that will leave the program financially viable and freestanding. These incubator graduates have the potential to create jobs, revitalize neighborhoods, commercialize new technologies, and strengthen local and national economies”.

In general, a business incubator will focus on a range of services on clients that are designed to help them launch well managed businesses. This mix of services is generally drawn from: administrative services (photocopying, bookkeeping, etc); business advice services (coaching, counseling, mentoring, training), technical services (technical advice, access to expensive equipment, etc), finance raising, and networking opportunities (between clients, links to wider business community). Other services (loan & venture capital funds, lobbying for special services/bureaucratic treatment, etc.) are sometimes developed to help clients overcome specific problems in the given business environment.

Clients can be resident, non-resident or affiliated to the incubator. The services targeted on clients are costly in relation to many other types of business development services (training programs, advice services) but are justified by supporters as “investment in success” because the concentrated support services should lead to higher survival and growth rates of incubated businesses.

⁴ Source: Centre for Economic and Social Services 2002

If clients are resident in the incubator, initially they pay a highly subsidized rent or enjoy a rent free period. Subsequently, rents will rise to commercial levels sufficient to cover at least the basic services they receive. After a specified period (2-4 years) clients are normally encouraged to move on to external premises and make way for new clients.

It is often a stated intention that an incubator will become sustainable through commercial income, though this is only achieved where the actual income has a realistic chance of covering costs and other objectives do not mitigate against this. In case of resident clients, sustainability is often linked to larger undertaking which can ensure consistent commercial rents.

Global practices show that success sharing models where the incubator takes an equity stake in its clients, or a royalty on gross sales for a period, or both, can be a good way in pushing for financial sustainability. Internationally, there are cases where incubator staff share in the success of tenant companies by way of success pool performance schemes.

The main focus for incubators is of course on the mix of services provided to clients. However, prior to a business incubator admitting a business as a new client there is often a need for a clear pre-incubation program to support potential entrepreneurs define their business ideas and develop their plans to the point where they can be evaluated as a potential client. Incubators commonly provide “hot desking⁵”, short training programs and initial coaching sessions delivered at their premises and often through small pre-incubation at distance where basic services are supplemented by on-line support⁶, all as part of the pre incubation support programs. Following the period of intense incubation support there also needs to be clear exit route for successful businesses, including after-care services that ensure both a smooth transition, support for future growth, such as internationalization, and ongoing linkages back to current and new clients of the incubator. Where there are developed local commercial property markets exit is not normally a problem area, however, in poorer regions of developed economies or in developing economies exit can prove to be problematic and the exit strategy needs to clearly identify how successful enterprises can leave incubation while remaining located in the area.

Many incubators are now confronting the issue of scaling operations efficiently, and increasingly using the Internet to provide lower-cost services to a larger client base. This channel holds particular promise in countries where Internet penetration is increasing and geography is cited as a key barrier to client access to incubation services.

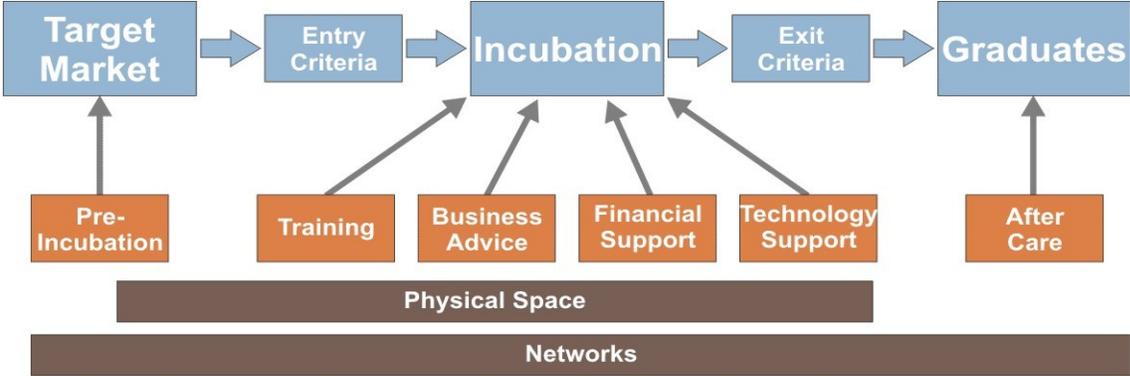
⁵ Normally a small room with desks & internet connected computers that potential entrepreneurs can use for short periods of research and preparation of their business ideas. Permission to use the free facilities is for relatively short periods that are only renewed if progress is being made and the facility is not abused.

⁶ The South African case study outlines the on-line coaching programmes provided by the countries incubators that are linked to universities and colleagues through at a distance learning programmes.

Many incubators in developing countries now use the Internet to provide some "virtual incubation" services. These services are most likely to include information resources and web-based toolkits, as well as access to email and the Internet, but incubators are increasingly experimenting with more complex virtual and remote service offerings. Kharkov Technologies in Ukraine, for example, offers distance learning, and The Semi-Virtual Incubator in Iran provides technology incubation services to remote villages through a partnership with another local incubator, the Yazd Technology Incubator and Science Park. ITCP in Brazil combines its web-based training programs with a broader remote incubation model that also uses radio and television to disseminate information in regions where literacy is a barrier to Internet usage.

3.1. The Business Incubation Process

The diagram below provides an overview of a typical business incubation process:



It should be clear from this brief description that Business Incubation is a targeted approach providing a range of focused services on a relatively small number of businesses. In evaluating public policy the results achieved by incubation needs to be considered alongside that of other methods of delivering support services to new and existing enterprises.

The table⁷ below sets out a basic typology of the range of business services that could be provided to SMEs.

⁷ infoDev: Innovation and Entrepreneurship in Developing Countries: Impact Assessment and Lessons Learnt from

Mechanism	Target Firms	Key Features
Business Development Services	<ul style="list-style-type: none"> Start-ups & SMEs 	<ul style="list-style-type: none"> Broad business support, including training and advisory services provided to individual businesses on a demand-driven basis Often coordinates other service providers Focused on building capacity within the BDS industry
Business Advisory Services	<ul style="list-style-type: none"> Start-ups & SMEs 	<ul style="list-style-type: none"> Broad business support, including training and advisory services Acts as primary service provider
Business Incubation	<ul style="list-style-type: none"> Start-ups and SMEs with high growth potential 	<ul style="list-style-type: none"> Integrated mix of intensive strategic and operational support provided to entrepreneurs and businesses selected for their growth potential Focused on helping firms to manage risk and build competitiveness through early, high-risk growth stages Support typically ends when clients 'graduate' by reaching particular milestones May be linked with educational or research institutions
Technology and Science Parks	<ul style="list-style-type: none"> Emerging and established technology businesses, but may target specific industries 	<ul style="list-style-type: none"> Focused on helping relatively mature businesses to accelerate their growth May use incubation as way to source future clients Usually linked to universities and R&D centres May be linked to national, cluster-driven development strategies
Industrial Parks	<ul style="list-style-type: none"> Emerging and established businesses, can be mixed but may target specific industries 	<ul style="list-style-type: none"> Support businesses to accelerate their growth May include incubation facilities as way to source future clients May be linked to national, cluster-driven development strategies
Industry Clusters	<ul style="list-style-type: none"> Related and supporting businesses and other organizations linked by a shared value chain (vertical) or shared final market (horizontal); Concentrated in technology industries 	<ul style="list-style-type: none"> May be linked with educational or research institutions May use incubation as way to source future clients May be linked to national competitiveness strategies

⁷ *infoDev: Innovation and Entrepreneurship in Developing Countries: Impact Assessment and Lessons Learnt from*

All these alternative approaches have their place in the provision of direct support services to start-ups and SMEs. As well as for the direct service schemes, many of which might be supported by regional or local government as well as central government, Governments are also responsible for the design and operation of the legal and administrative environment that governs the performance of enterprise⁸ and encouragement of entrepreneurship. All the possible business support schemes outlined above, including business incubation, involve a degree of co-location and take place within the environment created for business growth so that their relative success is heavily influenced by the strengths and weaknesses that are present in this wider environment.

While reviewing the global incubation practices and preparing the four national case studies covering Brazil, Malaysia, New Zealand and South Africa, we have identified a number of key policy dimensions affecting the design and implementation of an incubation policy framework, i.e.:

- Objectives for business incubation and service mix;
- Wider business environment;
- Funding strategies and sustainability;
- Ownership and management;
- Monitoring and appraisal.

In the following sections, we provide an overview of each policy dimension, based on the results of the literature review and case studies outputs. In the final section, we include an indication of key recommendations emerged from our research, which can contribute to the successful design and implementation of incubation policies.

4. Objectives and Strategic Planning for Business Incubation

In both developed and developing economies, small and medium enterprises (SMEs) are considered crucial to fostering economic and social development and their growth is supported with a wide range of policies as outlined above.

The failure rate of small new businesses in their initial years is high in both developed and developing economies. In part this reflects the competitive environment within which the businesses are launched and also the effectiveness of the specific business idea. It is also a consequence of the lack of experience of the entrepreneur who is launching the business and deficiencies in the environment (i.e. shortage of capital, legal difficulties, lack of information, etc). A wide range of initiatives are supported by governments to try and reduce business failure rates through addressing problems in the environment (i.e. special loan funds, removing legal obstacles, reducing government administrative procedures and speeding up their operation) and by assisting new entrepreneurs to tackle their lack of experience (training programs, advisory and support services, etc).

⁸ There are schemes available to measure the impact of the business environment on the ability of business to develop and thrive, the best known of which are the World Banks “Cost of Doing Business” <http://www.doingbusiness.org/> and the Global Entrepreneurship Monitor <http://www.gemconsortium.org/default.aspx>

Business incubators provide focused support to entrepreneurs through a supportive environment that helps them establish their business ideas and develop their concepts into market ready products, supports the acquisition of business knowledge, facilitates the raising of necessary finance, introduces the entrepreneurs to business networks, all of which should substantially reduce the level of failure. They not only allow new entrepreneurs to start their business by reducing the related costs and risk but do also increase their chances of survival and success by building capacity and networks.

Business Incubators have attracted significant support from governments throughout the world and in a wide variety of developmental contexts. According to the case studies drafted for New Zealand, South Africa, Malaysia and Brazil the main objectives pursued by National Governments through business incubation were the following:

	BRASIL	NEW ZEALAND	MALAYSIA	SOUTH AFRICA
Objectives	Economic development, employment generation (targeting disadvantaged groups) and technology commercialization	Generate high tech, growth-oriented and internationally competitive exporting SMEs	Technology transfer and Innovation	<ol style="list-style-type: none"> 1. Technology transfer and Innovation 2. Creation and development of sustainable, globally competitive SMEs that contribute towards the accelerated growth of the South Africa economy 3. Supporting selected groups (i.e. women entrepreneurship)

Governments see in incubators both a powerful means for supporting SME growth and for addressing a variety of socio-economic needs, which include job creation, technology and innovation transfer and thus competitiveness, local / regional development and restructuring, poverty alleviation and integration of economically disadvantaged groups. Thus public policy in support of incubation can have a number of different strategic focuses, each implying a different business development culture that will be reflected in the key skills and services provided.

Usually incubators are designed and implemented to pursue defined objectives as a part of a broader strategic framework (territorially orientated [regional strategy], or of particular policies [job creation, social policies, competitiveness], or a combination of these factors)⁹. Best practices show the need to have a strong consistency between the incubator programs and the overall economic development strategy. Where business incubation programs have been developed and conceived for standalone goals, incubators have generally turned to be of limited use with few sustainable results.

⁹ This is also confirmed by the Benchmarking Study for European Incubators undertaken by the “Centre for Social and Economic Study” in 2002.

Strong consistency with overall economic goals needs then to be combined with a long term approach (on average at least 10+ years), needed to ensure the establishment and sustainability of the incubation industry as well as the proper functioning of the business environment where incubators operate.

Policy makers should consider a deeper investment in understanding the drivers of success in particularly effective business incubation models. These investments should be followed with pilot initiatives that seek to test the findings and replicate these models in a variety of environments.

In the four countries that we have considered for our case studies, incubation policy has a long term approach and is usually part of clear strategic frameworks that have been developed and further refined during the years. The need to update and to be flexible in targeting emerging needs and/or weaknesses in the incubation system as well as to identify and replicate good local practices has turned out to be crucial in all cases.

	BRASIL	NEW ZEALAND	MALAYSIA	SOUTH AFRICA
Strategy framework	<p>The PNI (National Incubation Support Program) is designed to support new incubator creation and the expansion of existing ones. Incubation is now well coordinated within the SME support policy and the S&T Initiative, although it started as a bottom-up product of multi-polar initiatives by a wide coalition of local promoters.</p> <p>PRIME is the most recent step towards an increased support to innovative SMEs with high growth potential.</p>	<p>Incubators are supported under the Incubator Support Program (ISP), launched in 2001. Other programs supporting enterprise development are provided by New Zealand Trade and Enterprise (NZTE) Incubator Development Unit (IDU) residing within NZTE.</p> <p>There is a good integration of ISP into SME support systems and RED strategies.</p>	<p>The National Incubator Development Framework which led to the establishment of a specific incubator support program in 2002.</p> <p>The 9th Malaysia Plan has made a significant improvement in the coordination between incubation and SME development policy.</p>	<p>National Industrial Policy was launched in January 2008 and foresees also small enterprise support. The Small Enterprise Development Agency (SEDA) is in charge of coordinating SMEs support intervention. Incubation policy was piloted in 2001 through the GODISA program and is currently part of the STP (SEDA Technology Program).</p>

Incubation can also be included in the strategy framework for invigorating an industry cluster that is already attractive within a country or a region. In this case, launching incubators in industries that are already of interest to the national or regional authorities tends to imply that the businesses in such an incubator will be able to draw on a wider array of support services and programs than otherwise. In addition, the incubator will serve a larger purpose than simply helping a small subset of businesses in policy isolation. As a result, usually these incubators will not be narrowly focused on niche sectors but have a mixed nature in order to ensure a critical mass of deal flows.

The incubator should plan to support businesses in an industry that is structurally and contextually feasible and attractive in the country or region in which it plans to operate. For example, a biotech incubator focused on pharmaceuticals will struggle in a region where sufficient R&D funding is absent. At the same time, the incubator must have a substantial feedstock of suitably qualified and interested entrepreneurs. It is therefore useful to perform market research to identify the size and the requirements of their target market before proceeding too far in investing in its final portfolio of resources and services.

In general, a feasibility study is an important and necessary step, to design the business incubator and assess whether or not and how an incubator might be feasible. This is an important prerequisite for public support. The NBIA notes: “Providing detailed answers to critical questions, a feasibility study helps business incubator developers decide whether a business incubator will prove effective in a particular setting, by determining if the proposed project has a solid market, sound financial base, strong community support, and true champions. Beyond that a feasibility study identifies obstacles that business incubator organizers might have to overcome and offers options for surmounting them. It also may look at whether a proposed business incubator will further a community’s broader economic development goals.”

A useful tool for anyone considering to set up an incubator is the “Mixed-Use Incubator Handbook: a Start-up Guide for Incubator Developers” published by *infoDev*. The handbook is aimed at the context of developing countries to address the needs of these communities, which are often radically different from those prevailing in Europe and the United States where education, business training, and public institutional support belong to a more mature corporate environment. It is designed to help developers think through all the issues involved in establishing an incubator and outline a solid business plan to support the necessary fund raising.

We have set out here below the main different policy objectives pursued by governments through support to business incubation.

4.1 Promotion of new Business Sector, especially in Innovation and ICT

Currently, incubators are more and more intended to provide a convergence of support, towards creating growth-potential, technology based ventures. They are meant to promote technology innovation through interaction with universities and research centers, introducing new ventures to functioning clusters of high technology enterprises and direct advisory services for enterprises initiating innovative products and services. Thus incubation becomes part of a wider program for the encouragement of research and development (R&D) technology transfer and innovation and can call on a wide range of support programs¹⁰.

¹⁰ The Brazilian case study illustrates a development path where the majority of incubators are sponsored by Universities, linked to the business sector and financed by a variety of government programs. In Brazil these incubators act as focal points of complex networks that bring together funding sources, researchers and enterprises to encourage start-ups to take advantage of the research being undertaken in the country.

In some cases the incubation aim has been to introduce to an economy new business services and business models that are clearly required for the area to continue to compete successfully. ICT is the classic model for this, where incubators have enabled a range of new ICT based commercial business services (from bookkeeping to sales, to after sales services, servicing of ICT equipment etc.) often tailoring available packages to specific needs or creating innovative delivery mechanisms for service delivery, enabling other economic activities to gain efficiency and expand their operations more rapidly. While such businesses were often based on tried and tested approaches they have to innovate in service delivery, marketing, packaging and pricing to meet needs in different business environments, helping to build performance of other businesses, thus improving competitiveness across a region.

The role of business incubation in these programs facilitates the intersection of innovation and entrepreneurship thus having a particular powerful impact on the environment. The incubator becomes a place where wages go up because these new firms must compete on human capital and knowledge, where businesses grow from small to medium, and where local economies connect themselves to global economies¹¹. Their goal is not to support all start-ups, but rather those with the capacity to scale and grow, sometimes called *dynamic enterprises*.

This mainstreaming of technology transfer and innovation can be seen both in developed and developing countries, as shown in the table below.

¹¹ Audretsch, D.B. and R. Thurik, "Linking Entrepreneurship to Growth," OECD Science, Technology and Industry Working Papers, 2001/2

Promotion of new business sector, especially in innovation and ICT

<p><i>Developed economies</i></p>	<p>⇒ Primary objective is to establish technological leadership of local SMEs and make the local economy more competitive on international markets.</p> <p>Technology transfer and ICT models developed:</p> <ul style="list-style-type: none"> • incubators can be more industry-specific in terms of technology field and consequently marketing, information and training (<i>specialized research-technology based incubation</i>). Incubation is often included in a wider strategy for the development of technology-based clusters, for instance focusing on automotive technologies, biotechnology, electronics, new material, energy saving and environmental protection. This is quite typical in the EU. • incubators are established as <i>general research-technology based business incubators</i> and have a mixed use. This is the case in the USA where the vast majority of tech incubators are not established as specific to any particular industry. • <i>Business incubation with university relationship</i>. A common path is the creation of strong linkages with the university system to ensure a structured inflow of relevant resources, information and new ideas, as well as of clients and spin-offs coming from research centres and their staff¹². In other cases, incubators are directly set up within or by university campus to promote the research commercialization. This is very popular in the USA.
<p><i>Larger developing countries (like Brazil and South Africa)</i></p>	<p>⇒ Primary objective is to promote technology transfer and become knowledge based economies.</p> <p>Technology transfer and ICT model developed:</p> <ul style="list-style-type: none"> • <i>General research-technology based business incubators</i>: <ul style="list-style-type: none"> ◇ initial focus on simple business incubators with technology as a central theme ◇ located in industrial estates or clusters ◇ linkages with the R&D institutions are gradually supported and developed together with various related policies (incentives, tax structure, real estate development, foreign direct investments, skill-development and education programs) ◇ incubation may be sponsored to help build local services and suppliers, which also helps localize ownership, to key industrial clusters¹³. • <i>Business incubation with university relationship</i>. The Brazil case indicates the importance of the Universities to their model of business incubation. Essentially, the university or academic institution has a role as a founder (as in Brazil) besides being a source of resources such as research, expertise, space and/or funds.
<p><i>Smaller less developed economies</i></p>	<p>⇒ Primary objective is to facilitate the introduction of appropriate new technologies to their economies and building capacity to adapt and introduce technologies to their specific circumstances. This reflects the weak R&D infrastructure in the country.</p> <p>Technology transfer and ICT models developed:</p> <ul style="list-style-type: none"> • ICT support services incubation • Agri-business incubators¹⁴

¹² A distinctive feature of TU/e Innovation Lab (high-tech start-ups) in the Netherlands is the concept of an incubator representative in each university department. Their task is to screen new projects and identify potential even before the researchers themselves become aware of it. Furthermore, some of the benefits of the creation of a spin-off company are returned to the department itself, which is an important incentive for the department's effort to scout new projects. This ensures a powerful screening and scouting instrument.

Although most business incubators share a commitment to supporting growth-oriented enterprises at the early stages of their development, there is a relevant diversity in incubator models developed. This diversity reflects the need for a customized approach to effecting change in distinct, complex environments with different local barriers to innovation and entrepreneurship.

In general, success incubator programs, promoting new business sectors with a focus on innovation and technology transfer need to be embedded in wider frameworks for technology transfer and innovation development, usually implying¹⁵:

- The encouragement of applied R&D (i.e. grants for joint research between companies and academic bodies);
- development of industrial clusters (financing training programs, encouraging joint activities etc);
- improve education/human capital (e.g. initiatives to strengthen skills of the work-force to the new evolving technologies, e-learning and open education);
- creation of an adequate infrastructure like S&T parks or industrial parks providing high quality services where firms in the new sectors can co-locate.

¹³ Malaysia's economic growth has been critically supported by the electronics industry where international companies have located since the 1960's in free zones, producing primarily for export. These have mainly been "screwdriver industries" assembling parts produced elsewhere. Malaysia has struggled to maintain their place in the global system for this industry as availability of cheap labor has declined but skilled labor, enabling progress up the value chain has been scarce. Incubators, along with vocational education and training, R&D funding and other measures have formed part of the strategy to improve the country's ability to support and facilitate growth of the international electronics cluster.

¹⁴ Timbali Technology Incubator is the agricultural sector success story of the of the incubator fraternity in South Africa, Timbali, formed in 2003 as a partnership between the South Africa Land Bank, Mbombela Flower Growers and the South African Agricultural Research Council, has created an enabling environment where fledgling apprentice farmers have the opportunity to develop independent, competitive Agri-businesses. Over the past three years, Timbali has been instrumental in incubating more than a 100 Agri-related SME's, of which 97% are Black owned businesses, and 62% of which are owned by women. The Timbali Technology Incubator was the category winner in the Top Technology 100 Awards in South Africa for "Social Innovation" in 2005. In 2006, Timbali again qualified as a Top Technology 100 Company for 2006, and was a finalist for "Leader in Empowerment."

¹⁵ This can be seen in several countries i.e. China, India, Brazil, South Africa, Israel, Sweden, Finland, where the governments have launched multi-annual national plans for Science & Technology development placing the establishment of technology/industry business oriented incubators within the creation of a comprehensive infrastructure based on science & technology parks linked to R&D centre's and universities, a structured system of incentives in favor of innovation and technology transfer activities as well as human resources development initiatives.

4.1.1. Cultural Industry Incubation

The focus of this section is on technology transfer and innovation, illustrating how the economic growth objectives of government can be expressed in part through business incubation. Many developed and some developing countries (i.e. Brazil, Malaysia) have set themselves the objective of becoming knowledge based economies, as have many developed countries i.e. European Union Lisbon Agenda.

While this is the case the same concept of supporting innovation has been applied to the cultural area where specialist incubators have been established, often linked to centers of academic excellence in the performing and broadcasting arts, and designed to assist new artists establish successful commercial businesses. For example the Cultural Industry Quarter in Sheffield¹⁶ includes specialist music training courses at Red Tape Studio¹⁷, recording studios, incubator and workspace services through creative exchange¹⁸.

Cultural incubators provide support for creativity based enterprises delivering services into growth areas often linked to electronic media including television, broadcasting, electronic design, video, music, etc. Located within wider initiatives for cultural industries the incubators nurture local talent and raise levels of creativity that influences the ability of all industries to innovate.

4.2. Part of major Industrial Restructuring

Geographical areas tend to specialize in particular sectors because of locational and other advantages, leading to employment and skill patterns that reinforce advantages and build the sector into the areas major employer. However, if the industry situation changes the area can suffer major problems of unemployment and economic decline. The area subject to such major industrial restructuring needs to develop new enterprises, often in new sectors, to try and replace failed major employers. This requires both incentives for businesses to re-locate to the area and the encouragement of new business creation in the area, which could be in modernizing the dominant sector or in application of local skills and talents to new activities¹⁹. The wider public policy to address these restructuring issues usually includes financial incentives for relocation of existing businesses (tax credits, loans etc.) re-training programs for people facing redundancy and new different skill training for new entrants and support for new business start-ups including the encouragement of entrepreneurship often in areas where SMEs are under-represented in the economy (training, business advice, guarantee funds etc.)

Business incubators have been widely used as part of the policy mix tackling the restructuring of a local economy. Such incubators have typically targeted people facing redundancy, providing a mix of services emphasizing the development of business skills and entrepreneurship attitudes. The aim is to assist people to build new enterprises based on existing skill sets and/or to reapply their skills to new sectors, creating new growth businesses and role models for others.

¹⁶ <http://www.ciq.org.uk/>

¹⁷ <http://www.redtape.org.uk/>

¹⁸ <http://www.ciq.org.uk/featured-projects/cesy/creative-exchange-overview/>

¹⁹ The Sheffield Cultural Industry Quarter is a specific example where the failure of the steel, clothing and mining industries led to rapid decline and rising unemployment. The focus on cultural industries enabled a new sector to be created, providing new hope for young people and helping to regenerate local communities.

This happened in the transition economies of Eastern European countries where the incubator tool has been widely adopted to support SME and entrepreneurial skills development in order to facilitate the process towards a market economy. Incubation programs helped also to absorb the excess on the labor supply side and high level of unemployment resulting from the privatization of state companies.

Currently, many developing countries facing the urgent need to restructure their economies and address high unemployment rates in the context of rapidly growing young populations and increasing globalization are using this incubation model. In order to focus on entrepreneurial skills development and job creation, in ways that complement wider initiatives to improve opportunities for small enterprise development and growth and create labor friendly policies.

Usually, incubator programs aimed at major industrial restructuring foresees a **mixed portfolio business incubator** targeting a range of sectors.

If there is a local development or competitiveness strategy, commonly sectors supported by the incubators are aligned to it. This happened successfully with the generation of incubators funded by the Structural Funds for the period 2002-2006 in Europe, which contributed to several local regeneration and development initiatives. This is not the case of most Asian countries where there is still the need to promote the design of local development and competitiveness plans where incubators are adequately integrated.

In this type of incubator there is less emphasis on technical skills and more on developing entrepreneurship and business management skills. Pre incubation services will emphasize business training and coaching to build ideas and confidence with selection criteria focused more on the sponsors' ability to successfully make the transition to self employment in productive enterprises rather than innovation or new products. However, this model can also facilitate the germination of new areas of competitive capacity and provide a focus of innovation in this regard.

4.3. Introduction of Entrepreneurial Culture to Socially-excluded Groups

Particular groups suffer disadvantages in a country that can lead to them becoming isolated from main activities. Such groups, often an ethnic minority, become socially excluded, with poor school attendance and qualifications, relatively high levels of unemployment, poor housing, high incidence of poverty, higher crime levels, lower life expectancy etc. The outsider image and real problems of such groups often lead to growing discrimination in employment and treatment by service providers that reinforces their social exclusion.

Governments need to develop a range of policy measures to try and tackle these problems of social exclusion including special training programs, anti discrimination laws, local infrastructure investment etc. In some cases the policy mix has included efforts to raise the numbers of businesses created by the targeted group through special training programs, access to finance schemes, purchasing policies of government agencies etc. designed to assist businesses owned and managed by the target group to start and flourish.

Business incubation programs have been established to target such groups, providing them with strong mentoring services to help develop appropriate entrepreneurship behavior and management skills necessary for their business to succeed. They may focus on socially valuable products and services and require significant investment in human capital and “pre-incubation” activities.

In a similar way some incubators have been established to target potential businesses established by unemployed young people, who are likely to need more mentoring to develop appropriate behavior and assistance to network successfully in the wider business community. Young people not only lack life experience and resources, but for them getting equity and credit facilities can be a big challenge. Thus this type of incubation programs often include relevant services and assistance in covering the financing gap²⁰.

More recently a number of incubators targeting women owned businesses have been created, helping women to overcome discrimination in the wider environment.

Through the EQUAL program in Europe, incubators have been set up to support single mothers, unskilled women or women from ethnic minorities, by providing longer and more flexible opening hours, space for part-time working, longer incubation periods, access to public transport, security, and childcare.

Women business incubators have also been established in many developing countries where women’s social status is seen as providing specific barriers to them establishing businesses, e.g. the Tianjin Women’s Business Incubator in China²¹, The Village Business Incubator in Syria²², Women Business Incubator project of Turkey²³.

3.4. Objectives and Policy Mix

Incubation objectives have an impact on the policy mix, i.e. the actual mix of services and how they are delivered. Actually, the mix provided by the policy support must reflect the needs of the target group, which are different for different objectives and, within each objective, must also be tailored on the needs of the specific sector(s) and/or segment(s) targeted.

The table below presents incubation objectives and the related mix of services.

²⁰ Sharek Youth Forum – You Business Support Unit (www.sharek.ps) is recent initiative to support young Palestinians.

²¹ www.tjwbi.com

²² www.vbi-lattakia.org

²³ www.kisgem.org

Objective	Pre-incubation phase	Incubation phase	After care phase
<p>Promote new business sector, especially innovation and ICT</p>	<p>A strong pre-incubation program is used to identify:</p> <ul style="list-style-type: none"> ▪ potential new product ideas (creative resources: e.g., matching researchers with entrepreneurs programs, business plan competitions, etc.), ▪ identify funding opportunities for the very early stage financing (financial resources), ▪ help the incubatees acquire basic business understanding (human resources: e.g. seminars for researchers on entrepreneurship). <p>The screening process for clients then focuses on the potential of the new product and the ability of the sponsors to develop their business acumen</p>	<ul style="list-style-type: none"> ▪ Incubation services will include in addition to basic administrative services and networking both business and technical development support, providing guidance on financial management, marketing and design including access in some cases to shared specialist equipment that new businesses only use sporadically while they develop their operation. ▪ In order to avoid long term dependency and ensure the business is making sufficiently rapid progress to justify their place in the incubator; regular reviews are held to assess progress. ▪ If the business development falls significantly behind that forecast the business will be asked to make way for other clients who can make better use of the incubation services. 	<p>When the client firm leaves the incubation process, a growth facility for graduated companies has proven to be an added value for both the graduated firm and current incubator clients (see the case of China). Through a growth facility such as an industrial and technology park, the incubator can stay in close contact with its graduated firms thus maintaining a broader network, of which client firms might further benefit. Having a mixture of existing and newly established companies within one building or park creates a more dynamic environment of which all can benefit.</p>
<p>Part of major industrial restructuring</p>	<p>Pre incubation services will emphasize business training and coaching to build ideas and confidence with selection criteria focused more on the sponsors' ability to successfully make the transition to self employment in productive enterprises rather than innovation or new products.</p> <p>The pre incubation program would emphasize training and coaching services with incubation services focused on mentoring and coaching clients.</p>	<ul style="list-style-type: none"> ▪ Within the incubator there is likely to be little in the way of technical support apart from self employed specialists contracted to advise a specific business, and more emphasis on development of good business management and networking. ▪ Support for the new businesses to network into the wider business environment is important to establish trading links that go beyond the target group if most businesses are to become established and grow. 	<p>Post incubation support is likely to be required to manage the transition from the incubator supportive environment.</p>
<p>Introduction of entrepreneurial culture to socially excluded groups</p>			<p>Post incubation support is likely to be required to manage the transition from the incubator supportive environment.</p>

5. Wider Business Environment for SMEs

Ensuring an effective environment to encourage entrepreneurship and business development is a critical issue for all market economies. Governments are increasingly putting efforts into ensuring an effective environment for business growth, reducing unnecessary red tape, creating circumstances where fair competition can flourish, and addressing market failures in ensuring access to finance and services.

Business Incubation is a sub-set of this wider range of policies adopted to create a facilitative environment for business creation and growth. As such the impact achieved by business incubation policy is affected by the wider environment for business development in which it is placed. In some cases problems in the wider environment can create circumstances where incubators are unable to succeed in their central mission to help growth businesses.

Some incubators can have significant gaps in basic infrastructure. For example many incubators in Africa have unreliable electricity supply. In other developing countries there are gaps in ICT access and infrastructure.

Access to public and private R&D, market research and industry practices is an additional barrier to innovation and entrepreneurship in many incubation environments, while a key weakness is often a lack of incentives for entrepreneurial activity and innovation. In countries like Uzbekistan, the tax incentives simply do not exist in the environment. In many developing countries, the missing incentives include intellectual property laws that facilitate the commercialization of ideas. Countries where the laws themselves can be cited as particular barriers include Thailand and Iran, whereas in other countries, incubators lack of knowledge of intellectual property (IP) laws or have to deal with the cumbersome process and high cost of securing a patent.

The bureaucratic challenges of starting a business can also be cited as a key challenge. Time and costs for registering a company can be very high (i.e. up to almost 150 days). Financing gaps are then typically recurring both in developed and developing countries.

In the very early stages, financing needs may vary significantly but are often compatible with funds accessible through informal or traditional sources (e.g. micro and small and medium enterprises banks, MFI facilities, bootstrapping). Anyway, these sources do not always solve the problem in the following business development stages and cannot address the financial requirements of “high profile” innovative products and of many knowledge-based companies.

In these cases, sometimes there is a shortage due to underdeveloped supply side²⁴ and/or the challenge is compounded by high collateral requirements²⁵. This is typical for example in countries with a weak “equity culture” where debt financing is regarded as the main option and there is the need to introduce financing tools that can offer guarantees replacing the collateral as well as to promote progressively a wider use of equity and quasi-equity products.

²⁴ According to the Monitoring and Evaluation Impact Study undertaken by *InfoDev* on assisted incubators, more than 80% of grantees indicated that their clients are limited either because they cannot afford banking products or services or because SME-appropriate offerings do not exist in their local business environment. This gap exists in all regions.

²⁵ In Mauritius, for example, an innovative range of mechanisms exists to fund SMEs in the ICT sector, but clients of the National Computer Board ICT Incubator Center report that the collateral requirements make these funds difficult to access.

However, often the problems lies in a mismatch between the supply and demand side and the need to improve their interaction. In most countries, financial institutions do not have enough information about the economics or financial parameters of clients and so they show a conservative attitude. On the other side, clients are often not very well prepared in approaching banks or investments funds. They are unable to analyze the financial instruments available and to understand which suites best their needs. Nevertheless, they cannot prepare a good business plan in the most effective way.

Each business environment has its own unique mix of gaps, and these differences are reflected in the activities that incubators can undertake to support local entrepreneurs.

It is the case that incubation services can, and often do, help the specific businesses supported by the incubator to overcome wider problems in the business environment, for instance:

- providing financing services (brokering loan arrangements, developing clients negotiations skills, training and advisory programs to enhance investment readiness, in-house loan schemes, seed funds, specific venture capital access, linking to business angels²⁶);
- building stronger links between entrepreneurs and universities²⁷ thus promoting the development of the knowledge capital;
- accessing improved services from state owned or supported monopoly (i.e. overcoming ICT access problems),
- overcoming bureaucratic delays in obtaining licenses and permits (creating special fast track systems);
- working (formally and/or informally) to improve the regulatory environment for SMEs - not only for their own clients, but also for the broader community of SMEs (e.g. regular consultation with the government on SME and business environment issues)²⁸.

Building on their reputation and network of relationships and collaborations, incubators can then positively influence the environment dynamics. Many incubators are acting as effective pioneers for change. ISST in Iran had a direct influence on the country's strategy and now is focusing on knowledge-based development.

While this is the case business incubation is not a substitute for fixing significant problems in the wider business environment, and incubators programs need to be complemented with wider SME support initiatives addressing main constraints to enterprises development and growth. Public authorities have to intervene with other public mechanisms to create favorable conditions in the business environment, addressing financing and legal aspects relevant for new ventures.

²⁶ Brazil has a very well developed network of business angels

²⁷ The Genesis Institute in Brazil, for example, was founded with a mission to "transfer knowledge from the University to Society," and it has succeeded in promoting a stronger culture and structure for entrepreneurialism for students and faculty of the Catholic University of Rio

²⁸ Yangling and Tianjin in China, ANPROTEC and RMI in Brazil, and TREC-STEP in India, are regularly consulted by government on issues affecting the local business environment, particularly with respect to developing the SME sector.

Government leaders in countries such as Tunisia and Mauritius, for example, have made the build-out of ICT infrastructure a national priority in recent years. Policymakers in developed countries usually facilitates knowledge-sharing across sectors by creating stronger incentives for commercialization and R&D.

There are then environments where governments are providing cohesive policy, regulatory and legal frameworks that support the SME sector. For example, the investment in new technologies development and R&D activities as well as the involvement in new business sectors have raised some issues to governments in terms of intellectual property rights and the related economic and social implications. Of course, a balance must be reached between the need to encourage research and creation on the one hand and, on the other, the legitimate wish to make innovation and culture freely available to all.

In Tunisia, for example, recent legislation that protects knowledge-based SMEs includes the Telecommunications Code, the Electronic Business and Signature Law, and the Personal Data Protection Law. The Indian government has also focused on the Small Scale Industrial (SSI) sector as a driver of future growth and innovation through the National Science & Technology Entrepreneurship Development Board (NSTEDB), established under the aegis of the Department of Science & Technology to help promote knowledge driven and technology intensive enterprises. The Board has representations from socio-economic and scientific Ministries/Departments and aims to promote and develop high-end entrepreneurship for S&T Manpower, thus converting "job-seekers" into "job-generators" through Science & Technology (S&T) interventions.

Similarly, to overcome the shortage of available financial resources for new start-up companies, governments have contributed with the provision of a variety of financing tools which cover all the phases of the incubation process (loans, guarantee funds, venture capital). Initiatives are also launched to improve the legislative and institutional framework and promote sound and functioning financial markets. However, it is also recommendable that governments pay attention to the financial mismatch that can occur in their countries and that they compound incubators in promoting the investment readiness of their clients by launching adequate training and advisory programs involving both the supply and demand sides.

6. Funding Strategies for Business Incubation and Sustainability

6.1. Sponsorship

Initial funding of the incubator programs is usually provided by public authorities.

There are some examples, especially from developed countries of private enterprises²⁹ establishing incubators, especially in the ICT industry, often requiring a proportion of the initial share capital in exchange for space in the incubator.

²⁹ Private establishment of incubators is common in USA, Australia and in many EU countries,. The New Zealand case study identified investments of this sort and our Ghana research identified an incubator receiving financial support from Barclay's Bank.

Some large companies have also established incubators located at their premises where they encourage new starts as a way of building innovation linked to their businesses³⁰. Some large companies have also provided sponsorship to incubators.

In the majority of EU countries, a funding mix based on the matching of national funding – usually up to a maximum of 50% of the operations – and other sources such as regional/local public and private funding is the most common funding structure³¹. US incubation programs usually start as local initiatives by economic development agencies. Following the initial preparations, federal agencies are approached. Federal funding is usually limited to preparation and construction costs as well as research grants for client companies and is then compounded with other local/private sources.

Where more than one funding source is required then a structure which enables the funding providers to meet and agree the overall strategy is sensible to avoid problems of overlaps or gaps in the funding provision.

In some context, public authorities have entirely funded the incubation initiatives, primarily where strong social objectives are involved, for example when supporting the participation of socially excluded groups in business formation³². This is quite typical in the Middle East and North Africa, Saudi Arabia and Thailand as well.

When sponsorship is in the form of grant aid from the government, resources can be allocated on the basis of a long-term commitment (10 years and more in the Malaysian case for example).

In this case, interested applicants have to submit their request and negotiate the funding on an annual basis.

Another option is to have grants in successive funding phases (3 to 5 years each on average, New Zealand has annual phases, while South Africa 3 years grants). The end of phases usually coincides with an evaluation exercise.

Grants usually cover the establishment of the incubator (infrastructure) and/or part of its operation (staff, external expertise).

A yearly grant is often provided for covering the costs of the staff (manager and secretary service) and low costs facilities. Sometimes, special provisions are allocated to hire external expertise for ad hoc consultancy to clients. From the case studies this includes grants for services to clients and pre-incubation support (coaching, training programs etc.), finance within a wider grant for R&D (e.g. university/private funded research), sponsorships (e.g. large businesses such as banks, engineering companies, etc. providing financial support) and chargeable consultancy activities of core staff.

³⁰ Motorola, Coco Cola (2001), Panasonic (1999), Monsanto (1999), Intelligent Systems (1990), Reuters (2000) have their own in-house business incubators to grow businesses related to their specific needs.

³¹ Centre for strategies and evaluation services

³² Malaysia is quite unusual in directly providing 100% grant funding to the incubators in the country. While incubator rent income was estimated at 14% of running costs it was unclear how that money was used for additional support services when 100% funding was being received from Government.

Incubator initiatives are submitted for evaluation to the competent authority and need to include information on the investment.

An individual incubator seeking grant funding must demonstrate that they have a clear strategy and action plan to build a network of key stakeholders to embed the incubator within the necessary commercial and financial networks required for clients to develop their business.

Usually, a feasibility study or business plan is requested including the industry sector chosen based on competitive advantages, annual targets and outputs as well as details on the organization and management of the incubation infrastructure. In some context, information requested on incubators are carefully defined in order to judge the quality of the incubation initiatives and the approval of the investment request leads to the financing but also to the issuing of an official certification. In that sense, the incubator becomes part of a network and is eligible for getting further financing also in terms of grants that its clients can benefit from.

The experience in some developed countries like Finland and Israel shows that part of public sources can be devoted to supporting the development of client projects and is made available in the form of grants or soft loans. The incubator project grants procedure starts when an entrepreneur makes his/her application to an incubator. If the project proposal is accepted, it is submitted to the incubator fund where it is screened again. If the screening is positive, the incubator gets the funding for supporting the project for a fixed period of time (on average for 2 years). The funds usually provide a part of the total budget (it can reach the 85% of the total); the remaining part should be covered by the entrepreneur. There are usually fixed funding ceilings per project.

The table below summarizes the sponsorship structure in the four case studies analyzed.

	Brazil	New Zealand	Malaysia	South Africa
Period of grant funding	Varies between different funds & schemes but typically for short periods.	Annual basis (award and renewal based on merit; assessment made on the quality of their operation and impact). By 2014, incubators have to be self-sufficient.	Open-ended long term funding.	3 year grant period but annual adjustment against performance targets.
% of funding provided	It was determined that public authorities and agencies contribute approximately to 35% of the costs of setting up an incubator.	<i>Incubator Awards</i> mechanism: annual merit-based grant to approved incubators covering up to 50% of their running costs. There are eligibility criteria for awards.	100% (the Government covers both start-up and running costs + large contribution (almost 50%) to venture capital funds (MAVCAP).	Variable percentages

6.2. *Business Models*

According to a report commissioned by the European Commission which benchmarked business incubators³³, incubators are more likely to succeed when supported by a broadly-based partnership of public and private sector sponsors. Particularly in the initial stages, public sector funding is critical to ensure that incubators become operational.

As incubators become established, external support can decline or cease, so that incubators have to identify sustainable, flexible revenue streams for their organizations to survive and perform effectively. Only in very few circumstances are incubators not expected to achieve financial sustainability. This for example happens in Finland where financial sustainability is considered in contrast with the incubators role and where funds are given directly to clients.

Lalkaka and Shaffer (1999) define the concept of financial sustainability as being able to continue to achieve positive cash flows in the future.

There is a view on financial sustainability saying that business incubators are established to mentor and guide start-up companies to a position of health and financial viability so they should themselves be striving to achieve the same. Another view says that government should not fund incubators unless a specific market failure exists.

There are few examples of incubators reaching financial sustainability. In developing economies most of incubators are not in a position to cover all operating costs with earned revenues or return on client investment in the short-term. In Malaysia, incubators are dependent on Government funding and there are few incentives to develop self-sustainable financial models, while in South Africa few steps have been taken in terms of sustainability but there is a wide recognition about its importance and the willingness to make soon progress to implement it.

Looking at global practices, incubators use a mix of the following business models to manage their revenues streams.

³³ Centre for Strategy and Evaluation service (2002)

BUSINESS MODEL	DESCRIPTION
Rent model	<p>Rental charges to clients can be source of funds, though incubators need to achieve a significant size before this becomes a major income source. Rent in many incubators in USA, China, Brazil and other countries is the main income source (up to 40%) and can make incubators self-sustainable if large enough. In South Africa, incubators gets 20-30% of their revenues from rents. Sometimes initial rental are subsidized.</p> <p>In most cases public grants are provided directly to the incubator but in some cases (i.e. Slovenia³⁴) grants towards rents are given to incubator clients, helping to focus the incubator staff on the need to attract sufficient clients to fill the space available.</p> <p>The level of rent subsidy usually declines over time to near market-related levels. The benefits of this strategy are to gradually introduce commercial discipline to clients, to counter charges that clients compete with non-incubated businesses with an unfair advantage, and to make a progressively growing contribution towards the financial sustainability of the incubator.</p>
Equity model	<p>Incubators can take minority stakes (2-6 %) in incubated businesses, often in return for free and low rent periods, enabling future income from dividend payments. An additional equity (e.g. 1-2%) may be further added for additional periods spent in the incubators. The relative smallness of the incubator's shareholding means there are many opportunities for it to liquidate its position. To work, the equity model requires scale and portfolio quality.</p> <p>This is the model mainly developed in New Zealand and it is also becoming adopted in Brazil, by university based incubators. Australia introduced an ambitious version of this model whereby incubators took up to 45 percent equity in their tenant companies. These incubators only incubated ICT companies.</p> <p>As for China, it represents a special variation of the model as it is the central government that is funding the incubators but also taking equity in their tenant companies.</p>
Royalty model	<p>According to this model revenues earned by the client will legitimate a royalty payment for the incubator. Usually the royalty is at around 5% of the revenue and is limited in time (on average 5 years).</p> <p>As the royalty can undermine the financial management of clients that are in their start-up phase thus needing sources, it might happen that incubators agree to postpone payments at when companies can afford them. This type of model requires then a lot of trust, communication, and exchange between the parties. New Zealand has three incubators currently using the royalty model, two of which adopt the equity model too.</p>
Deferred Debt model	<p>In this model the services provided to the client are valued, along with incubator's overheads, and then charged in the incubation fee. The client has up to 10 years to pay back the debt to the incubator. Once the client has left the incubator and/or when it has reached an agreed financial target, the total debt due to the incubator is fixed and the repayment can start. Repayment can be in a lump sum or partial payments.</p>

Apart from the business models identified above, global practices show a great creativeness and a number of interesting initiatives (mainly related to the delivery of paid services) developed by incubators around the world in order to target the financial sustainability issue.

34 See <http://www.worldbank.org/urban/local/toolkit/docs/m3/lm/module-3-lm-9.pdf> for a case study of Slovene incubation

A high-technology incubator in Belo Horizonte (Brazil) plans to develop revenue sources from consulting and other high-value services to clients also outside the incubator to reduce its reliance on rental income.

As per InfoDev reports, Parquesoft in Colombia, for example, negotiates sales on behalf of its entrepreneurs, collecting 10% of fee for the service, and Kharkov Technologies charges a membership fee to new virtual clients. Others are providing services to non-incubating clients such as training or consulting, or as in BusyInternet's case, running ancillary businesses such as an ISP, a

The case of Biominas in Belo Horizonte³⁵

“Biominas, a biotech-focused incubator in Belo Horizonte, provides an example of innovative financing which also contributes to financial support for promising new ventures. The incubator has started a program with the Inter-American Bank (IAB) to finance new companies in Brazil. IAB gives the incubator grant money of \$200,000 to \$1 million to invest in promising new firms. The program allows the incubator to invest money in its more promising firms with the return on investment reinvested in other companies. This particular incubator had financed 12 companies through the IAB program, and has also started a seed capital program in partnership with FINEP and FAPEMIG (Minas Gerais State Agency for Science and Technology) of R10 million (US\$4.382 million) to invest as seed capital in early-stage biotech ventures, with the incubator taking a 25–30 per cent stake in the venture in return for its investment.”

bar and a restaurant.

7. Ownership and Management of Incubators

In this section we consider the key issue of ownership and management of incubators from the viewpoint of public policy.

In many countries the first wave of incubators have been established and managed by the governments, either nationally or locally. With few exceptions, this ownership pattern has proved dysfunctional.

Publicly owned incubators have generally been too cautious and employed people without sufficient business experience to deliver the level of services required. Managers of public owned incubators tend to be more focused on bureaucratic aspects and devote less time for engagement with clients or tend to link incubator clients with sources of financial assistance and can be less selective in entry procedures. In Malaysia part of the reform process launched since 1999 was aimed at overcoming the lack of experience of part of the incubator managers of public funded incubators, who were considered as bureaucrats with little knowledge in entrepreneurship.

³⁵ Aruna Chandra “Business incubation in Brazil: creating an environment for new ventures” (Belo Horizonte interview, 2006).

As a result most of new start-ups were going out of business, showing a lack of support to their activities and sometimes poor entry procedures.

A lack of managerial skills can also be found also in university environments where disfunctionalities are often compounded by part-time management which further undermines the needed focus on the incubatees and on efficiency (e.g. lessons from Thailand and India). Whereas mixed ownership structures (public, private) encourage incubators to make riskier direct investment in their clients and thus to be more efficient in selection of ideas (Chandra and He, 2008).

The government role is essentially to develop the technical infrastructure, policy framework and initial finance and to help catalyze the venture creation process, but experience shows that the establishment of public private partnership (PPP) based incubators contributes to maximizing the positive effects of the incubation experience.

Several countries, for instance Brazil, South Africa, India, Thailand, Finland and Turkey, have promoted governmental mechanism favoring PPP based incubators. Some countries, for example Israel, have opted for privatization programs for state owned incubators, attracting private financial entities as well as strategic actors within specific sectors to be owners of incubators and to operate them in a more efficient way. This has brought higher success rates; both in raising funding for projects during the incubation period and after graduation, as well as enhanced quality of the management teams within the incubators. About 65% of the privatization program's graduated projects have successfully attracted private investments compared with 45% in the original program. In the same way, the corporatization of government-funded technology parks and research institutes has managed to change the mindset of incubator managers towards being more business-minded and profit-oriented.

Incubators are expected to enable their clients to integrate with the commercial, financial and research networks that are critical for the growth and success of their business. Equally, incubators needs to be integrated into the same networks to build their reputation and support for their activities. Consequently, incubator require clearly defined mechanisms to ensure they are networked with key stakeholders and are clearly recognized as a centre of expertise within appropriate networks.

In many cases, either the ownership or the governance structure is used to construct a public private partnership that facilitates the incubator and its clients networking with key stakeholders³⁶. Sometimes, incubator programs encourage important institutions to engage in incubation projects and select incubators for grant funding using evaluation criteria that include effective networking arrangements. In other cases, some restrictions are imposed. For example, the program may require that at least one of the owners is an academic institution or that incubators demonstrate a well functioning cooperation with universities.

The main problem is to decide who does what and build an appropriate level of trust and shared vision. This implies measures to introduce the incubation concept and its advantages to all partners involved and reach an overall consensus on incubator program objectives.

³⁶ In other cases an advisory committee is used to achieve the same effect.

Workshops can be organized with relevant institutions to invite foreign experts from benchmarked countries to provide training and exchange experience about successful PPP in business incubation, thus inducing the establishment of similar initiatives. Relevant institutions can be involved in sectoral strategy working groups created for the identification of projects (including incubation) that can be financed through public sources.

The next table summarizes the ownership and partnership structures adopted in the four countries of our case studies. The observed formal legal structures, ranging from internal department, through to private company, to NGO, etc, reflects the different legal options available.

	Brazil	New Zealand	Malaysia	South Africa
Ownership / Partnership structure	Mixed partnerships as required by the specific project. Government works in tandem with industry and universities.	Generally stand-alone commercial entities, owned by universities or regional economic development agencies. A small number are joint ventures between these organisations and national, multi-national companies.	National authorities, universities, voluntary organizations.	All the incubators are registered as independent entities, being either not-for-profit companies or trusts, and report to STP.

Because of different ownership models, business incubators’ management and leadership styles vary. When the owner is a government agency, the incubator is usually established according to the public institution model with a director appointed to manage the incubator and take care of its functioning. Incubators established on the basis of a public-private partnership are also usually set up according to the prevailing corporate style and culture, creating a board appointing a general manager.

Currently, some newly-established government-sponsored business incubators are also following a more corporate style. A combination of a board of directors and a manager appears more likely to be a successful mix for the management of an incubator. In this way the board can be focused on the incubators formulation and implementation of strategy and hold a clear overview of progress against the targets set., while the manger can take care of the day-to-day management and engage more with clients. To this aim, a clear division between the governing committee and day-to-day management is essential and the governing committee maybe be overseen, as in New Zealand, by a central monitoring body.

The initial leadership of the incubator is critical to the success of the initiative. Experience shows that dynamic, entrepreneurial managers are crucial to set the course of an incubator, while cautious, overly academic or bureaucratic managers generally fail to produce high-impact initiatives.

Day-to-day management is clearly delegated to a manager with the appropriate business skills and experience plus management expertise. The incubator manager is responsible for the delivery of the service mix to clients, marketing programs to attract clients and responding to needs as they occur. Other staff should be working under his/her direction.

The management of the incubator should be carried out like the incubator itself is a company with its own cost and profit constraints to be respected and for which the manager takes responsibility. The incubator is designed to assist companies to become fast growth businesses which inevitably requires the clients to adopt a clear commercial orientation. It is difficult to conceive how an incubator which is not commercially oriented itself would be able to create such an orientation in its clients.

Equally, the terms and conditions of employment should ensure there is an award system that encourages success with a clear system for replacement if success is not forthcoming. One of the most significant reasons for the failure of incubators is the appointment of inappropriate people into key positions. This can be caused because the employment package reflects considerations of the public sector not relevant to the post (i.e. pay structure, grades and terms of employment appropriate for a public servant on an internal career path), or because the post becomes part of an appointment system where the needs of the incubator are not central to the decision, (i.e. part of wider career paths for civil servants, etc).

In all selected countries examined in our study, a corporate style prevails or has been introduced in the day-to-day management, as can be seen in the table below.

	Brazil	New Zealand	Malaysia	South Africa
Management Structure	Mixed partnerships as required by the specific project. Government works in tandem with industry and universities.	Generally stand-alone commercial entities, owned by universities or regional economic development agencies A small number are joint ventures between these organisations and national, multi-national companies.	National authorities, universities, voluntary organizations.	All the incubators are registered as independent entities, being either not-for-profit companies or trusts, and report to STP.

Whatever the ownership and management structure it is important that the public sector is clear about its objectives, the level of finance to be provided and the outcomes expected. This enables the development of clear performance measures (see below) and also for periodic bids to be made for future public support.

Program designers should place particular emphasis on recruiting and empowering strong managers to drive the management of business incubators.

Donors should consider investing more directly in leadership development of incubator managers, including capacity building for high potential individuals, global networking and knowledge-building opportunities, and disseminating effective strategies for recruiting and retaining talent in the incubation sector.

8. Monitoring and Appraisal

At the start of this paper we raised issues relating to the best practice approach. Central to best practice is the need to clearly define policy and program objectives in operational terms, enabling clear monitoring of outputs and appraisal of the impacts actually achieved, enabling identification of the process leading to success which can be further improved and replicated as necessary.

Programs designed to implement the objectives of government within best practice should be defined as a set of goals to be achieved with the resources available. Such goals should follow SMART principles; these are that the program should be: specific, measurable, attainable, realistic and timely³⁷. Monitoring and appraisal systems are then easy to define and relate to the “measurable” part of the SMART definition, enabling both implementers and policy makers to see the real progress being made in achieving the policy goals.

The design of a monitoring and appraisal system for a business incubation program is therefore critical to identify unexpected problems that are preventing successful outcomes and to identify where further improvements can be made. The matrix adopted should clearly reflect the objectives and goals of the program without placing unnecessary strain on the incubators resources.

Within this framework monitoring should be used to regularly measure ongoing process in implementing the specific policy goals with the measures designed to effectively capture key quantitative measurements of performance, allowing policy makers to evaluate what is being achieved against the clear goals they have set, both for individual incubators and for the program as a whole. It also allows for evaluation of incubation against other policy options for the promotion

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Specific - To set a specific goal you should be able to answer the six "W" questions:

*Who: Who is involved?

*What: What do I want to accomplish?

*Where: Identify a location.

*When: Establish a time frame.

*Which: Identify requirements and constraints.

Measurable – refers to the need to establish concrete criteria for measuring progress toward the attainment of each goal you set. The measurements should be easy to collect and relate directly to the goals to be achieved. When you measure your progress, you stay on track, reach target dates, and know the effort required to reach your goal.

Attainable – Goals should be clearly defined and achievable within a specific period for them to be attainable.

Realistic - To be realistic, a goal must represent an objective that implementers are both *willing* and *able* to work.

Timely - A goal should be grounded within a time frame. With no time frame tied to it there's no sense of urgency.

of specific objectives. The key issue for the design of ongoing monitoring program is to design clear unambiguous measures that:

- Clearly relate to the program's goals
- Are easy to collect
- Allow for comparative performance within the incubation program and with other forms of business support targeted to the same objective.

Appraisal is then a different form of evaluation, being designed to identify how implementers are achieving or failing to achieve the goals set. The appraisal system should include qualitative as well as quantitative measures designed to identify and disseminate the key features that lead to superior performance. Thus an appraisal should look at the program's objectives and how these have been formulated as clear implementable goals and how incubators have approached these goals. Another key function is to identify and support improvement strategies. Where a monitoring system is regular, ongoing and collected by the organizations in the program, appraisals are best undertaken at specific points in the multi-annual program by an external reference group and conducted through qualitative measures i.e. face-to-face interviews, focus groups etc. in addition to an analysis of the quantitative information to identify key issues in improving the program.

Of course government policy makers are not the only group to benefit from monitoring and appraisal systems. Other stakeholders that can benefit from the monitoring and appraisal system include:

- the incubator manager who, through regular measurement of outputs and performance, can evaluate activities and incrementally try and achieve improvements in all processes;
- the management committee which can use the monitoring system to evaluate the performance of the manager and staff in achieving the organization's objectives, proactively identifying policy adjustments to improve performance;
- the potential clients of an incubator which can use monitoring information to identify the benefits they should obtain through being granted a tenancy;
- investors, customers and network partners of incubator clients that can use the monitoring information to evaluate how reliable incubator clients are likely to be as customers, suppliers or partners.

	BRASIL	NEW ZEALAND	MALAYSIA	SOUTH AFRICA
Monitoring and appraisal system	<p>A track record of annual reviews by governing bodies and associations could not be found.</p> <p>Some surveys are carried out including data on performance, graduated companies, sectors of activities, but on a sporadic basis.</p>	<p>Incubators are required to</p> <ul style="list-style-type: none"> • report statistics on a regular basis • undergo annual capability assessments and performance benchmarking conducted by the IDU (which play a part in annual funding decisions) • collect performance data from former tenants for five years post-exit. <p>Intermediate evaluations carried out by the Government in 2004 (for identifying best practices) and 2008 (on survival rates, sustainability and update on intermediate objectives).</p>	<p>Government does not carry out formal M&E activities. Incubator management does it informally. Systems to monitor companies once they have exited are not currently in place.</p> <p>Economic Planning Unit of Prime Minister's Dept. has launched an impact assessment study.</p>	<p>STP makes use of aggregated data from each of its incubators and reports on a quarterly basis on the following parameters:</p> <ul style="list-style-type: none"> • The number of new companies registered • Survival rates of new companies • Growth in turnover of new companies • # of black employees • # of female employees • # of clients graduating from the incubator per annum.

A good monitoring and appraisal system needs to identify a set of performance indicators that collectively reflect the benefits expected by all these stakeholders, as well as government policy makers, ensuring that, in total, the information collected does not place too heavy a burden on the administration and management of the incubator.

In many countries, incubator managers are usually requested by incubator program coordinators to submit regular reporting on their activities. Standard templates and adequate MIS are in place, like in the case of New Zealand where a computer based system is used to collect regular statistics reports from incubators. Evaluation are organized on a mid-term base and commissioned to an external panel of experts who make a judgment on the basis of information available, as well as on the results of interviews to main stakeholders and client companies, including graduates.

However, collection of data can represent a challenge in some countries, especially where monitoring requirements are not designed at the outset or altered radically during the life of the program. Sometimes, data on individual graduate companies cannot be easily found, as balance accounts are not available on public sources or because companies are reluctant to share information and fill in questionnaires.

Some incubators are not keen on soliciting feedback from their clients and/or on reporting on their activities and there are no incentives or countermeasures to ensure data collection. However the recent experience shows that incubator networks can help in the collection exercise by making available alternative tools³⁸.

New Zealand offers a good practice too, as incubators are contractually bound to collect data on graduates for 5 years after their graduation. According to global practices, mainly two aspects are assessed through the monitoring and appraisal exercise:

1) The incubator outputs

In most programs, quantitative data are regularly collected to monitor incubators administration and running activities. Information varies country by country, however they usually cover main outputs of the incubation process, including the establishment and operational phase (e.g. financial performance, number of incubated clients, etc) and the key incubation functions and delivery (e.g. occupancy and average length of tenancy, ratio of incubator personnel to clients, number of successful graduated companies, etc). The monitoring of the incubation process is usually undertaken by the sponsor but sometimes is also an internal function carried out by the incubator management (continuous internal auditing) which can also be useful to produce important marketing materials on incubator activities to be divulged.

This type of data only offers a quantitative picture of the situation, without identifying why things are going in a certain way and what lessons can be learned. The assessment of the incubation process often requires to be integrated with qualitative data and interviews with incubator managers³⁹ and clients to better understand the possible problems and define an action plan to improve performance. For example, if the average length of tenancy is very high with respect to the planned timeframe, this could be a result of bad scouting and screening practices and/or poor support programs delivered to clients, requiring the incubator to implement improvements in the service mix and management. Alternatively, the reason for longer than expected tenancy periods might be linked to a shortage of suitable policy or other aspects of the business environment, requiring action by external bodies rather than improvement of incubator services. To this purpose, feedback from companies can be extremely useful. Incubator managers can provide good insights to the “input” and “process” aspects of their operations, but they will rarely provide the basis for an in-depth understanding of outputs and impact in the way direct beneficiaries can. Monitoring of companies both when they are in the incubator and after they graduate, is recognized both as a best practice and a necessary complement of the incubator process assessment⁴⁰.

³⁸ Best Practices in terms of monitoring clients can be found in several European countries. The Centre d'Entreprises Héraclès in Belgium is a good example of post-incubation monitoring: here a strong effort is made to keep in touch with companies after they have left with an annual follow up asking for basic information such as numbers of jobs. The incubators objective in doing this follow up is to ensure that the incubator has information on outputs. But it also provides information to continue networking activities. The ADT in Germany is also planning to undertake a national follow-up survey of technology centre graduates.

³⁹ As it is done in the case of New Zealand on a regular annual base.

⁴⁰ For the importance of this approach see the benchmarking study of business incubation in Europe carried out by the Centre for Strategy and Evaluation Services in 2002.

What do incubator managers need from data? Based on NBIA (US National Business Incubation Association) research team members work, it appears that there are two types of information that program managers find valuable: (1) understanding how well they are doing performance-wise compared to peer programs elsewhere; and (2) understanding what they can do differently to improve their performance with clients.

Achieving those objectives requires to go through a benchmarking exercise that allows to: (1) characterize the performance of a national sample of business incubators; (2) use the data to identify both exemplary and low performing incubators, as well as to inform participating incubators of their standing relative to peers; and (3) expand the understanding of incubator best practices in a wide variety of activity domains, particularly their inter-relationships and relationship with performance outcomes.

Incubators can be then encouraged to benchmark themselves against best practices and thus progressively update their performance to achieve excellence. It should be noted that this approach has been applied with some success in several programs including assistance programs for small manufacturing companies (Luria, 2000) and university-industry technology transfer schemes.

Currently, exchange of practices is promoted mostly as part of incubator associations which are also involved in launching benchmarking initiatives usually funded by national government, as in the case of NBIA. Practices on incubator spaces management are almost standardized. However, benchmarking should be confined to a specific environment as good practices change from economy to economy and need to be adapted and identified according to different contexts.

The focus on benchmarking exercises is more and more focused on identifying best practices in business services delivery, especially entrepreneurial training, financing and technology support and business-like incubator management. Benchmarking does not try to underestimate the importance of understanding what can be improved by maximizing the exchange of information with the clients. A hand-on approach with regular surveys of clients (as in the BIC in Genoa - Italy) aimed at judging their performance but also at gauging SME demand for specific services or checking lacks in the existing service delivery system remains a valuable practice.

CSES recommendations in seeking to achieve best practice at an operational level:

- Ensuring that incubator operations are integrated into wider *regional (technology) development strategies* and supported by broadly based partnerships;
- Clearly defining the *target market* and adopting *admission criteria* that focus on projects where an incubator can genuinely add value;
- Placing particular emphasis on developing *high quality business support services* (entrepreneurial training, business advice, technology support, financing, etc);
- Ensuring that incubators are managed in a business-like manner with the aim of maximising *value for money*;
- Developing '*virtual*' *incubation services* so that more businesses can benefit and job and wealth creation effects are retained in local economies through after-care/graduate networking.

At the initiative of DG Enterprise, a major European Union-wide benchmarking program has been prepared and carried out by the Centre for Strategy and Evaluation Services. These are the benchmarking parameters proposed:

Incubator Set-up	Benchmark
% of revenue from public subsidies	25%
Incubator space	2,000 – 4,000 msq
Number of incubator clients	20-30
Incubator Functions	Benchmark
Incubator occupancy rate	85%
Length of tenancy	3 years
Number of management staff	2 managers
Ratio of incubator staff to clients	1:10 to 1:20
% of managers' time advising clients	50%
Evaluating Services and Impacts	Benchmark
Survival rates of client firms	85%
Average growth in client turnover	25%
Cost per job (gross)	€4,000 to 8,000

2) The incubator impact

Incubator performance is evaluated against incubator program strategic objectives. In this case, key performance indicators are closely linked to the initial goal for which the incubator was set-up. Sometimes there is confusion between indicators the adopted and objectives.

Usually exit rates, jobs created and business survival rates are indicators adopted to assess impact regardless of the final goals of the incubation initiative. Incubator programs that support a new business sector should be assessed by indicators outlining the growth of graduated companies more than job creation, like the turnover, taxes paid, average salary/new job created, and the amount of private equity attracted, as well as funds raised by the companies. The amount of private equity attracted gives an indication of the market value created by the new companies. The turnover shows the actual revenues and expenses of the newly established companies, their development and their contribution to the regional economy. If the main objective is to restructure the economy and re-launch an entrepreneurial spirit, then the number of new enterprises created becomes the most relevant indicator. Finally, an incubator conceived to promote social inclusion should not be judged with respect to profitability parameters but on the basis of job created and entrepreneurship attitudes encouraged among the targeted communities. The table below shows suggestions provided by NBIA⁴¹ in deciding what data to collect to evaluate the impact of different types of incubators.

WHAT TO COLLECT (source NBIA)

Special-Focus Incubators

No. of women employed by clients and graduates
 No. of minorities employed by client and graduates
 No. of low-income residents employed by clients and graduates
 Value of local goods and services purchased in the community by incubator clients and graduates

Technology or University affiliated incubators

No. of technologies commercialised into new products or services by client and graduate firms
 No. of student, faculty, and staff-initiated businesses
 No. of student employed by incubator clients and graduates
 No. of students securing internships at client and graduate firms
 No. of university graduates permanently employed in client and graduates
 Royalty/licensing revenues gained from client and graduates
 Equity investment returns gained from client and graduates

Looking at our case studies, South Africa has developed a set of parameters to evaluate incubators impact. They are meant to investigate if progresses have been made in terms of:

- Improving the business performance, profitability and survival rate of newly established technology based SMMEs (e.g. new SMMEs created, % of SMMEs surviving after 1st and 2nd year),
- Promotion of Black Economic and Women Empowerment and (e.g. % of black owned SMMEs established, % of black empowered SMMEs established; number of woman-owned projects initiated)
- Promotion of economic growth and employment creation (e.g. jobs – direct and indirect – created)

⁴¹ The National Business Incubation Association is a private, nonprofit 501(c)(3) membership organization based in Athens, Ohio, USA.

Data are collected on a quarterly basis. These data are also used to evaluate the cost effectiveness of the incubator programs, whose measurement requires impact appraisal⁴²⁻⁴³. Incubators are clearly expensive investments in both capital and running cost terms, focusing business support services on a small number of clients and require a higher per capita cost when compared to other types of SME support (i.e. basic business training and advice services). The cost per job of incubation is also lower when compared to other initiatives to support employment. For example, in Australia, incubation is more than five times less costly per sustainable job created than other job or enterprise creation programs, and this figure is quite similar elsewhere.

Justifying public expenditure in incubation programs requires that their relatively higher costs are outweighed by the results achieved. As described above, this can be in terms of social impacts (i.e. youth unemployment, empowerment of target groups, etc) or economic impacts through jobs created, additional growth, extra taxes generated or through creation of long term changes in the economy that will bring about a desired transformation (i.e. from manufacturing to innovation). Only when this is supported by evidence, then donors and policymakers can consider incubation an effective and measurable part of both an economic development and a national social impact strategy.

According to the *infoDev*'s Monitoring and Evaluation Impact assessment (MEIA) study, incubators report significant economic and social impacts. Associations have the largest client reach: for instance the clients of ANPROTEC, the national incubator association in Brazil, have helped to create more than 5,500 sustainable new businesses and 28,000 jobs. The University of Guadalajara has created more than 6000 new jobs, and TWBI in China reports more than 3300 staff employed by its clients, many in high-skilled graduate and post-graduate research and development initiatives. Many of these impacts are also being achieved in areas where unemployment is endemic. Clients of Incoval in Ecuador employ an average of 3 to 6 people directly (plus others indirectly) in an environment where grantees reported that 11% of the population is unemployed and an estimated 50% are "underemployed" in jobs that are below their skill level. About half of grantees estimate that their clients will create up to 100 new jobs in the next two years.

If this was not the case then the entrepreneurs benefiting from selective support would gain at the expense of the country and alternative support programs would need to be considered⁴⁴.

⁴² Historically, NBIA member incubators have reported that 87 percent of all graduate firms are still in business. NBIA has undertaken several important studies to evaluate the cost-effectiveness of incubation in USA and has also developed a toolkit to facilitate the collection of relevant data from incubator managers. <https://www.nbia.org/impact/index.php>

⁴³ In Finland, the Otaniemi Science Park carried out a study to demonstrate the cost-effectiveness of a sectorally target incubation program. Over the past 10 years, 450 new companies have been created of whom 200 have graduated. The total number of jobs created over the ten year period was 5,000 direct jobs. The combined salaries of both employees in client and 'graduate' firms were an estimated 150 million euro (generating annual taxes of 50 million euro). When compared with an annual public subsidy of 0.5 – 0.7 million euro towards the incubator's operational costs, this resulted as a highly favorable return on investment (CSES 2002).

⁴⁴ In the USA, it has been estimated that incubators have assisted until now more than 35,000 start-up companies. These companies have provided full time employment for nearly 82,000 workers and generated annual earnings of more than \$7 billion. Publicly supported incubators created jobs at a cost of about \$1,100 each, whereas other publicly supported job creation mechanisms commonly cost more than \$10,000 per job created.

The MEIA study outlines also that the tangible economic/social impact of incubators is not limited to businesses and jobs. Many incubators are also impacting their broader community's knowledge and skills. TWBI's small business training program has reached more than 20,000 women since its inception, and TREC-STEP has reached more than 15,000 people through training programs and partnership activities, in addition to launching more than 160 core entrepreneurs. Incubators also indicate that their clients are contributing to the economy by paying a variety of regular taxes.

In general, business incubators are widely regarded by governments as a cost-effective approach to reach several economic development goals and this is confirmed by several studies. However, as Lalkaka also noted⁴⁵, performances of individual incubators in both developed and developing countries differ markedly, depending on the quality of infrastructure, type of the sponsors, and a variety of other external and internal factors. As a consequence, assessments can be carried out and lead to the evidence of effectiveness and sustainability. But, these results have to be always considered in relation to local conditions.

In general, incubators can be seen as powerful instruments but highly sensitive to local environmental features and to the unique entrepreneurial ecosystem in which they are applied. For this reason, in some contexts incubator performance assessment is integrated with an evaluation of the surrounding environment in terms of status and improvements of entrepreneurial culture and skills, regulatory framework, incentive system.

9. Key Recommendations

Following the review of the global situation and the four case studies, as well as the analysis of the identified key policy dimensions, a number of key recommendations have been identified for the design and implementation of an incubation program:

1. Consistency between objectives and the broader strategic framework

⇒ Incubators should not be treated as stand-alone operations and should not be conceived for stand-alone goals. Incubators are designed and implemented to pursue defined objectives as part of a broader strategic framework (territorially orientated [regional strategy] or of particular policies [job creation, social policies, competitiveness] or a combination of these factors).

⇒ Strong consistency with overall economic goals needs then to be combined with a long term approach (on average at least 10+ years), which is needed to ensure the establishment and sustainability of the incubation industry as well as the proper functioning of the business environment where incubators operate.

⇒ Policy makers should consider a deeper investment in understanding the drivers of success in particularly effective business incubation models. These investments should be followed with pilot initiatives that seek to test the findings and replicate these models in a variety of environments.

⁴⁵ Lalkaka 2002

2. Consistency between objectives pursued and suitable service mix

Incubators can be established to meet a range of public sector objectives, from social inclusion to fostering growth of innovative businesses. Incubators need to design a range of services tailored on their target groups. As well as the basic administrative services designed to reduce operational costs of clients, a mix of business (training, coaching, mentoring) and technical (production advice, access to specific equipment, etc) services are required to meet the needs of their target group. The actual service mix should reflect an analysis of the needs of clients for the specific objectives of the incubator.

3. Stakeholder support

The involvement and support of stakeholders (consisting of sponsors drawn from the business community, government, the local society, venture capital providers, entrepreneurs, etc) and incubator management are vital for incubator success. It is important that there is clarity, consistency and cooperation from all stakeholders. There should be consensus on a mission that defines the incubator's role in the community and quantifiable objectives to achieve the mission. Incubator programs should develop stakeholder support, including a resource network and capacity building initiatives.

4. Investing in Pre-incubation

- ⇒ A pre-incubation program to assist potential entrepreneurs to develop their ideas and learn basic business skills through a mixture of training and coaching is critical to ensuring that the incubator takes on clients close to business launch.
- ⇒ Incubator clients should be selected through clear evaluation criteria appropriate to the objectives of the incubator. Pre-incubation should help potential entrepreneurs to prepare their applications, but should not be a guarantee of acceptance.
- ⇒ In public policy terms this means incubators should set out a clear strategy for pre-incubation, indicating numbers to be involved, how they are supported and expected numbers and time periods to generate clear clients. A clear and transparent set of selection criteria to be applied to applicants must be defined and communicated at an early stage. It should reflect the objectives of the incubator and its target market.

5. Address gaps in the Business Environment

- ⇒ In addition to services designed to meet the needs of individual clients, incubators are often asked to develop services or to intervene in order to address weaknesses in the business environment. Incubators need to analyze the local business environment and propose solutions to any particular problem faced by their clients if successful growth businesses are going to be successfully launched.

- ⇒ Incubators should build on their reputation and network of relationships and collaborations in order to positively influence the business environment dynamics. Nevertheless, existing weaknesses in the regulatory and enterprise support frameworks should be targeted also at government level through the adoption of adequate initiatives supporting SME activities. Policymakers may also take into consideration the opinions of incubator associations when identifying main strategic priorities.

6. Commercial approach

- ⇒ When the incubators are designed to improve the growth and success rates of new businesses, they need to be focused on satisfying the needs of clients and delivering high value cost effective services to enhance the clients' commercial focus. As such the incubator should adopt the same business-like approach to their operation.
- ⇒ The policy framework needs to encourage a business mindset and/or discipline for a public benefit in line with the set objectives and assess the performance of incubators in those terms. This has an impact also on the funding policy adopted.
- ⇒ The grant application process should require clear business and action plans from the applicant incubators, along with measurable performance outputs in terms of clients, financial sources etc. that indicate the commercial intention and expected achievement.

7. Ensuring elements of competition and merit in grants assignments

- ⇒ Public support can be important in the early stages of incubation programs. However, governments are suggested to ensure the efficient use of funds. This can be achieved through the organization of open competitive rounds for grant funds, which can contribute also to develop a commercial approach of applicants.
- ⇒ Then, keeping funded incubators accountable for their performance also contributes to ensure efficiency in incubation management.
- ⇒ Introducing an element of competition into the provision of grant supported services has also been demonstrated to greatly improve performance in most instances.

8. Financial sustainability

- ⇒ A financial self-sustainability goal can be encouraged and actively promoted as it will also contribute to an efficient management of the incubator. The benefit of this strategy is to gradually introduce commercial discipline to clients. To achieve sustainability, incubators often need to develop a range of alternative funding sources, both public and private.
- ⇒ Initial public funding can be granted but then should decline in favor of other funding models (commercial income, equity in incubated companies, royalties, etc).

- ⇒ When applying to grant funds, incubators can also be asked to indicate which funding model they intend to adopt in the longer term.

9. Networking and Public Private Partnerships

- ⇒ Partner networks contribute to incubator successes through sharing the wisdom reaped from both achievements and failures, and help expanding market opportunities for entrepreneurs and graduates. These networks typically include universities, R&D centres, industrial contacts, financial institutions and professional service providers such as lawyers, accountants, marketing specialists, venture capitalists, angel investors, and volunteers.
- ⇒ An incubator needs to have clearly defined mechanisms to ensure that it and its clients are in contact with key stakeholders in important networks, and that the incubator is clearly recognized as a centre of expertise within these networks.
- ⇒ Strong cross-sector partnerships – or PPPs – can create important value for incubators by filling gaps in the organization's service model, mitigating operational risk and creating a platform for influencing the broader business environment. PPP models should be promoted either in the ownership or in the governance of incubators.
- ⇒ Associations can also play a relevant role in creating networks among members.

10. Incubator Manager

- ⇒ An effective, committed, knowledgeable incubator manager and staff are critical to the effectiveness of an incubator. The manager in particular needs to be able to lead the support team, manage the incubator's important networks, understand the business needs of clients and pre-incubation businesses, as well as support the staff of the incubator in delivering effective services to meet these needs. Failure to employ a suitably skilled and motivated manager is one of the key reasons for the failure of an incubator.
- ⇒ The business plan for an incubator should preferably set out the qualifications and experience of the proposed manager. At the very least a clear personnel specification, job description and recruitment and selection system should be spelled out in advance of funding. Policies that unrealistically limit salaries, appoint managers on the basis of performance in government or other bureaucracies, or recruitment not based on competitive criteria, are very unlikely to lead to successful incubators. Donors should consider investing more directly in leadership development of incubator managers, including capacity building for high potential individuals, global networking and knowledge-building opportunities, and disseminating effective strategies for recruiting and retaining talent in the incubation sector.

11. Monitoring and Appraisal

- ⇒ The design of a monitoring and appraisal system for a business incubation program is critical to identifying unexpected problems that are preventing successful outcomes and where further improvements can be made, as well as to tracing best practices to share within the incubator network.
- ⇒ The introduction of indicators of performance as a part of a monitoring and appraisal system is also important to ensure the achievements of concrete results as well as to allow a constant program improvement.
- ⇒ Constant internal monitoring should be carried out also by incubator managers.
- ⇒ Benchmarking exercises can be helpful to incubator managers for understanding how well they are doing performance-wise compared to peer programs elsewhere – in the country or even worldwide – and in understanding what they can do differently to improve their performance with clients.

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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