Global Practice in Incubation
Policy Development and Implementation

Malaysia Incubation
Country Case Study

infoDev
Global Good Practice in Incubation Policy Development and Implementation

Malaysia Incubation Country Case Study

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TABLE OF CONTENTS

1. INTRODUCTION 5

2. OBJECTIVES AND BROADER STRATEGIC PUBLIC POLICY FRAMEWORK OF INCUBATION ACTIVITIES 5
   2.1 History of Business Incubation in Malaysia 5
   2.2 Development Phases of Business Incubation in Malaysia 7
   2.3 Evolution of the Incubation Generation Model 8
   2.4 Incubator Generations 9
   2.5 Current State of the Malaysian Incubation Movement 10

3. INSTITUTIONAL ENVIRONMENT 14

4. INCUBATION MODEL 15
   4.1 Examples from Flagship Technology-based Incubators 17

5. MONITORING & EVALUATION 22

6. CONCLUSION / STRENGTHS AND WEAKNESSES 21
   6.1 Areas for Future Improvement 23

STATISTICAL DATA 27
1. **INTRODUCTION**

This case study has been produced as part of the World Bank infoDev project on developing a policy framework and implementation strategy for business incubators. Its purpose is to analyse public policy in incubator development and identify some critical success factors which should be considered in the development of incubators.

The Malaysia study was conducted using desk research and an in-country visit to meet some of the key players involved in incubator development\(^1\).

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

Incubation activities in Malaysia should be examined against a broader public policy context which includes: business start-up and SME development, technology and innovation development, commercialization of R&D results, international competitiveness, education, training and job creation. Several Government Ministries are involved including Ministry of Finance, Economic Planning Unit (EPU), Ministry of Science, Technology and Innovation (MOSTI), Ministry of Agriculture and Agro-Industries, Ministry of Higher Education (MOHE), Ministry of Arts, Culture, and Heritage, and Ministry of Rural Development.

The Economic Planning Unit (EPU) of the Prime Minister’s Department has now assumed the main responsibility for coordinating the development of business incubation in the country, while main players in business incubation include Technology Park Malaysia, Kulim Hi-Tech Park (KHTP), Multimedia Development Corporation (MDeC), Standard and Research Institute of Malaysia (SIRIM), MCA ICT Resource Centre (MIRC), Malaysian Agriculture Research and Development Institute (MARDI), Majlis Amanah Rakyat (MARA), and several universities. Other organisations are also involved, such as the Malaysia Technology Development Corporation (MTDC) and Malaysia Venture Capital Management (MAVCAP), which are part of the Government, but can provide investment funds to private companies, including those in incubators.

2.1 **History of Business Incubation in Malaysia**

Prior to 1970, the Malaysian economy was dominated by agriculture and resource-based in nature, with the main export products being commodities (tin, rubber, palm oil).

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\(^1\) Interviews were held with NINA; MAVCAP, MIRC incubator. Substantial support and valuable first-hand information was also provided by infoDEV partner in Malaysia.
Early in the 1970s, important developments took place in the manufacturing sector, particularly through Foreign Direct Investments (FDI) by multinational companies in the electronic and textile industries, which have created new jobs in the urban areas and encouraged the transfer of management skills and technology. Another important source of growth for the Malaysian economy at that time was the development of a robust oil and natural gas industry.

In the 1970s and 1980s massive FDIs did improve the quality of goods and services produced by the Malaysian economy, boosting the export sector first of all. Malaysia was thus growing solidly for many years to accomplish its transition from a resource-based to a manufacturing-based economy.

But during the Nineties, with a reduced volume of inward FDI due mainly to the competition from other low-cost manufacturing centres and cheap labour countries such as China, Vietnam and Mexico, the manufacturing sector had to face increasingly stiffer overseas competition and the manufacturing base started to shrink. Malaysia was forced to build its own SME base as the new main source of economic growth. The Federal Government soon realised that inadequate technological capability and low adoption of modern enabling technologies were among the main barriers hindering the development of competitive enterprises. Hence the strategic decision to embark on a strong initiative to support the SME sector.

The new shift from a production economy towards a technology- and knowledge-based economy required SMEs to become more innovative. A pillar of this new policy approach was the promotion of technology parks and incubators for the purpose of nurturing new innovative firms and technology-based entrepreneurs, as well as expanding the capacity for innovation-related services.

It was in the early 2000s (8th Malaysia Plan) that the government started to pay more and more attention to the provision of industrial infrastructures and services for SME, including expansion of factory units and incubator facilities, at key locations throughout the country.

Under the current 9th Malaysia Plan2 (2006-2010), science-based and innovation-based activities, especially biotechnology and ICT industries, are being enhanced as new sources of growth under the knowledge economy. The overall vision for the country is now to achieve Developed Economy status by 2020.

New sectors, which are helping to revive the resource base, have started to emerge, such as biotechnology (for example, in the production of palm oil for biodiesel), microelectronics (for example, in the design of integrated circuit design and wireless networks) and clean technologies (for example, in the manufacturing of solar cells and PV modules).

2“A platform for enterprise start-ups and incubation will be built to create a pool of new and innovation-driven entrepreneurs so as to sprout new businesses and services. The Government will promote the setting up of technology incubators to nurture new firms and entrepreneurs. (...) The Government will continue to support SMEs with the provision of industrial site at more competitive rates for them. During this plan period, a total of RM927.5 million will be provided as soft loans to state economic development corporations and regional development authorities to develop industrial sites and special SME parks.” Extracted from the Chapter on “Innovation-driven SMEs” of the 9th Malaysia Plan.
The Malaysian incubation movement started in the late 1980s, while the big acceleration in terms of numbers came only ten years later. Since then the government support given to technological development and innovation has consistently gone hand-in-hand with the growth of incubators.

The most distinctive feature of the incubation policy in Malaysia is its being deeply embedded into the wider technological development and innovation policy of the country. We will see later through examples that some of the most successful Malaysian incubators are indeed “incubation facilities” integrated into wider technology centres that have a much broader scope.

Another key issue for understanding the trajectory of the incubation movement in Malaysia is that the prevailing economic conditions under which the incubation policy started to develop and consolidate were those of an economic growth of around 5% p.a. and controlled inflation.

This sustained growth scenario has lasted for several years, until the recent global crisis that has caused a sharp decline in GDP and has brought inflation down to 1% or 2% against the 7.7% high recorded in August 2008.

### 2.2 Development Phases of Business Incubation in Malaysia

The business incubation movement in Malaysia began in 1988 with the establishment of a small incubator unit at the Standard and Industrial Research Institute of Malaysia (SIRIM). In 1988, several of the SIRIM incubator officers were seconded to the Ministry of Science, Technology and Environment (MOSTE) to work in the Implementation Unit for the establishment of the Technology Park Malaysia (TPM), located near Kuala Lumpur, the capital city. It was a humble beginning for TPM whereby its incubator was just two rows of run-down commercial shop-lots in a poor neighbourhood, owned by the Kuala Lumpur City Hall (DBKL). However, TPM now is a beautiful, 776-acres sprawling technology park. Its incubator space with more than 2 million square feet and its technology infrastructures are among the largest and the best in Asia, if not in the world.

TPM is proof that an incubator needs not begin as an expensive, real estate initiative. TPM was first an incubator, before it became a beautiful technology park through the relentless efforts of its management.

Other active incubators in the late-80s and early-90s (Phase 1) were departments within government organizations such as at SIRIM, University Sains Malaysia, MARA, etc.

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3 MTDC was set up by the Government in 1992 to spearhead the development of technology businesses in Malaysia. Its initial role was to concentrate on the promotion and commercialization of local research and invest in new ventures that could bring in new technologies from abroad. To date, MTDC has invested more than RM480.65 million in both local and foreign high-tech companies. Many of these companies have been successfully listed on Bursa Malaysia. The MTDC’s Incubator Program (Technology Incubation Centre) is embodied under the Government’s Technology Development Cluster (TDC) program, which is designed to strengthen linkages between universities/research institutions and industries. The main objective is to activate and promote the accel-
In the mid-90s (Phase 2), newcomers to the business incubation scene in Malaysia included the Malaysian Technology Development Corporation (MTDC)\(^3\) and several university-linked incubators (University Technology Malaysia as the key point for Advanced Engineering and Life Sciences; University Putra Malaysia for ICT, Multimedia and Agri-Bio; University Kebangsaan Malaysia for Biotechnology).

The third phase (Phase 3)\(^4\) of incubation development was in the early 2000s with the establishment of incubators at the Kulim Hi-Tech Park (KHTP), Multimedia Development Corporation (MDeC), Melaka K-incubator, etc. In 2002, a policy of technology-based incubators, named The National Incubator Development Framework, led to the establishment of a specific support programme for ICT and multimedia-related business incubators. As a result of this policy there is now a movement to develop MSC-Status Incubators\(^5\), Cyber-Centres and Cyber-Cities. Melaka K-incubator, Perak Techno-Trade Centre are examples of cyber-centres, whereas the Kulim Hi-Tech Park is both an MSC Cyber-City and an MSC-Status Incubator (through its subsidiary, Kulim Technology Management).

The development target under the National Incubator Development Framework is to have 100 incubators in Malaysia by 2010, of which 30 are MSC Status Incubators.

2.3 **Evolution of the Incubation Generation Model**

The policy towards incubation has evolved over the years. Most of the incubators in the early 1990s operated according to the ‘first generation’ model, which focused on real estate, shared facilities and reactive support. In a sense, this is the classic traditional model of a “Business Incubator”. However, in reality the typical “incubator” in Malaysia at that time was closer to a small real estate management company with significant services targeted at a small number of new enterprises.

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\(^4\) There is no official document that suggests the phases of incubator development in Malaysia (Phase 1: 1988-1995, Phase 2: 1996-2000, Phase 3: 2000-2005), but these phases of development are very much linked to the Five-Year Malaysian Plans.

\(^5\) The eligibility criteria for MSC Status Incubators include:

- must be directly engaged in incubation / acceleration related activities
- incubator technology focus; specifically in ICT e.g. software development, engineering, e-commerce, telecommunications, wireless, mobile applications, bio-technology/bio-informatics
- tenancy must house ideas, seed, start-up, early growth companies
- must offer business support, advisory services, mentoring, coaching and training
- physical Facilities must offer the following basic facilities:
  1. internet access with minimum bandwidth of 128Kbps
  2. shared facilities e.g. meeting rooms, reception and audio visual systems
  3. minimum of 2000 sq ft for incubation activities
- must have a trained Incubator Manager
- must establish a separate legal entity to qualify for MSC Status Incubator
- must demonstrate funding and fund-raising capabilities must comply to MSC-TeDD’s Incubation Best Practices
The ‘second generation’ model, which did emerge from 1995 onwards, incorporated pro-active business advisory support services (in addition to real estate and shared facilities) and resulted in more than 30 incubators, including 3 technology incubators. This second generation of incubators are known as “Business Innovators”.

The ‘third generation’ incubator model emerged from 1999 onwards providing a wider range of services, including access to funding, mentoring/coaching, technology labs, ‘technopreneur’ development programs, however the level of support per tenant is lower than in most incubator models. Examples are the TPM, MDeC, SIRIM, MiRC, in Kuala Lumpur, as well as Kulim Hi-Tech Park in Northern Malaysia. This Third Generation Model is also known as “Business Accelerators”.

2.4 Incubator Generations

<table>
<thead>
<tr>
<th>Generation</th>
<th>Determinant</th>
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<tbody>
<tr>
<td>1\textsuperscript{st} Generation (From 1988)</td>
<td>• Real estate and shared services, \textbf{reactive} business support</td>
</tr>
</tbody>
</table>
| 2\textsuperscript{nd} Generation (From 1995) | • Set up under Malaysian Technology Development Corporation (MTDC)  \hfill 
• 1\textsuperscript{st} generation plus proactive business development support and business coaching focusing upon growth oriented companies.  \hfill 
• Resulted in 30+ incubators overall including 3 technology incubators |
| 3\textsuperscript{rd} Generation (From 1999) | • 1\textsuperscript{st} and 2\textsuperscript{nd} generations plus in-house debt/equity finance for clients, or channels to external providers of finance. \hfill 
• Intensive business support program focusing on investment readiness and high growth (mentoring/coaching, technology labs, \textit{technopreneurs} development programs). |

With the “National Incubator Development Framework” established in 2002, the ultimate objective became the development of innovation-driven SMEs that must be high performers, resilient and capable of competing in the global market. They had to be equipped with strong technical and innovation capability as well as managerial and business skills to create new job opportunities and produce quality products and services at competitive prices for improved market access.

As of March 2009, Malaysia is proud to have more than 106 incubators operating in the country with different types of incubation-focus such as ICT, multimedia, advanced engineering, agro-bio, food, etc. Out of 106 incubators, 97 are government sponsored (federal and state), while only nine (9) are privately-owned.

As to their ‘generation model’, 44 incubators can be classified in the Second Generation (Business Innovators Model), whereas 24 are in the Third Generation Model (Business Accelerators Model). While these figures represent a remarkable achievement, there is still a genuine concern that a large number of incubators (38) are still operating as First Generation incubators (Real Estate Model). Efforts are being made to transform more of these incubators into the Second Generation Model (Real Estate with Incubation Processes).

Under the current Ninth Malaysian Plan (9MP) 2006-2010, the Federal Government wishes to facilitate the establishment of more incubators (and implement more incubation programs). It has outlined strategies and introduced several measures aimed at creating and supporting innovation-driven SMEs. Following on from the National Incubator Development Framework there is now a movement to develop MSC Status incubators, cyber-centres, and cyber-cities (Kulim is an example of the latter) as a way to enhance the status of incubators and also differentiate among incubators. The development target by 2010 is to have at least 30 incubators in Malaysia that have MSC Status.

### 2.5 Current State of the Malaysian Incubation Movement

With 97 government-linked incubators in operation (out of a total of 106), it can be concluded that the vast majority are still government-funded and directed. There are no examples of “mixed private-public sector funding” for incubators, and very little evidence of local government and state government(s) involvement.

Key players within the incubator movement have reported that, at the start of the process, Malaysian business incubators were not well integrated with the mainstream of SME development programs. This was mainly because business incubation (in Malaysia) fell unofficially under the purview of the Ministry of Science Technology and Innovation (MOSTI) and Economic Planning Unit (EPU) with a focus on technological development, R&D, innovation and wealth-creation, while the SME Development Strategy paid relatively little attention to Incubators. A serious attempt to coordinate between incubation and SME development policy has been made by the 9th Malaysia Plan, which is rapidly bridging the initial gap.

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7 The SME Development Strategy is implemented by various Ministries & Agencies – first of all SMIDEC, established in 1996 as the Small and Medium Industries Development Corporation now being transformed into the “SME Corporation Malaysia”. The SME Strategy is based on three (3) main strategic thrusts aimed at: 1. STRENGTHENING THE ENABLING INFRASTRUCTURE (formulations and enactment, or review and amendment, of guidelines, standards, licensing requirements and fiscal incentives governing the operations and activities of SMEs and entrepreneurs); 2. BUILDING THE CAPACITY AND CAPABILITY OF DOMESTIC SMEs (to enhance the knowledge, skills and ability of SMEs and their employees towards improving their performance, growth and competitiveness); 3. EHANCING ACCESS TO FINANCING BY SMEs (to ensure adequate access to financing to support the growth and development of SMEs).
Nowadays most of the incubator support initiatives are part of the wider strategy for technology and innovation development. They have points in common with the wider SME support system and therefore the incubator support policy is no longer seen as a stand-alone initiative. Efforts are being made by the Economic Planning Unit (of the Prime Minister’s Department) and Ministry of Science Technology and Innovation (MOSTI) to improve coordination between incubation and SME development policy.

Both technology and non-technology (general) business incubators are supported by the Federal Government of Malaysia through various ministries. However, the vast majority of technology-based incubators operating in ICT, multimedia, software development, advanced material, advanced engineering, automation and biotechnology are functioning under the wing of MOSTI, as for instance TPM, MDeC, SIRIM, etc.

While the “Non-technology” or “General” Incubators, which operate mostly in agriculture (rice-based, palm oil-based, fruits-based, etc), tourism, craftsmanship, general services (construction) or are targeted at unemployed graduates, receive support from different line ministries: the Ministry of Agriculture and Agro-Industries, Ministry of Arts Culture and Heritage and Ministry of Rural Development.

The key players involved in the “third generation” incubators (those having the highest profile and visibility in the current Malaysian incubator community) have ranked the objectives of Malaysia’s incubator policy support in the following order of priority:

1. to contribute to technology transfer and innovation
2. to help universities and R&D centres commercialise their know-how
3. to help companies generate spin-off activities
4. to contribute to local competitiveness and job creation
5. to help disadvantaged communities/individuals with dedicated projects

During our interviews “to create wealth through technology development” was mentioned by many of the key players and was seen as the most important objective of the incubator support policy. This was regarded as part of the wider effort to move towards the knowledge economy, which is a key driver for Malaysia and relates directly to the competitiveness of its enterprises.

8 This parameter was meant to measure the local impact of incubators and their influence on the local labour market. Therefore the issue of competitiveness mentioned in the text was mainly related to the territorial dimension and not to the wider effort to increase the competitiveness of Malaysia through a shift towards the knowledge-based economy.
At an average of around 25 tenant companies per incubator (range 10 to 250+) and 106 incubators in operation, the total number of tenants is estimated at around 2,650. With an average employment of around 3.5 per company (see the Statistical Table), this indicates that incubated companies create around 9,250 jobs. This may be considered as just a ‘small drop in the ocean’, but is extremely important because of its high demonstration and multiplier effects. Indeed, incubated companies play a critical role in stimulating key target groups, such as young graduates, to go into business and may positively impact other companies outside the incubator in terms of increased demand for their products or services.

Some special incentives too are made available by banks to encourage and support start-up enterprises, within an incubator.

While the banking system remains the main provider of funds to the SMEs, alternative sources of financing for SMEs include the development financial institutions and the various special funds established by the Government, which are provided in the form of grants and soft loans, mainly through the Bank Negara Malaysia, whose Development Finance and Enterprise Department aims to assist viable SMEs in obtaining financing. However, this support is mainly targeted at established companies and not much is available to start-ups.
Much more relevant is the Pre-Seed Fund Programme\(^9\), that the MSC Malaysia Technology Commercialization Centre has recently launched, again with Government money. Its purpose is to catalyse the creation of Technopreneurs and SMEs in ICT towards growing the national ICT industry.

This program aims to address the funding gap at pre-seed stage and is expected to boost the development of commercially viable ICT projects and kick off a chain reaction in the creation of new ICT excellence companies.

Government involvement even extends to investments in incubator companies through VC organisations such as MAVCAP (see table below) which is primarily an ICT investor with a fund of one billion MYR. This accounts for around one-third of Government funds in registered venture capital companies in Malaysia which in turn represents around 50% of total funds. The remainder comes mostly from corporations with a very small amount from private ‘angel’ investors.

**MAVCAP's investment offerings**

<table>
<thead>
<tr>
<th>MAVCAP 100 (Minimum 51% Bumiputera shareholding)</th>
<th>MAVCAP 110</th>
<th>MAVCAP 120</th>
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<tbody>
<tr>
<td>Typical investment size</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• RM1 million – RM10 million</td>
<td>• RM3 million – RM15 million</td>
<td></td>
</tr>
<tr>
<td>• For seed &amp; start-up deal stages</td>
<td>• For early &amp; expansion deal stages</td>
<td></td>
</tr>
<tr>
<td>• RM5 million – RM20 million</td>
<td>• For late-deal stages</td>
<td></td>
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<table>
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<tr>
<th>Target sectors</th>
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<tbody>
<tr>
<td>• General ICT – Hardware/Software</td>
<td>• New media</td>
<td></td>
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<tr>
<td>• Various domains</td>
<td>• Games</td>
<td></td>
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<tr>
<td>• Multimedia service</td>
<td>• E-content</td>
<td></td>
</tr>
<tr>
<td>• Providers/ Application service</td>
<td>• Community &amp; networking</td>
<td></td>
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<tr>
<td>• Providers (MSPs/ASPs)</td>
<td>• Wireless &amp; mobile</td>
<td></td>
</tr>
<tr>
<td>• Software applications &amp; services</td>
<td>• Digital content, including animation, high definition (HD) &amp; games</td>
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</tbody>
</table>

\(^9\) The targeted beneficiaries of the Pre-Seed Fund Programme are only individuals (existing companies are not eligible), who can receive up to RM150,000 of conditional funding to develop viable business plans into commercially focused ICT projects. As a developmental program, it is not a pure grant and recipients will also benefit from mentoring services and access to shared lab facilities at MSC-Status Incubators provided through the MDeC’s Technopreneur Development program.
Overall, the public policy framework in Malaysia is supportive of incubators, particularly for technology development, and indeed the public sector is predominant in the setting-up and running of incubators, although there still appear to be many gaps in provision and delivery. The private sector has recently joined in, but in a very small proportion. However, despite the large public sector involvement, this does not seem to have excessively discouraged private sector initiatives (e.g. the MIRC – MCA ICT Resource Centre, now known as Mobile Application Development [MAD] Incubator).

Despite this large public support, or maybe exactly because of it, some issues of financial efficiency and accountability deserve more attention to ensure that public money is spent effectively and that tangible impacts are achieved. However, the incubator movement is still enjoying a positive image among the business community and the general public at large thanks to its noble mission, and there is no indication of any major debate about possible financial inefficiencies in the state supported incubators.

3. INSTITUTIONAL ENVIRONMENT

As mentioned above, the Federal Government is the main and virtually the sole player in incubator development in Malaysia. Therefore, the issue of ‘partnerships’ remains a moot point. Clearly the private sector is involved through the incubatees and therefore is the intended key beneficiary of incubators, but beyond that the private sector is not really involved in promoting incubation, apart from the few cases of privately-run incubators.

The other main stakeholders are Universities (most of which are also part of Government) and the intention is for all Universities in Malaysia to each have an incubator. Six Universities already have their own incubators and other ten incubators have strong connections with Universities, mainly because of their strong focus on technology.

General awareness of incubators among the private sector is reportedly ‘very low’. Even tenants may not be aware of what the incubator provides in terms of add-on services apart from rental of space\(^{10}\). This means that the ‘incubator concept’ is not strongly-rooted in Malaysia, while terms like ‘technology park’, or ‘managed workspace’ etc. may have more resonance.

There does not appear to be a strong pre-incubation policy with limited assessment of potential economic viability prior to the approval of tenancy status. This may also help explain the low level of awareness of intended Incubator support services on behalf of tenants. However, it is also the case that if incubator tenants are not aware of support services available then the incubator management is not strongly promoting these services and working closely with the tenants.

\(^{10}\) This comment was provided during interview with Mr. Annuar bin Mohd Saffar, Executive Director of Kulim Technology Management in the Kulim Hi-Tech Park (KHTP) and former President of NINA. It is the writer’s opinion that a generally low awareness of incubator services may be caused by the fact that many incubators are relatively small facilities within large technology parks that have a much wider scope. Therefore even incubator tenants may not realise what is on offer from the incubator apart from rental of space because most of the added-value services are seen as provided by the technology park instead.
Key stakeholders reported that the Federal Government provides an average of around USD 40,000 per incubator per annum to cover the whole operational deficit. On top of this annual expenditure there are also the start-up capital and launch costs for each incubator. Therefore, as mentioned earlier, this indicates a very strong public policy commitment.

Government involvement includes support through venture capital and pre-seed financing instruments as we have already seen above (MAVCAP and the Technopreneur Pre-Seed Fund Programme), which however, address only the ICT sector.

From the viewpoint of the venture capital stakeholders consulted (e.g. MAVCAP) the effectiveness of incubators is rated as fair-to-good with improvements suggested in the areas of selection of tenants, after-care facilities and follow-up funding. VC companies sometimes approach incubator managers to look for good prospects and will, if invited, give presentations to tenants.

However, stakeholders reported that from the viewpoint of incubator tenants, the main potential investors tend not to be VC companies, seed funds or business angels or even banks but rather family, friends and own funds which indicates a fairly traditional business culture even among those companies involved in hi-tech operations.

There is an active association of incubators (NINA) which is closely linked into the Asian Association of Business Incubators (AABI). The current President of AABI is CEO of Kulim Technology Management (Kulim Hi-Tech Park incubator), and Honorary President of NINA, and is therefore in a good position to enhance the development of incubators in Malaysia by drawing on international best practice and lobbying for change at government level. Through this individual, Malaysia is well connected to international networks and forums on incubation.

Not much in the way of international assistance has been utilised for incubation in Malaysia, apart from UNDP-funded project in 1994 plus some JICA and World Bank involvement.

4. INCUBATION MODEL

As mentioned earlier, nearly all incubators in Malaysia are Government-funded (97 out of 106) and are run as budgetary organisations, hence with little pressure on cost-efficiency and revenue collection. Typically, the organisation and governance arrangements of these incubators are within wider government structures. The incubators tend to be a department or section within a larger entity and therefore come under the governance rules of that entity, be it a university, federal government department or ministry. In several cases the corporatisation of publicly-owned technology parks and research institutes has managed to gradually change the attitude of incubator managers towards becoming more business-minded and profit-oriented.

For these incubators, all set up costs and running costs are covered by the Government. The second main source of revenues, after public funds, is from the rental fees paid by tenants (reportedly around 14% of running costs but this is a variable estimate) and the third is from outreach services (e.g. training programmes for business, advisory, etc). Sometimes these commercial revenues may create small annual surpluses but there is no evidence that incubators are using these additional funds systematically for feeding new development initiatives.
There are only nine private incubators. These incubators are privately-funded through foreign telecommunication company, local conglomerates, political parties, etc. No particular incentives exist for private incubators although they are eligible to receive MSC-status. In rare cases (e.g. MIRC) incubators are investing substantial equity stakes in the incubated companies (up to 70%) and this is foreseen as their main income contributor for the future.

The average size of all Malaysian incubators is around 50,000 square feet and around 25 tenants. Guidelines and requirements for admission vary from case to case. For instance the KHTP Incubator within the Kulim Hi-Tech Park has developed criteria to screen projects that are representative of similar criteria adopted by other technology-based incubators. They take into consideration:

- Enterprise profile: 35 points
- Innovation, product/service type, business model 25 points
- Expansion in business scale and outcomes 25 points
- Benefits, take-up of specialised services 15 points

Geographically, 36/106 incubators are within larger Urban Technology Parks that are operated at State level and cater for larger enterprises, including many inward investment assembly companies. 24 incubators are located in small rural areas and controlled at a more local level by the relevant government organisation. Of the remainder, several are located on university-campuses.

Many of the incubators in Malaysia have a strong technology focus. Therefore the main business activities tend to be ICT, R&D and advanced manufacturing.

The main services provided by incubators include some pre-incubation services, advice on product development, help with raising finance, networking, and professional services. There is not any standard list of services that can be valid for all incubators. Based on our interviews with the managers of NINA and several incubators we have created the following table:

MSC Malaysia was conceived in 1996 with the full support of the Government to provide the required skills and infrastructure to transform Malaysia into a knowledge based economy.
Malaysia Case Study

Most common types of technology incubators tend to be within Technology Parks, Business Innovation Centres and Universities together with a number of specialised incubators, most of them in the ICT sector. As for non-technology based incubators, those focusing on the food industry (see below) and on handicrafts tend be the most active. There is hardly any virtual incubator, although MIRC does operate a virtual incubator for entrepreneurs who need to operate from home (e.g. disabled), along with a conventional in-house incubator.

4.1 Examples from Flagship Technology-based Incubators

The most distinctive feature of incubators in Malaysia is that many of the most successful experiences are in reality incubation facilities integrated within wider Technology Park initiatives. In the following we analyse a few examples of flagship innovation and technology-based incubators, as presented by the respective incubator manager.
**KHTP Incubator within the Kulim Hi-Tech Park (KHTP)**

KHTP Incubator is based at the Kulim Hi-Tech Park, State of Kedah, in the northern part of peninsular Malaysia. The park was set up as a national pilot project in high-technology development and covers a land area of more than 1,620 hectares (4,000 acres). The technology park combines several zones comprised of industrial, R&D, training, education, residential and recreation facilities within a self-contained ‘science city’. KHTP aims to attract leading names in high-tech plus a new breed of ‘technopreneurs’. It was awarded a Multimedia Super Corridor (MSC) Cyber-city status in 2005.

The KHTP Incubator, located within the R&D zone of the park, is managed by its subsidiary Kulim Technology Management, a joint venture company between the Kulim Technology Park Corporation and Universiti Sains Malaysia. It is one of 97 Government-funded incubators but one of only a handful to be awarded an MSC-Status Incubator (since 2003) in recognition of the quality of its facilities and services which are offered to technology-based companies, and its ability to offer a broad range of services to incubatee companies, including access to other government incentives.

Through Kulim Technology Management, the KHTP Incubator offers a range of services to technology-based companies including an Information Technology Centre (Java Technology Lab, Open Source Lab, etc.), a Metal Excellence Centre (CNC Laser processing, sheet metal fabrication, etc.) and a Research, Engineering, Science and Technology Centre (rapid prototyping, product development, CNC machining, etc). It also offers Quality Management Services (QMS) including consultancy and training services in quality and technology development. There are 30 tenants in the incubator. On average they have 4-5 employees at start-up increasing to 40-50 after exit.

The leadership role of KHTP Incubator in the business incubation movement in Asia Pacific cannot be underestimated. The current incubator manager of KHTP Incubator is also the current President of Asian Association of Business Incubation (AABI), and Honorary President of Malaysia’s National Incubator Network Association (NINA).
**Multimedia Development Corporation (MDeC) as an Incubator Driver**

The Multimedia Development Corporation (MDeC) was established in 1996 by the Malaysian Government as the agency to spearhead the development and implementation of the MSC – Malaysia Super Corridor. It globally markets the MSC Malaysia, shapes its specific laws, policies and practices and facilitates the establishment of company operations within the MSC Malaysia.

MDeC serves as champion, facilitator and partner, dedicated to ensuring that MSC Malaysia becomes the world’s best environment to harness the full potential of ICT companies. Its vision is to ensure leadership in the information age and its mission is to realise Malaysia as a global hub and preferred location for ICT and multimedia innovations, services and operations.

MDeC is also the driving force behind the initiative to create *sustainable incubators* (MSC Malaysia Status Incubators) nationwide, which would provide an environment that is conducive to nurture *technopreneurs*. These incubators are intended to be the spawning ground for innovative Malaysian entrepreneurs and will form the nuclei for the physical rollout of the MSC Malaysia throughout the country.

Moreover, MDeC has established the Multimedia Super Corridor's (MSC) Central Incubator at Cyberjaya, located within the Multimedia University with 62,500 square feet of space, which was initially intended as the nucleus for the National Incubator Network that would link other excellence centres that are already in operation.

The Cyberjaya Central Incubator was subsequently transformed into the MSC Malaysia Technology Commercialisation Centre, which is now the country's leading initiative for the global ICT industry. A range of programs is planned under this initiative to attract, nurture and retain ICT-enabled businesses. The technology lab has been turning innovation into business for the last 10 years. The facility explores how technology shapes the future and invents the next wave of cutting-edge business solutions.
**Incubation facility of the Technology Park Malaysia (TPM)**

Technology Park Malaysia Corporation Sdn Bhd (TPM) was incorporated in 1996. Designed to further propel the nation into a innovation-based economy, TPM is the pioneer technology park in Malaysia aimed to increase the wealth of the community by promoting culture of innovation and competitiveness. TPM is a vibrant 700 acre technology community within MSC Malaysia. It is strategically located between the Federal Government Administrative Center of Putrajaya and Kuala Lumpur.

TPM has been home to more than 140 technology-driven companies, contributing about 1.2% to National GDP and creating employment opportunities to about 9,000 professionals. TPM is the only technology park that encourages mixed development in ICT, biotech and engineering.

The park is the result of integration of physical and soft infrastructure supporting the growth of incubatees at different stages of their business life-cycle. Ranking first in the list of TPM's objectives is "to incubate and nurture knowledge based enterprises by providing expertise and support services technically and commercially". Its experienced Management Team is responsible for sourcing the most progressive and innovative tenant companies that can also create synergies within TPM.

TPM owns flexible incubator premises with rentable size from 400 to 1200 sft. Individuals, scientists, researchers or start up companies have options to rent the space to carry research development and business activities at pre-incubation stage, pre-production stage through market testing and productions. Besides, TPM also offers rental of business premises to established companies and R&D wings of large local and international companies.

The incubation programme offers business mentoring and coaching services, business, marketing & financial consultancy services, technology & business forums, workshops and business matching to researchers, scientists, technopreneurs and SMEs. Its most advanced modules offer assistance and support in technology commercialisation that include advisory and consultancy services in technology transfer facilitation, project management, strategic management advice, market research & opportunity analysis and professional development programmes.

Other TPM units offer more specialized services, as for instance **TPM Biotech** providing product development, contract research, laboratory services, contract manufacturing and commercialisation of neutraceutical and biopharmaceutical products, **TPM Engineering** that offers Engineering design and solution, CNC machining, rapid prototyping and contract manufacturing services for the SMEs, and **TPM IT** that provides broadband services, data centre, project management & consultancy services for ICT entrepreneurs.
The MCA ICT Resource Centre (MIRC) in Kuala Lumpur was established in 2005 as an initiative of the MCA (Malaysian Chinese Association) to assist SMEs and encourage IT adoption. Its aim is to transform SMEs into globally competitive organisations. The MIRC Incubator was set up in 2006 and is designated an MSC-status incubator by the Ministry of Science Technology and Innovation (MOSTI).

The incubator houses 5 companies which pay rent of RM500 per month. In addition there is a ‘virtual incubator’ of 10 companies, which pay RM300 per month primarily for incubator support services.

The incubation programme at MIRC consists of 3 stages: start-up (Acceleration), full-service incubation (Escalation), and Expansion programme. Other services include: MIRC-BT Global Innovation Programme (funded by SMIDEC), various seminars, exhibitions and conferences (mainly ICT-focused, as for instance the MIRC Global SME ICT exhibition), an investment programme called Start-It, which has a capital fund of RM3.5 million (minimum investment RM250,000) and a Technopreneur venture fund with capital of RM1.5 million. The capital is provided through a joint venture between the incubator holding company, Huaren Holdings and the Star newspaper.

The incubator is owned by the holding company and salaries are covered by rental income. No Government funding or other sponsorship is received. The incubator takes substantial equity stakes in the incubated companies (up to 70%) and this is foreseen as the main income contributor in the future. The companies can stay in the incubator for a maximum of two years. So far two companies have exited and are reportedly doing well.

The incubator has three main strategic thrusts: Creative Multimedia and Animation, Mobile and Broadband content services (e.g. email / SMS marketing), and Women Entrepreneurship (ICT, professional services, food retailing, and SOHO).
5. MONITORING & EVALUATION

The National Incubator Network Association (NINA) does attempt to bring together incubators and encourage exchange of information and practices, although the prevailing opinion among interviewed players is that not much sharing of best incubation practices has taken place so far, apart from some exchange of procedures and service programs. NINA is also part of the regional Asian Association of Business Incubation (AABI), which is networking incubators at Asia-Pacific regional level.

The Multimedia Development Corporation (MDeC) has conducted an annual impact survey, but this is limited to the 20-odd MSC-status incubators. As for other tech- and non-tech based incubators, the Federal Government reportedly does not carry out any formal monitoring & evaluation activities, nor are these carried out by incubator management apart from at a very informal level. There are also no systems in place to monitor companies once they have exited from the incubator.

Last but not least, the Multimedia Super Corridor has set a list of best practices that each MSC-status Incubator must be able to demonstrate in order to obtain and maintain its status. The parameters that must be monitored are:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selectivity</td>
<td>Acceptance of incubatees that have viable business concepts and characteristics for success</td>
</tr>
<tr>
<td>Accountability</td>
<td>Measurement of incubatees against set goals and milestones.</td>
</tr>
<tr>
<td>Mentoring, Coaching, and Training</td>
<td>Provide incubatees with valuable wisdom and experience through individual mentors, advisory groups and training programmes or through the staffing of incubatees with experts in various business functions. This is the highest value an incubator can provide to incubatees.</td>
</tr>
<tr>
<td>Access to capital</td>
<td>Provide direct investment capital or establish channels for financing seed or growth.</td>
</tr>
<tr>
<td>Access to growth related resources on a Just-In-Time basis</td>
<td>Access to resources such as facilities, internet access, office equipment, legal, HR and accounting services on a needs basis.</td>
</tr>
<tr>
<td>Assistance in developing non-core business components of the company</td>
<td>Focus on building in-house competencies or through partnerships.</td>
</tr>
<tr>
<td>Synergy Creation</td>
<td>Adoption of business eco-system through peer level relationships</td>
</tr>
<tr>
<td>Industry knowledge, business, and management skills</td>
<td>Possess in-house knowledge on entrepreneur’s specific industry segments as well as associated management skills.</td>
</tr>
<tr>
<td>Previous successes</td>
<td>Successful launch record and professionals in the management team with experience in technology and in the investment industry.</td>
</tr>
<tr>
<td>The intangibles</td>
<td>Includes highly networked individuals, synergy with other incubators, alliance with corporations and VCs as well as relationships with mentors.</td>
</tr>
</tbody>
</table>
6. CONCLUSION / STRENGTHS AND WEAKNESSES

The main strength of the incubation movement in Malaysia is the extent of Government support for incubators which has resulted in quite an extensive network, particularly in the ICT and technology-based sectors. Located in many instances within larger technology parks, universities and research institutes, tenants have quick access to potential customers, many of which are assembly/development plants of international companies.

However, the extent of Federal Government funding may also be the main weakness, since over-reliance on Government funding (but without close monitoring by the latter) may be giving too much control to such departments without the necessary accountability, thus creating, in some instances, incubators that run along civil service attitudes, rather than entrepreneurial encouragement. This may help explain the reported low awareness of tenants of incubator services and poor attention to cost-efficiency. Of course there is also the risk that policy may change in an adverse direction in the future and that incubator managers are not ready to face new challenges.

The history of incubator development in Malaysia may also help explain some of the specific features of the model. Many incubator-project approvals were given for their noble cause (entrepreneurship, commercialization of R&D, etc.). However, due to a lack of monitoring and accountability, many incubators (one third) did not move beyond the First Generation Real Estate Model. The level of support services has not evolved significantly within these units; hence the level of resources support appears to be lower, reflecting the ownership and the background of staff (public sector). The description of “incubator” applied to these units may be confusing in that many appear to be closer to managed workspaces, rather than for wealth-creation and (techno) entrepreneurship.

Malaysia provides a clear example of technology-based, government-supported policy to encourage local entrants to international markets, which could serve as a guide to practice where private-sector initiatives are less likely and the Government wishes to take a leading role in incubator development.

The main strategic thrust is the transformation of the economy to one which is primarily knowledge-based rather than resource-based, and which is more internationally competitive and sustainable in the long-term. Incubators are important in this scenario because they can enhance the prospects of small technology-oriented companies and can bring about improved utilisation of knowledge assets that reside within Universities or other R&D centres. It is perhaps too early to say how successful this strategy is in the context of Malaysia since it is part of a long-term goal of achieving a developed economy by 2020. At that time it will be possible to evaluate more accurately how successful the strategy has been.
For now, the main lessons learnt from the Malaysia experience are as follows:

- Importance of a very clear public-policy focus and rationale for incubators linked to the long-term economic strategy of the country.

- Given the above, the need for Federal Government support for incubators to ensure that they become operational and achieve sustainability.

- Importance of the linkage with universities, research institutes and other centres of knowledge and R&D.

- For private incubators, the importance of a sustainable funding model which is based on one, or better a mix of the following: parent company, equity holdings in incubated companies, rental payments, income from other services including training and event organisation (conferences, exhibitions etc). In this context, the parent company takes on the role of the Government in public-funded incubators, effectively underwriting the incubator’s existence and ensuring that the main operational costs are covered.

- The reported problems of cost effectiveness and impact that can derive from the Malaysian organisational and funding model need to be analysed and addressed when considering the importation of this model into other countries.

- Linked to the above, the corporatisation of government-funded technology parks and research institutes has managed to gradually change the attitude of incubator managers towards becoming more business-minded and profit-oriented.

- The need for an annual economic assessment to measure the impact of public-funded expenditures and monitor the contribution of incubators towards the achievement of national economic goals.

- The introduction of MSC-Status Incubator certification or accreditation, along with its incentives, has encouraged the establishment of nine private incubators.

- The National Incubator Development Program (NIDP) framework provided the impetus for the establishment of an industry association, NINA (National Incubator Network Association), in 2004. NINA is now an active member of the Asian Association of Business Incubation (AABI), a powerful advocate for improved incubator support policy and a promoter of best practice sharing in Malaysia.
6.1 Areas for Future Improvement

The main drawback to the Malaysia model is exactly its overwhelming dependence on Government funding. The current extent of subsidies to publicly funded incubators is hindering their search for alternative sources of funding and this may have an extremely negative influence on the incubators’ movement in occurrence of any change of Government and/or major revision of policy. Therefore, given Malaysia's aspiration of 'developed country' status, the current situation needs some corrective action in the medium term, probably in terms of improved management structures and incentives.

At the same time, with less than 10% of incubators being private, it is clear that the incubation industry is not attractive for private capital, which is true in almost every country. Indeed, the National Incubator Development Policy (NIDP) Framework, promoted by the Multimedia Development Corporation (MDeC) through the MSC-Status Incubator’s Bill of Guarantees, has certainly started to encourage the establishment of private incubators. Perhaps, the promotion of ‘mixed-funding’ incubators, which can attract a Government grant to cover part of the private-sector costs (as in New Zealand), would be a better option for the future. This is not a far-fetched idea as the Federal Government, via the Ministry of Science Technology and Innovation (MOSTI), is already providing grants to fund private sector R&D projects. A “mixed public-private” approach could open up the possibility of private sponsors becoming more involved in the establishment and operation of business incubators and encourage incubators to develop creative financial models to ensure their sustainability, including taking more equity stakes in incubated companies.

Other areas where Malaysia could significantly improve the practices and performance of its incubation system comprise:

- Creating a better policy support framework for venture capital funds, particularly those managed by technology parks and incubator management companies, which in the past have not been able to achieve favourable returns-on-investment. A number of them have indeed failed, thus lowering the confidence in the VC industry with respect to collaboration with incubators.

- A stronger push for the incubators (still too many) that continue to operate under the First Generation Model (Real Estate Model) to evolve towards more dynamic models.

■ Being more selective in granting funds to incubators only against their actual performance and measurable achievements, to avoid that some incubators obtain public funds for creating new enterprises and then do not live up to their promises. This might create a dangerous level of distrust towards the whole incubator movement.

■ No consistent Economic Impact Survey of incubators has been conducted and the results of the annual survey of MSC Status incubators have not been released. This situation must be quickly reverted, for the same reasons discussed in the precedent bullet.

■ Stronger leadership is desirable. Appropriate training programmes should be developed for both policy makers and incubator managers to develop the necessary skills and competencies.

■ It could be advisable to extend the availability of some of the incubators’ services, particularly those obtained through technology parks, to more companies in the surrounding territory to have a better fall-out of the most advanced R&D facilities on the regional economies.
## STATISTICAL DATA

The figures on this table have been obtained through an interview held with NINA and our elaboration on available data.

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Incubators</td>
<td>106</td>
</tr>
<tr>
<td>Jobs created every year</td>
<td>3,975&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td>Split the total number of incubators by type</td>
<td></td>
</tr>
<tr>
<td>- Type 1 (‘Landlord model’)</td>
<td>38 (35.8%)</td>
</tr>
<tr>
<td>- Type 2 (‘Landlord + consulting/advisory model’)</td>
<td>44 (41.6%)</td>
</tr>
<tr>
<td>- Type 3 (‘Facilities + BAS / mentoring’)</td>
<td>24 (22.6%)</td>
</tr>
<tr>
<td>% of incubators in growing sectors (sectors that have a competitive advantage for the country)</td>
<td>23.6% (25/106)</td>
</tr>
<tr>
<td>AVERAGE Incubator space (sq meters)</td>
<td>50,000 sq ft</td>
</tr>
<tr>
<td>AVERAGE occupancy rate</td>
<td>75%</td>
</tr>
<tr>
<td>AVERAGE number of tenants per incubator</td>
<td>25</td>
</tr>
<tr>
<td>Ratio of public to private sector funding</td>
<td>97:9 or 11:1</td>
</tr>
<tr>
<td>% on non-profit incubators</td>
<td>52.8% (56/106)</td>
</tr>
<tr>
<td>Average duration of the incubation process</td>
<td>4 years</td>
</tr>
<tr>
<td>Average number of employees</td>
<td>3.5</td>
</tr>
<tr>
<td>Average survival rate (of graduated companies) (In most industrialized countries is 85%)</td>
<td>No study conducted at national level&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>Survival rate of non-incubated companies</td>
<td>40%&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td>Percentage of graduated companies remaining in the local area</td>
<td>No study conducted at national level</td>
</tr>
<tr>
<td>% of tenants leaving the incubators every year</td>
<td>No study conducted at national level</td>
</tr>
</tbody>
</table>

<sup>1</sup> Our estimate based on the number of companies that exit incubators every year (662.5, calculated by dividing the current number of incubated companies [2,650] divided by the average period of incubation per company [4 years]) multiplied by the average number of jobs in companies leaving incubators (6).

<sup>2</sup> Certainly much better than the survival rate of non-incubated companies, but there is no general consensus about this figure - it should probably be around 80%.

<sup>3</sup> “... in Malaysia, even though there have been no comprehensive studies or accurate figures published so far, the estimated failure rate for SMEs was 60% (Portal Komuniti KTAK, 2006)”. Extracted from “Dissecting Behaviours Associated with Business Failure”, Noor Hazlina Ahmad, Universiti Sains Malaysia.
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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