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**REPORT ON BUSINESS INCUBATORS  
IN THE ESCWA REGION**



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The views expressed in signed articles are those of the authors and do not necessarily reflect the views of the United Nations secretariat or of the organizations with which the authors are associated.

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## BACKGROUND

1. The power of entrepreneurship has been rediscovered, and small is beautiful again. Advanced computing and telecommunications technologies are rapidly changing the traditional concepts of manufacturing scale, styles of management and the competitive advantage of nations. This technological revolution has made the whole world an open global market, reinstating economic models based on private enterprises. Recognizing these dramatic changes, the General Assembly in the early 1990s passed resolutions urging Governments to open the way for private initiatives to contribute effectively to economic and social development.

2. In both industrial and developing countries, small and medium-sized enterprises (those employing between 5 and 500 persons) have generally constituted the overwhelming bulk of total firms—by number—and have accounted for around one third to one half of gross domestic product (GDP) and total employment. Indeed, as employment in large corporations has declined in countries such as the United States of America owing to automated manufacturing systems and international competition, small and medium-sized enterprises (SMEs) have been responsible for almost all the net growth in jobs, as well as for a significant proportion of technical innovations. Small companies, with growth-oriented management, can adapt faster to change, create new products and bring them to market swiftly, trim overhead and feed the large corporations with low-cost, high-value services. Indeed, SMEs represent the real economic and production complements to large-scale industries.

3. In most developing countries, including ESCWA countries, SMEs have been performing well and have done so without serious government support. The few Government-sponsored support mechanisms that exist have generally lacked the needed flexibility, motivated personnel and political leadership. Comprehensive small-enterprise development strategies barely exist in spite of increased talk about the necessity to enhance the role of the private sector and to support SMEs. Universities, research institutions, large corporations and private-sector associations in developing countries have until recently failed to provide any meaningful support to SMEs.

4. In the countries of the ESCWA region, providing increased support to the private sector, particularly small enterprises, became necessary in order to minimize the side effects of economic reforms and privatization on labour and employees, by reducing unemployment and creating employment opportunities.

5. If this renewed successful trend in the growth of small entrepreneurial businesses is to be fully exploited and is to lead to prosperity, then innovative ways must be found to channel it. One such modality—the business and technology incubation centre—has been fairly successful in the United States and Europe. The United Nations Development Programme (UNDP) has been assisting developing countries in adapting this concept to their specific needs and conditions.

6. Business incubators are one of the recent approaches adopted worldwide to promote and support small enterprises, which are almost always in the private sector and which include in particular innovative, technology-driven enterprises. The results have been encouraging. Today more than 1,500 incubators are in operation worldwide, mainly in the United States of America and Europe, with over 500 incubators now operating in the developing and formerly socialist countries.

7. ESCWA has been active in promoting the business incubator concepts and practices in the region since the early 1990s. In this effort, ESCWA has cooperated closely with UNDP/Private Sector Development Programme, in New York, as well as with various UNDP offices in the region. ESCWA has been cooperating also with the Friedrich Ebert Foundation offices in Amman and Jerusalem, the UNIFEM regional office in Amman, and many national institutions concerned.

8. This report is a continuation of an earlier report on the subject published by ESCWA in 1995.<sup>1</sup> It is based on many related activities undertaken in the past few years and continuing up to the end of June 1997. The report aims at disseminating the results of these activities to as many of those concerned as possible, particularly since interest in the business incubator concept is increasing, with more attention being given both to SMEs and to their support institutions. In fact ESCWA is scheduled to present the concept at the Seventh Conference of Arab Investors and Businessmen, to be held in Beirut in October 1997, and to another meeting, organized by the Arab Industrial Development and Mining Organization (AIDMO), to be held in Cairo in early 1998.

9. The subject of business incubators was a major topic discussed at the ESCWA Expert Group Meeting on Creation of Indigenous Entrepreneurship and Opportunities for Small- and Medium-Scale Industrial Investment, held in Damascus in 1993. As an outcome of the Meeting, in 1994 and 1995 ESCWA formulated project documents and plans of action for the establishment of business incubators in Gaza and Nablus, in the occupied territories and in Damascus. Furthermore, since early 1996, ESCWA has been providing technical assistance and advisory services to establish a women's business incubator in Amman, a project undertaken by the Business and Professional Women's Club, in cooperation with the UNIFEM office in Amman. Other advisory services on the subject were provided to various concerned national institutions in Lebanon and Saudi Arabia.

10. The Regional Seminar on Assessment of the Role of Business Incubators in Economic Development, was held in Beirut from 11 to 13 September 1996 and was organized by ESCWA, UNDP (Private Sector Development Programme) and the Friedrich Ebert Foundation; it was hosted by the Lebanese National Council for Scientific Research (NCSR) and the Hariri Foundation of Lebanon.

The primary purpose of the Seminar was to acquaint decision makers in the ESCWA region—in the related ministries, chambers of commerce and industry, private-sector institutions and enterprises, and universities—with the potential and the problems of business and technology incubators worldwide, as well as to deliberate on the likely conditions for success and failure.

11. The Seminar also deliberated on a study assessing the role of business incubators in economic development in seven developing countries, undertaken by UNDP, in cooperation with the United Nations Industrial Development Organization (UNIDO) and the Organization of American States (OAS). The study covered some 140 business incubators, a significant portion of the estimated 250 incubators that existed in 1994 in the industrializing countries and in transitional economies. These countries differ markedly in development level, policy orientation and technical infrastructure, and their incubators exhibit a wide range of sizes, characteristics and performance levels.

The assessment document served as a working paper for a global workshop held in Tianjin, China, in 1995. During the workshop, it was recommended that the results of the assessment be widely disseminated among planners for SMEs, in various regions of the world, including Western Asia.

12. This document reports on recent developments and activities related to business incubator concepts and practices in the region, as well as on the characteristics of business incubators. It also includes the conclusions and recommendations of the Regional Seminar held in Beirut, as well as selected papers presented during the Seminar.

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<sup>1</sup> ESCWA, *Establishment of Business Incubators in the ESCWA Region: the Cases of the Syrian Arab Republic and the Palestinian Territories* (E/ESCWA/ID/1995/1).

**PART ONE**

**BUSINESS INCUBATORS IN THE ESCWA REGION**



## I. GENERAL CHARACTERISTICS OF BUSINESS INCUBATORS<sup>2</sup>

The focus of attention with regard to economic development planning has shifted from large multinational firms to small and medium-sized enterprises. Such enterprises are recognized as the generators of new products and new processes and of employment, revenues, profits and wealth. However, they are also characterized by high failure rates. Economic development professionals are now seeking better instruments for promoting small-enterprise creation and growth.

Business incubators have been set up to support the emergence and development of small enterprises. Little is known about the cost or the effectiveness of this tool, particularly outside the United States and Europe. A recent study found that the performance of incubators in seven industrializing countries varies widely but that on average they are effective in developing new enterprises (as measured by jobs created) and in helping the enterprises achieve sustainability without ongoing subsidies.<sup>3</sup> Although these incubators have been adapted to suit local conditions, they nevertheless share a number of characteristics; workspaces are enriched by business development support, and financing and assistance are often provided to the incubated enterprises.

Adapting this modality to individual countries remains a challenge. Part of the adaptation process involves recognizing the strengths and weaknesses of family-focused enterprises: families are willing to support initial efforts but they also constrain growth (the transition from smaller to a larger enterprise). Further, for small enterprises to achieve their potential, the traditional independence of the small business must yield to the integrative requirements of the entrepreneurial venture.

### A. ESSENTIAL CHARACTERISTICS

In simple terms the business incubator is a micro-facility which has a small management staff and which provides work space, shared facilities, interaction among tenants, and access to technical and business support services with affordable rents and fees, in one *integrated package*. Such caring and sharing have been shown to facilitate business start-ups and to diminish the chances for failure by reducing initial costs and delays and by providing a supporting environment that can assist in dampening the effect of deception and disappointments.

Entrepreneurs/tenants are carefully selected; there is a defined selection process for entry into the incubator, and there are flexible exit requirements. A small management team with core competencies provides early diagnosis, treatment and/or referrals for business threats and opportunities by tapping a comprehensive network of professionals and friends in the local community. The selected entrepreneurs are assisted in preparing business plans and accessing seed capital; they are trained in small business management skills and advised on marketing, accounting, legal and other problems. After a stipulated incubation period, the successful businesses “graduate” from the incubator, making space available for new tenants. In industrial countries, the graduating company is not serviced by the incubator, but in developing countries a system of continuing assistance may be needed.

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<sup>2</sup> For more details, see Rustam Lalkaka and Jack Bishop, “The adaptation and replication of business incubators in Western Asia”, paper presented to the Regional Seminar on Assessment of Business Incubators in Economic Development, sponsored by ESCWA, UNDP and the Friedrich Ebert Foundation (Beirut, 11-13 September 1996). The paper is included in Part Two of the present report.

<sup>3</sup> Rustam Lalkaka and Jack Bishop, *Business Incubators in Economic Development: an Initial Assessment in Industrializing Countries*, (New York: UNDP, 1996).

Initial support is almost always provided by Governments or NGOs, in the form of planning and training, low-cost (or no-cost) building and renovation, equipment and initial operating subsidies, so that rents and fees from tenants match operating expenses.

In addition to nurturing its own tenants, the incubator can provide outreach assistance to external businesses on their own premises. If it has no tenants within its walls to benefit from interaction and focused attention, then it lacks the defining features of an incubator and is more like a traditional small business development centre.

The business incubator itself is to be run as a business, with the prospect of becoming self-supporting when operations are fully established. Initial support, however, is almost always provided by private and public sources in the form, for instance, of a low-rent (or no-rent) building and a budget for operating expenses. Services for tenants may be partially subsidized at the start, with the subsidy gradually declining.

International experience in the establishment of incubators is important. However, pilot incubators for developing countries must be *specifically designed to suit local conditions and culture*.

*The incubator is service-oriented* and depends upon the use of equipment and facilities in neighbouring universities and laboratories, as well as professional services from an informal network of community supporters.

Many incubators provide targeted support for technology-based businesses (sometimes referred to as “knowledge-based” enterprises). While this is more common in developed countries, many industrializing countries are adopting a “technology” theme as well. This orientation provides self-generated employment in firms led by local (or expatriate) scientists and engineers, while also enabling society to reap rewards from investments in universities and research institutes.

The incubator not only helps to create new businesses; it also more than trebles their chances of survival. There may be, say, 20 surviving businesses with 200 workers within the incubator, but the real benefits come from the companies that leave and grow (some incubators have sustainable graduation rates of 20% to 30% per year). These flourishing businesses stimulate economic activity, with collateral growth and employment for both suppliers and customers. Significant tertiary effects come from the incubator’s catalytic role in developing entrepreneurial skills, modifying the culture of university-research-industry relations and influencing national policies towards small private businesses.

## B. INCUBATOR OBJECTIVES

The *primary purposes* of an incubation centre are to foster an entrepreneurial culture and increase the participation of indigenous entrepreneurs in the national economy. Special attention may be given to target groups such as youth or women or other special groups. The incubator provides focused technical and business counselling and also helps overcome the bottlenecks and regulatory hurdles that impede rapid business formation, by facilitating the start-up process through access to a community support network.

*Specific objectives* may vary, depending upon the incubator’s focus, as follows:

- (a) *Technological innovation*, through interaction with universities and research complexes, for initiating businesses concerned with innovative products and services that cater to domestic and export markets;
- (b) *Regional development*, by enhancing the attraction of areas outside of urban centres;

(c) *Industrial sub-contracting*, by linking up with industrial estates, larger industries or industries abroad, providing specialist services and opportunities for “spin-offs”.

#### C. INCUBATOR ARRANGEMENTS

To achieve the above objectives, the following incubator modalities may be used:

(a) *Full-service incubator*, providing a broad range of assistance to start-up businesses on the incubator’s premises, and utilizing equipment and facilities in neighbouring universities, laboratories and industrial institutions;

(b) *Virtual incubator*, serving companies outside the incubator walls;

(c) *Internal incubator*, established by a large industrial or academic conglomerate and working in symbiosis with it;

(d) *Special-purpose incubator*, concentrating on specific technologies such as computer software or biotechnology, or on specific target groups such as women or new graduates.

#### D. INCUBATOR COSTS AND BENEFITS

The incubator programme needs funding for three purposes:

(a) *Capital resources* to establish the incubator, including the preparation of the building premises and the purchase of office equipment and furniture, as well as other preparatory expenses;

(b) *Operating funds* to pay staff and to cover building utilities and related costs for the first four or five years; thereafter income from tenant rents and services could cover operating costs. Incubator income can be augmented by charges for outreach services, by “royalties” (say 1-2%) on sales turnover of successfully incubated companies, and by equity participation in tenant companies.

(c) *Seed money* to help the incubator’s tenants cover working capital and investment requirements. Such money can be provided on commercial terms by a revolving fund linked to the incubator management or as equity, through growth capital funds.

#### E. TENANT BENEFITS

Besides the national social and macroeconomic benefits, the incubator benefits for the tenants include the following:

(a) Firms in the incubator have a greater likelihood of success, owing to the reduction of operating expenses and gestation times;

(b) Access to technical advisory services, joint procurement and marketing and so forth can be vital in raising technological levels, lowering costs and enhancing quality;

(c) Rental expenses are initially lower than elsewhere, and the terms of incubator leases are more flexible, to allow for business fluctuations;

(d) Management can enhance the firm's credibility, thus enhancing its access to capital and customers;

(e) Incubator tenant businesses can be developed to serve as feeder units through the sub-contracting of services and components, at home and abroad. Besides this, the tenants can conclude business deals among themselves.

#### F. REQUIREMENTS FOR A SUCCESSFUL INCUBATOR PROGRAMME

Recent experience in developing countries highlights the importance of the following factors in the success of incubation centres:

1. *Appropriate design of the incubator.* The process of successful incubator development is both an art and a science and requires significant investments of time, talent and effort. Thoughtful preparation in the early stages can minimize subsequent costs and contribute to the success of the programme. One of the most critical aspects of incubator development is a general acknowledgment of how important the essentials of the entrepreneurial process are in the context of local culture and conditions.

A feasibility study combined with a business planning process should help to determine the main design parameters. Careful estimation of the cost and revenues of the incubator is essential to ensure sufficient capital for establishment and early operation. A shortage of fixed or working capital will divert management attention from the development of tenant services to institutional fund raising, setting the stage for the failure of the incubator concept. During the critical early months of operation, developing links to sources of essential services and finance establishes the basis for subsequent incubator success.

2. *Careful selection of the manager.* The importance of the manager and staff to the success of the incubator is well established but difficult to quantify. The manager must combine maturity with youthful enthusiasm, and business skills with an openness to new concepts. The ideal manager has sufficient business experience to diagnose emerging problems and to provide "first aid" in connection with a full range of business functions. Obviously the manager cannot fulfil every expectation, so his efforts must be supported by networks of service providers, consultants and institutional linkages.

3. *Proximity to and the support of the local business community and service providers.* The premises should be located close to a large business centre in order to provide easy access to service providers such as accountants, consultants, lawyers and so forth. In addition, the site must be readily accessible to the incubator tenants, as well as to their potential customers.

4. *Proximity to centres of technical education, research and industrial activity.* The proximity of large industries, technical universities and research facilities provides a pool of potential management talent, as well as customers and suppliers for new ventures. Universities and industries may contribute spin-off businesses to be developed in the incubator.

5. *Support of local government and sponsors.* At the start-up stage, incubators need the political support of government agencies, as well as the financial and substantive involvement of local sponsors and of the State.

6. *Good transport and communications infrastructure.* The availability of bus and rail transport and of convenient telephone and fax facilities is necessary to give tenants the access they need to market information, and to secure easy access to markets for their products. A reliable electricity supply, with



minimal voltage fluctuations and power outages, and reliable availability of the raw materials likely to be used by tenant firms are also important.

7. *Availability of affordable premises.* A facility with a good layout in a pleasant environment conducive to creative work can be a major determinant of success. The first incubators should be situated in locations which maximize the probability of success.

#### G. CRITERIA FOR THE SELECTION OF SITES FOR INCUBATION CENTRES

Important considerations for the *selection of buildings* to house the incubators include the following:

(a) *The possibility should exist to expand initial floor space to approximately 2,000 square metres gross, with possibility for future expansion.* This is the optimum floor space necessary for a self-sustaining incubator. It is large enough to provide a meaningful stream of rental income from tenants and small enough to be readily manageable and affordable;

(b) *An existing facility which could be promptly transferred to the incubator entity is desirable,* in order to minimize start-up delays. It is also critical that the legal title (or a clean lease, depending on the situation) to the premises can be passed promptly to the incubator management. However, if vacant space is unavailable, a custom-designed building is both functional and architecturally attractive;

(c) *There should be possibilities for a flexible layout.* It should be possible to easily and quickly change the layout of the facility to adapt to changing tenant needs and to potential growth in the number of tenants. In addition, the layout of the facility has a direct impact on internal traffic and interaction between tenants. This interaction has been shown both by formal studies and by informal experience to be an important determinant of tenant success. The possible need for warehousing, parking, and laboratory facilities must also be kept in mind;

(d) *The general condition of the building should be good.* The vacant space should require minimal capital investment, renovation and maintenance, so as to ensure that resources dedicated to the business incubators reach the tenants and are not dissipated on the facility itself;

(e) *Security should be good.* The interior layout should provide good security through a single entry point. A common office area should be adjacent to the entrance, for easy access both by tenants and their customers. Interior spaces should provide access to the central office area, while ensuring confidentiality and security for individual businesses. The premises should also be environmentally safe.

#### H. REQUIREMENTS FOR INCUBATOR OPERATION AND ADAPTATION

Incubators have proven their ability to support business development in both industrialized and industrializing countries. Greater attention must now be given to adapting the incubation concept to particular circumstances; individual incubators must have the ability to respond to a wide range of local opportunities and requirements and to accommodate the local constraints and culture. The challenge is to understand the essence of the incubation process so that adaptations do not compromise the incubator's defining characteristics and effectiveness.

##### 1. *An agribusiness focus*

In rural areas, entrepreneurship promotion may be directed towards the support of food-processing businesses as a focus of local economic development. There are significant potential benefits related to the

creation of such value-added production activities, including new employment opportunities outside of the major cities and higher incomes for farmers as a result of the increased demand for higher-value crops. The lower population densities, the lack of infrastructure and the limited educational support make incubators both necessary and more difficult to implement in such areas.

## 2. *“Out-wall” tenants*

Offering incubator-based services to non-tenant (affiliate) entrepreneurs who conduct business on their own is an effective way to increase the reach and enhance the financial sustainability of an incubator. However, any attempt to move away from the incubator facility and develop what is mainly a non-tenant process ignores the lessons learned from traditional programmes. Without the daily personal contact afforded by its professional staff, an incubator’s early diagnosis capabilities, proactive business support activities and tenant interactions are seriously compromised.

## 3. *Cost per job*

While important to policy makers, the calculation of cost per job is complicated by the near impossibility of identifying or quantifying the exact role and contribution(s) of each of a wide variety of support structures involved in the development of an entrepreneurial environment. This task is made even more difficult by the fact that the major job growth comes after the tenant has left the incubator. The associated programmes are so diverse—ranging from education and training to small-business tax incentives and loan programmes—that simple cost and benefit calculations become quite complicated. Further, there are benefits of skill development and changes in university-industry linkage cultures which are difficult to quantify. The intensive support afforded by the incubation process can result in what appears to be a high cost per job. However, focusing on businesses with value-added product or process technologies increases the potential for significant growth, which can dramatically lower the cost per job.

## 4. *Entrepreneurial training*

At best, traditional schooling provides a basis for employment in established industries or Government, but it may fail to instil the thought processes or provide the tools necessary for the development of vibrant and inventive entrepreneurial activities. Entrepreneurial training concentrates on developing more open modes of thought and behaviour. Eschewing the “specialization” of the traditional corporate approach, entrepreneurial training is more intensive and extensive, focusing on the process of aggregating human, fiscal and technical resources to create a new enterprise. Techniques have now been developed to identify entrepreneurs, sharpen their skills and orient them toward success.

## 5. *Management skills*

Beyond basic entrepreneurial training, a variety of increasingly complex management skills must be mastered to turn a newly hatched venture into a major enterprise. Technical and administrative specialization is needed to facilitate the transition of a small, often family-owned partnership into a modern corporate structure with external equity and debt financing.

## 6. *Financing*

Early-stage businesses often require financing from external sources. However, because they are considered high risks, they must pay significant premiums. Further, the fixed costs of evaluation and processing are quite high in proportion to the small initial capital needs of these enterprises. The successful implementation of an incubator strategy calls for a full continuum of readily available financing vehicles

(both debt and equity); the ability of the incubation process to deliver the desired results is seriously imperilled by gaps in this continuum or by the imposition of high costs or administrative delays.

A variety of debt instruments is required, in addition to traditional asset-based financing. From long-term equipment leasing to short-term accounts receivable factoring and purchase-order financing, the needs of growing enterprises for both fixed and working capital must be met to enable businesses to achieve their economic potential.

Both incubators and incubatees need sources of long-term capital. Debt capital requires long-term maturities so that businesses can meet their investment needs, while equity capital requires well-functioning private and public markets. There has been some experimentation with providing equity financing that is “bought out” through the return of a fixed percentage of revenues, an option which offers valuable flexibility.

### *7. Government policy*

Government policies frequently reflect an implicit bias that constrains the development of small enterprises into larger and more viable firms. The technical labyrinth of administrative rules and regulations, as well as reporting requirements that necessitate the employment of a large staff, and other such factors force small enterprises to operate in the shadows of the economy. Carefully crafted and sensibly administered government policies can protect the interests of society without constraining the ability of small enterprises to contribute to the economic development and well-being of that same society.

## II. REGIONAL DEVELOPMENTS

### A. BUSINESS ENVIRONMENT AND THE INCUBATION CONCEPT IN THE ESCWA REGION

The concept of business incubation has been gaining ground worldwide as a highly successful mechanism for supporting the start-up of small-scale enterprises (SEs). Many developing countries have chosen this mechanism as an effective means of enhancing entrepreneurship and providing support to selected target groups. The number of successful incubators in developing countries has steadily increased, offering a variety of service packages and covering a wide range of target groups, specializations and specific conditions.<sup>4</sup>

In the countries of the ESCWA region, the incubation concept has been diffusing very slowly.<sup>5</sup> Experts stress that the characteristics of an incubator and the requirements for its successful operation are country-specific, or even site-specific; every incubator constitutes a unique case of its own and cannot be replicated elsewhere. The establishment and operation of a successful incubator require careful preparation and the existence of certain conditions. While a review of the relevant region-specific characteristics<sup>6</sup> suggests that conditions in most ESCWA member countries are not yet ripe for the support of incubator projects, the concept of incubation has gained increased understanding and acceptance in most quarters. It is clear that more concerted and sustained efforts and greater dedication are needed before the region is ready to support successful incubators. For every incubator project proposed, selecting the target group and the service package to be offered requires very careful, detailed consideration of the characteristics of the host country, of the supporting community and of the site itself.

#### 1. *Some salient features of the business environment in the region*<sup>7</sup>

The countries of the ESCWA region are characterized by definite and clear variations in their business environments. However, there are some salient common features that will directly affect an incubator project in any one of these countries and which have already contributed significantly to the stagnation of all initiatives to establish pilot incubators in the region. The most important of these features are described below.

For some time the region has relied on one major economic sector, namely oil and gas and their related fields. The revenues generated within this sector also have had a profound effect on the non-oil-exporting countries, which have been able to benefit from the remittances of expatriate workers, the export of agricultural and manufactured products, financial assistance and aid received from the oil-exporting countries, spending by Gulf tourists, and business contracts/subcontracts with companies operating in the Gulf.

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<sup>4</sup> Rustam Lalkaka and Jack Bishop, *Business Incubators in Economic Development: an Initial Assessment in Industrializing Countries* (New York: UNDP, May 1996).

<sup>5</sup> ESCWA, *Establishment of Business Incubators in the ESCWA Region: the Cases of the Syrian Arab Republic and the Palestinian Territories* (E/ESCWA/ID/1995/1 in English and E/ESCWA/ID/1995/1/Rev.1 in Arabic).

<sup>6</sup> Ibid.

<sup>7</sup> For more details, see Hassan Charif, "Promoting the incubator concept in Western Asia" and Antoine Mansour, "Entrepreneurship development, business incubators and the business environment", papers presented to the Regional Seminar on Assessment of the Role of Business Incubators in Economic Development, sponsored by ESCWA, UNDP and the Friedrich Ebert Foundation (Beirut, 11-13 September 1996). These papers are included in Part Two of the present report.

This dependence has created a unique business environment based on a renter mentality, rapid-return investments, commissions, and the practical separation of work, effort and income. This environment, which prevailed during the oil boom era, has been dampened lately by the serious drop in oil income. However, the business traditions acquired as a result of the oil boom are still affecting most economic activities in the region; more to the point, they are seriously hampering the development of entrepreneurship, innovation and investment, particularly at the level of small-scale enterprises.<sup>8</sup>

In most of the countries in the region (with one or two exceptions), the State has been the most important economic actor, serving as income provider, purchaser, investor, regulator and so on. Thus, with the possible exception of Lebanon, the public sector has dominated the economy, leaving little opportunity for entrepreneurship or private-sector initiatives, even at the SE level. Further, for reasons which vary between countries, central government planning has also prevailed, with a clear bias towards large-scale public-sector projects. Little attention has been given to private-sector support institutions.

Through their monetary, financial, trade and fiscal strategies, macroeconomic policies generally discriminates against new and existing small firms through the imposition of considerable entry barriers. For example, in several ESCWA member countries, investment laws provide various incentives and exemptions from income tax, but only to projects with a high level of capital investment.

With a negative business environment prevailing in many countries of the region, the maintenance of entrepreneurial traditions and the development of entrepreneurial skills and initiatives have been curtailed or are very limited; most people would rather secure employment with established public or private agencies than become self-employed or employ others. This is even more apparent when it comes to industrial ventures, which are often characterized by longer-term returns, higher risk and the need for more specific skills and qualifications for success, even at the SE level.

Consequently, the important industrial ventures in the region have mostly been medium- to large-scale businesses employing more than 100 people and dealing with problems that are different from those generally faced by small-scale enterprises which employ only a few people; such circumstances have obscured the need for those SE support services required to enhance the establishment of incubators and for other support mechanisms geared mainly towards small-scale enterprises.

One of the most significant barriers to enterprise development in a number of ESCWA member countries is the complexity and number of procedures (forms and approvals) related to the establishment and operation of an industrial enterprise. The government bureaucracy thus increases the transaction costs for firms, which in turn reduces their competitiveness and discourages investors from starting up a business. Transaction costs relate to the processing of business documents, the negotiation and conclusion of contracts, litigation related to violations of contracts, and so on.

For all of the above (and various other) reasons, community support for the start-up of small-scale enterprises is almost non-existent. Communities generally understand the need to support charitable activities, but it is more difficult for people to understand the need to support other people's efforts to make a profit, a tradition that must be developed systematically and continuously over a long period so that it becomes an inherent and prevailing social value.

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<sup>8</sup> ESCWA and others, *Selected Proceedings, Expert Group Meeting on Industrial Strategies and Policies [and] Managerial and Entrepreneurial Skills under Conditions of Global and Regional Change*, Bahrain, 20-23 November 1995 (E/ESCWA/ID/1996/2).

In a region where medium- and large-scale enterprises dominate and where industrial small-scale enterprises are still perceived by the community to have little economic impact, it is not surprising that the banking and credit systems are reluctant to cater to the needs of SEs, particularly start-ups. Most new enterprises have to come up with a relatively large proportion of their financing on their own—sometimes 100%—in order to meet the needs of their start-up phase. Few chances to obtain credit are available—and certainly not for extended periods, as is necessary for industrial ventures expecting medium- to long-term returns.<sup>9</sup>

Finally, it must be pointed out that the region as a whole lacks an innovative spirit and the will to search for and develop new ideas, products, processes and services. The countries of the region have relied heavily on imported turnkey projects which have had a minimal impact on the development of local technological skills. There is also a serious gap between academic circles, the few research and development institutions that exist, and the production sector, reducing opportunities for the exchange of services and thus for the creation of new ventures based on locally developed innovations—a subject that will be further elaborated below.<sup>10</sup> Many incubators worldwide have been established to support the commercialization of successful research results—a need that is rarely felt in any of the countries of the ESCWA region.

All of the region-specific features mentioned above apply to varying degrees to the ESCWA member countries and are among the more important reasons that the response to the United Nations promotion drive to establish pilot incubators, though positive and encouraging, has been so slow. However, while no tangible results have yet been realized, it is important for all concerned regional and international agencies to continue their consolidated efforts in cooperation with the national institutions and agencies that have expressed their interest and concern. Any future efforts must take into consideration the experience gained thus far and the main obstacles faced by each particular country.

## *2. Incubation and technology innovations in the ESCWA region*

World experiences show that incubators may cover a wide range of businesses, production and services sectors, target groups, objectives and scopes, service packages, and management and working group structures. From among the large variety of successful incubation experiences, the technology-business incubators (those designed to encourage technologically innovative projects) are of special interest to the ESCWA region and should be elaborated further, as they have played a vital role in promoting local technological innovations and have enhanced the development of national technological capabilities and infrastructure.

Technology innovation is an increasingly important factor in economic development and in building up the competitive advantages of firms and of nations. In the countries of the ESCWA region, technology innovations in the production and services sectors are scarce and have had almost no impact on the respective economies. Almost all industrial projects are based on turnkey agreements. The design of the products and processes, the technologies, the machines, the spare parts, the maintenance, and many times even the operating personnel are brought in from outside. Local scientists and engineers are given little to do, though they may be asked to perform certain operational tasks or carry out minor maintenance tasks. As a result of this situation, the development of national technological capabilities and infrastructure has been slow, and

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<sup>9</sup> ESCWA and others, *Proceedings of the Expert Group Meeting on Creation of Indigenous Entrepreneurship and Opportunities for Small- and Medium-scale Industrial Investment* (E/ESCWA/ID/1994/1).

<sup>10</sup> ESCWA, *Proceedings of the Workshop on the Integration of Science and Technology in the Development Planning and Management Process in the ESCWA Region* (E/ESCWA/NR/1994/12).

there have been very few applied research and development projects that have reached the commercialization/production stage. In addition, skilled scientific and technological personnel have left the region for greener pastures, and the production and services sectors are almost completely isolated from the academic and research community.

Technology innovation—more particularly the role of technological innovations in enhancing the competitive advantages of a country and the need to elaborate and implement plans to enhance the development of national technological capability and infrastructure—is a comprehensive topic requiring consideration that is beyond the scope of a single seminar; within this context, however, it is important to point out that many countries in the world, including industrialized countries, have adopted the incubation modality as one small microtool to enhance technological innovation and to help new ventures based on bright and innovative ideas to overcome the hurdles faced at the take-off stage. Many universities and research centres have established affiliated technology incubators to assist in the commercialization of their successful research and development projects and to encourage and support those of their students, staff and graduates who have innovative ideas. Evidence is mounting that properly designed and supported technology incubators constitute a very promising small-scale mechanism for promoting technological innovations in the region.

The technological innovations which affect economic activities in any one country may be either radical or incremental. For the time being at least, the Arab countries (like other developing countries) have to restrict themselves to developing limited incremental innovations which suit their markets and their prevailing economic, social, technical and industrial conditions. Incremental innovations in Arab and other developing countries must aim at fulfilling one or more of the following objectives:

- (a) Increasing the local value-added;
- (b) Increasing local input (to replace imported feeder, parts, subsystems and raw materials);
- (c) Increasing local technological input, especially in the areas of design, redesign, adaptation and maintenance;
- (d) Responding more effectively to local needs and to the local market;
- (e) Improving acceptability in existing and potential export markets (i.e., increasing the competitive advantage).

Incremental innovations—limited changes in existing products, processes and services—may be achieved through one or more of the following mechanisms:

- New research and development efforts
- Imitation and reverse engineering
- Improving and upgrading local traditional techniques
- Enhancing local design capabilities and contributions

Each of these mechanisms deserves detailed consideration; however, the present study will focus on issues related to incubation and technology incubators.

Technology incubators can effectively promote and sustain the development of incremental innovations, since they provide the following:

(a) *Individual and direct attention.* People who have promising technical ideas but no access to resources or markets are provided with encouragement, consultancy services and advice in various fields, and very often, access to resources and credit;

(b) *A network of support facilities, capabilities and expertise.* The incubator management must develop a network linking incubated projects to a wide range of supporting facilities and expertise in the surrounding area, including: larger industrial firms and workshops; university faculties and laboratory services; research centre laboratories, workshops and expertise; and consultancy services;

(c) *Skilled project managers.* The main objective of incubation is to reduce the difficulties associated with the take-off stage. This is even more important for ventures with innovative ideas, since the owners of such ventures might have sufficient technical expertise but inadequate experience and/or skills in business and management to translate their ideas into viable businesses. The incubator manager should be able to provide all necessary support to an innovative venture, allowing each “incubated owner” to concentrate on developing his ideas into a successful, commercially viable product, process or service;

(d) *A link between the incubated innovative ventures and potential beneficiaries/clients/investors.* This link is in the form of the incubator manager. With his wide experience and contacts, the incubator manager should be able to identify potential beneficiaries and can work to develop a connection between the two parties, drawing the attention of the end-user to the innovative idea, and helping the incubated business owner adapt his product or service to the needs and tastes of the end-user;

(e) *An incubation-friendly environment.* The prevailing social values and business practices in most Arab countries reflect the region’s long-time dependence on imported turnkey projects. Locally developed innovations usually fail to generate much interest, an attitude which dooms a new idea from the very start. A totally different environment—one that is very supportive and encouraging—must be created and developed within any technology incubator to sustain the creative spirit and fulfill the other needs associated with innovative projects.

One very important aspect of incubation is communications access. Incubators should be prepared to facilitate the transfer and acquisition of the information that innovative ventures need to keep up with the dynamic, fast-changing nature of technological innovation. One of the most important services that the incubator can provide—either directly or through access to collaborating universities, research centres and firms—is ready access to current technical, scientific and industrial information. The world’s accumulation of knowledge and know-how is increasing at an exponential rate. A new discovery or invention, anywhere in the world, can trigger a number of practical and innovative ideas which may lead to the creation of new materials with special properties, new tools with greater flexibility, new products with special functions and so forth. Many of these “new” ideas, when combined with local resources and initiative, may be developed into successful economic activities. Providing access to up-to-the-minute information is a vital function of any technology incubator.

Finally, incubator management must provide each incubated project with whatever information and/or training it may need to translate a good idea into a commercially viable activity and to transfer the necessary technology horizontally to the production sector.

A number of advantages and benefits of technology incubators are described above. However, they are not simply assumptions, nor are they recommendations that the experiences of other nations be imitated. They are meant to answer the specific needs of the Arab region, determined through careful observation of and direct contact with various countries in the area over the past decade or so. Some of the region- and country-specific innovative ideas that have been partially developed during this period should be given



priority for incubation. Only a few of these have ever reached the stage of producing an operational prototype, and even fewer have achieved commercialization. These ventures and many others could have developed into successful enterprises had they been given the chance to receive suitable incubation and support.

B. REPORT OF THE REGIONAL SEMINAR ON ASSESSMENT OF THE ROLE  
OF BUSINESS INCUBATORS IN ECONOMIC DEVELOPMENT<sup>11</sup>

**Introduction**

(a) *Background*

Business incubators are one of the new approaches currently being tested to promote and support small enterprises (which are almost always in the private sector) throughout the world. The results have been encouraging. Today more than 1,000 incubators are in operation worldwide, mainly in the United States of America and Europe, with over 250 incubators now operating in the developing and former Socialist countries.

An "Assessment of the role of business incubators in economic development" in seven developing countries was recently undertaken by the United Nations Development Programme (UNDP), in cooperation with the United Nations Industrial Development Organization (UNIDO) and the Organization of American States (OAS). The study covered some 140 business incubators, constituting a significant portion of the estimated 250 incubators in the industrializing countries and in transitional economies. These countries differ markedly in development level, policy orientation and technical infrastructure. Their incubators extend over a wide range, in size, characteristics and performance.

The above assessment document served as a working paper for a Global Workshop held in Tianjin, China, from 21 to 23 September 1995. During the Workshop, it was recommended that the results of the assessment should be widely disseminated among planners for small and medium-sized enterprises (SMEs), government officials and private sector institutions, through the organization of regional seminars in the various regions of the world, including Western Asia.

The Regional Seminar on Assessment of the Role of Business Incubators in Economic Development, which was held in Beirut from 11 to 13 September 1996, was part of the implementation of the recommendations of the Tianjin Workshop. The Seminar was organized by ESCWA, UNDP (Private Sector Development Programme) and the Friedrich Ebert Stiftung (Foundation); it was hosted by the Lebanese National Council for Scientific Research (NCSR) and the Hariri Foundation of Lebanon.

(b) *Objectives*

The primary purpose of the Seminar was to acquaint decision makers in the ESCWA region in the related Ministries, Chambers of Commerce and Industry, private sector institutions and enterprises, and universities with the potential and the problems of business and technology incubators worldwide as well as to deliberate on the likely conditions for success and failure. More particularly, the objectives of the Seminar were as follows:

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<sup>11</sup> Previously issued as E/ESCWA/ID/1996/4.

- (i) To clarify the concept, problems and potentials of business incubators in the ESCWA region as one of the appropriate tools for small business development and support;
- (ii) To acquaint decision makers within the Governments and private sector institutions in the countries of the ESCWA region with the experience of business incubators worldwide and with initiatives undertaken in the ESCWA region;
- (iii) To deliberate on the conditions of success and failure of the projects to establish business incubators in ESCWA member countries.

### 1. *Organization of the Seminar*

The Seminar brought together representatives of United Nations agencies, Ministries of Industry, small enterprise development agencies, industrial and development banks, credit institutions, Chambers of Commerce and Industry, universities and scientific research institutes, and other private sector institutions in various countries of the region.

At the opening ceremony, statements were made by: Mr. Omar Meskawi, Minister of Transport of Lebanon (representing the Prime Minister); Mr. Henry Jackelen, manager of the UNDP Private Sector Development Programme; Mr. Samir Farah, representative of the Friedrich Ebert Stiftung; Mr. Mostapha Al Zaatari, Director General of the Hariri Foundation; Mr. George Tohme, President of the Board of the Lebanese National Council for Scientific Research, and a representative of the ESCWA secretariat. The opening ceremony was attended by 80 people.

A total of 24 participants from outside Lebanon participated in the seminar activities. Participants included representatives of UNDP (New York), UNIDO, the United Nations Development Fund for Women (UNIFEM), as well as participants from Egypt, Iraq, Jordan, Kuwait, Saudi Arabia, the Syrian Arab Republic and Turkey. Around 30 participants from Lebanon also attended the Seminar.

The first day of the Seminar was devoted to the presentation of papers by United Nations bodies and agencies. A representative of UNDP presented the results of the study on "Assessment of the role of business incubators in economic development", which covered seven developing countries with a total of 140 business incubators. The study was undertaken in 1995 by UNDP, in cooperation with UNIDO and the OAS. Two papers were presented by ESCWA: one on "Promoting the incubator concepts in Western Asia", and the second on "Entrepreneurship development, business environment and business incubators." Papers were also presented by representatives of UNIDO and UNIFEM.

During the second day, participants from ESCWA member countries and Turkey presented in two sessions their country papers on SME development and business incubators. The first session was concerned with country experiences in incubation, including (a) the experiences of two operating technology business incubators, the Technology Development Centre in Turkey and Jordan Technology Group in Jordan; and (b) the experiences of the Social Fund for Development (SFD) in Egypt and An-Najah National University in the West Bank, which had completed the preparatory phase for the establishment of business incubators and were currently working on their implementation. The second session of the second day was devoted to the presentation of country papers on support schemes for SMEs.

The third day consisted of two sessions: (a) a panel discussion and (b) the closing session and recommendations. The panel consisted of six members: Mr. Rustam Lalkaka (UNDP); Mr. Hassan Charif (ESCWA); Mr. Omar Oz (Turkey); Mr. Hussein El Gammal (SFD-Egypt); Mr. Laith El Qassem (Jordan); and Mr. Anis Abi Farah (NCSR-Lebanon). Each panel member introduced main issues related to one of the

following topics. The presentations were followed by a general discussion. Five topics were selected on the basis of the discussions of earlier sessions. These were:

- (a) Obstacles facing SMEs, and support structures such as business incubators;
- (b) Characterization of business incubators;
- (c) Role of public and private sector institutions;
- (d) Cost/benefit analysis and monitoring system;
- (e) Financing schemes for tenants.

During the closing session, the participants discussed and adopted the Seminar recommendations, which concerned mostly actions to be undertaken in follow-up of the Seminar.

## 2. *Deliberations and discussions*

The Seminar in general achieved the objectives envisaged, namely: (a) to clarify the problems and potential of the incubation system based on the UNDP/UNIDO/OAS assessment of incubators;<sup>12</sup> (b) to identify obstacles to the development of business incubation systems in Western Asia; and (c) to initiate actions to establish pilot technology and business incubation centres in selected countries, as warranted.

The discussions covered the above-mentioned five topics and are summarized below.

### (a) *Obstacles facing SMEs, and support structures such as business incubators*

The participants in the Seminar recognized that the unfavourable business environment and the lack of entrepreneurial behaviour in most ESCWA member countries were the major obstacles facing SMEs and were among the major factors that delayed the establishment of pilot business incubators in the region. The most challenging obstacles were identified as follows:

- (i) A *renter* mentality seeking fast returns on investment, as a result of the dominance of oil activities and revenues in the economic life of ESCWA member countries. This has negatively affected the development of entrepreneurship and innovative skills and capabilities;
- (ii) Macroeconomic policies that favoured large enterprises over small ones. These policies have been reflected in the development of support institutions that cater mostly to the needs of large-scale projects which, in most cases, are government-owned. This has resulted in weak private sector initiative and entrepreneurship;
- (iii) Lack of community support spirit to start a small entrepreneurial venture, in most ESCWA member countries. Community support may be more easily mobilized for charitable activities rather than for people seeking profit;
- (iv) Complexity and inefficiency of bureaucratic and administrative procedures related to the establishment and operation of a business;

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<sup>12</sup> Rustam Lalkaka and Jack Bishop, *Business Incubators in Economic Development: an Initial Assessment in Industrializing Countries* (New York: UNDP, 1996).

- (v) **Relative absence of financing schemes for SMEs and technology-based projects.** The banking system is more geared to serve the financial needs of large projects and for short-term trade activities.

The above obstacles explain the slow progress in the establishment of support systems for SMEs, and business incubation systems in particular. In this respect, the participants stressed the importance of business incubators as an effective support micro-structure which could contribute to promoting small high-value-added, technology-based enterprises, innovation, entrepreneurial culture and community support and solidarity. The services offered by the incubation system could substitute for the relative absence of support institutions for SMEs and could assist, under certain conditions, in providing similar support services to SMEs outside the incubator building.

(b) *Characterization of business incubators*

Business incubators can be designed to fulfil a variety of objectives determined by the main sponsors. Such objectives include research commercialization, economic development, income generation, and rural revitalization. The main thrust, however, is always to nurture early stage and start-up companies, within the incubator premises and/or on an outreach basis, to enable them to survive and grow as sustainable enterprises, thus achieving one or more of the following benefits: creating direct and indirect employment; transforming the culture of entrepreneurship; and enhancing university/research/business linkages in addition to other non-quantifiable benefits.

The participants in the Seminar agreed that the desirable focus in many Western Asian countries was to create knowledge-based enterprises, with the incubator linked to a technical university or research organization. The main sponsors could be the central/local government, the university or the research institute, and a private sector organization, such as a Chamber of Commerce and Industry. The services and facilities needed to be designed specifically to meet the requirements of local potential entrepreneurs and adapted to suit the local culture and conditions. Legal assistance could be provided by a non-profit foundation or non-governmental organization (NGO), a for-profit commercial entity, or a department of the university/government. The non-profit foundation approach could be the most appropriate mechanism, as it could provide the incubator with a competent managing board comprising private business, academia, government and banking institutions.

It was stressed during the Seminar that a business incubator was a support micro-structure that could not, alone, substitute for a broad national strategy for SME development. Such a national strategy must be formulated, based on the comparative advantages of the country concerned, as determined by its national economic development plans and priorities. The national strategy must give due attention to the necessary support institutions as well as the establishment of many incubators and a national incubators association.

Among the recent developments discussed during the Seminar was the establishment of international business incubators to facilitate the entry of small and medium high-tech companies into a large developing country market. Another such development was the establishment of agri-business services to revitalize rural communities and generate sustainable livelihoods. One interesting experiment was the establishment—inside a university or research institute—of a department which could act as a virtual incubator to help researchers and graduate students develop their innovations into marketable goods and services. Such a department subsequently would evolve into a full-fledged incubator, with physical facilities for both “in-wall” and “out-wall” tenants.

In a developing country environment, the logical progression of activities to create business incubators was described as follows: (a) sensitization campaign on incubator concepts, problems and prospects; (b)

feasibility analysis to identify the main stakeholders, entrepreneurs, purposes and costs; (c) preparation of a detailed business plan, to elaborate the main parameters, select and/or renovate suitable vacant building space, establish criteria for selection of entrepreneurs, and prepare a detailed implementation plan; (d) the implementation phase: during which the managing board starts its functions, an incubator management team is recruited and trained, entrepreneurs are carefully selected, operating practices are determined, building renovation and equipment procurement completed, and operations started (the above preparatory work normally required 9 to 12 months in most developing countries; the work was best undertaken by a local working group assisted by international consultants as needed); (e) the subsidized initial operation phase, for three to four years, until such time as the incubator income was sufficient to meet operating expenses; and (f) monitoring and globalization of operations to enhance performance and link the incubator to international associations and tenants.

Recent experiences had demonstrated that the key determinants of success were: a strong public-private partnership, careful selection and training of the incubator manager and management team, careful selection of initial members entering the incubator, and networking with professionals in the local community.

(c) *Role of public and private sector institutions*

The Seminar participants agreed that Governments in the countries of the region had to play a catalytic promotional role to initiate the pilot national incubator programme. This required provision of empty space for incubator operations, as well as initial investment and working capital, until the incubator became self-sufficient with a positive cash-flow.

The State could also undertake the task of creating a supportive environment, and of providing regulatory arrangements and support structures that promoted innovation and entrepreneurship.

The private sector must be mobilized from the start: to participate in the managing board, to provide “mentoring” to incubator tenants, and, in due course, to assist incubator operations through a “corporate club”, with subcontracting and licensing.

To assist in developing an SME-friendly environment, the State, the private sector, and the education and research systems have to work together to meet the challenges of the global competitive economy. With the globalization of the economy, private sector institutions in particular should play a greater role to respond to the need to improve the productivity and quality of local enterprises to meet the challenges of an open market.

Western Asian countries and areas were at different stages in the preparation and establishment of pilot incubation systems: comparing the situation to an aeroplane, it was stated that Palestine and the Syrian Arab Republic were moving towards the runway, Egypt had been cleared for take-off, while Jordan and Turkey had reached the required cruising altitude. Some others, such as Saudi Arabia and other Gulf Cooperation Council (GCC) countries, were still in their hangars.

The participants felt that United Nations organizations, such as UNDP, UNIDO, ESCWA and UNIFEM, could play an important part in bringing the incubation concepts to the attention of planners, providing objective technical advice, training managers, and generally facilitating linkages to the international community. Considerable experience had already been accumulated on establishing incubators in Latin American and Asian countries, so that Western Asia could avoid some of the mistakes made earlier.

The participants, especially those from Kuwait and Saudi Arabia, stressed the important role that United Nations organizations could play in introducing the concept of business incubators to the Gulf countries, where the concept was still practically unknown.

(d) *Cost-benefit analysis and monitoring systems*

An essential component of the business planning process was the estimation of capital investment and initial operating cost, as well as operating expenses, in order to determine the level and duration of external support and subsidies needed. The incubator manager should, if possible, be involved in the planning process, so that he could be completely familiar with the various parameters and could subsequently be responsible for operating performance.

To persuade the planners and sponsors, it was also necessary to quantify, to the greatest extent possible, the benefits that a well-functioning incubator programme could bring to the community and the country. In addition to generating enterprises and high quality employment, there were important non-quantifiable benefits in the long term, such as enhancing the creation of an entrepreneurial culture, improving the linkages between the research centres, universities, and productive and services sectors, and influencing Government to adopt a more favourable policy with regard to small private enterprises.

In an age of rapid technical change, the incubator could be instrumental in introducing high-value-added products and services, based on local technology innovations, such as computer software, biotechnology applications, environmental technologies, and other pioneering techniques (such as remote sensing and robotics).

One incubator alone did not create an impact on employment generation in the short term. However, over a five- to six-year horizon, successful tenants in the incubator and those graduating from it could progressively generate highly paid jobs.

The Seminar participants recognized that perseverance and determination, and “patient-money” were essential in order to realize the full benefits of an incubator. As a good example illustrating that point, it was noted that the Turkish incubator which had started up in 1989 had started slowly, but had developed within a few years into a successful cost-benefit operation. Fifteen additional incubators were being planned in Turkey.

(e) *Financing schemes for tenants*

Adequate investment and working capital for starting companies was a critical problem in all countries. The traditional banking system was unable to evaluate technology projects and incur the high cost of small loans. Therefore, special mechanisms for seed capital (revolving funds) without collateral or with minimum collateral, and credit guarantee schemes needed to be devised. Increasingly, venture capital companies were interested in small high-tech incubated companies. Other innovative arrangements were for the incubator to take equity in the incubated company (such as in the Jordan Technology Group) or to be compensated over long periods through payment of royalties. Islamic banking offered various schemes that could be beneficial for incubator tenants.

The participants recognized the venture capital role being played by the Jordan Technology Group (JTG), where many tenants had been graduated. New venture companies had recently been formed in Turkey, giving priority to companies recommended by the incubator management.

The Social Fund for Development in Egypt, established as a safety net against the structural adjustment programme, quickly recognized that the provision of micro-credit was ineffective unless accompanied by technical assistance, counselling and training and by managed work space, such as incubators. Two incubators had just been established in Mansura and Tala in the Nile Delta. Four more were being planned.

The Small and Micro-Enterprise Project of the Alexandria Business Association, which started in 1990 with a revolving fund provided by USAID (United States Agency for International Development), was a good example of a credit scheme that provided loans without collateral to existing micro and small businesses; in addition to credit, the Project extended technical assistance (business advice and training) to its clients. The Small and Micro-Enterprise Project was able to expand rapidly its activities; currently it provided around 2,000 loans per month. The Project was currently considering extending its services to start-up businesses, through the establishment of a business incubator.

### 3. *Recommendations*

As a result of the deliberations on various issues presented to the Seminar, the following action-oriented recommendations were adopted.

#### (a) *Information and sensitization drive*

The Seminar noted that the concept, benefits and impact of technology and business incubators were still new in the region and needed to be diffused further to all decision makers in public and private institutions concerned with the promotion of small and medium-scale enterprises and their support institutions, as well as those concerned with supporting and promoting technology innovations. To that end, the Seminar recommended:

- (i) That all national, regional and international institutions and agencies concerned should be called on to continue their information and sensitization drive in all forms—conferences, seminars, workshops—and through all media—newspapers, journals, TV and radio—including the Internet and electronic mail;
- (ii) That the co-sponsoring agencies should be called on to publish and disseminate the proceedings of the Seminar;
- (iii) That the co-sponsoring agencies should be called on to cooperate with other national, regional and international agencies to publish a newsletter or a bulletin on incubation activities in the region—and on relevant activities worldwide—and on activities to promote entrepreneurship and small and medium-scale enterprises. The newsletter should include case-studies of successful incubators in environments similar to those prevailing in the countries of the region, particularly cases of virtual incubation.

The Lebanese National Council for the Scientific Research (LNCSR) offered to produce an annex on the subject in its monthly bulletin, as a first step towards the above goal.

- (iv) That, in view of the special case of the Gulf countries and the fact that business incubator concepts, mechanisms, modes of financing, management and operation were all issues that were either completely new or that had barely been introduced at all in the GCC countries, all United Nations agencies and other regional and international agencies concerned should be called on to formulate and implement a timely programme of activities to promote the

above concepts and to enhance the implementation of the concepts in some of the Gulf countries.

(b) *Regional cooperation and networking*

Noting the similar business environments prevailing in the countries of the region, and the benefit of exchanging information between experts and institutions concerned with the concept of incubators, the Seminar recommended the following preparatory action for the establishment of a regional association of business incubators and a regional network:

- (i) Exchanging information on a regular basis, between agencies and institutions concerned in the region, noting that most of the institutions had participated in the Seminar;
- (ii) Exchanging visits periodically between groups already involved in an incubation project, and providing experience and mutual support;
- (iii) Organizing periodic meetings—yearly, if possible—of experts, institutions and agencies concerned with the concept of business incubators and with promoting small-scale enterprises and support institutions;

To that end, the Egyptian Social Fund for Development, the founder of the Egyptian Incubators Association, offered to host the next meeting in an operating incubator, in Mansura, Egypt.

- (iv) Preparing for the coming meeting on incubators, an in-depth study on small-scale enterprises in the region and their established support institutions.

(c) *Mobilization of support to incubator projects*

Noting the slow diffusion of the concept of incubators in the region and the slow implementation of approved projects to establish pilot business incubators in the region, the Seminar adopted the following recommendations:

- (i) That co-sponsoring agencies and other national, regional and international agencies concerned should be called on to organize a regional workshop to deliberate on the macro- and micro-business environments prevailing in the countries of the region, with the aim of identifying problems faced and proposing suitable incentives and support for small- and medium-scale industries. Such a workshop would have to address the following issues:
  - a. Regional and global changes and their impact on the economies of the region;
  - b. Problems and mechanisms of technology innovation;
  - c. Formulation of suitable new industrial strategies for the countries of the region.
- (ii) That national, regional and international agencies concerned, in the private and public sectors, should be called on to assist in mobilizing the needed financial resources to implement the already completed project documents to establish pilot technology and business incubators in the Syrian Arab Republic, the Gaza Strip, Nablus and Lebanon, as well as to enhance the process of establishing a women's incubator in Jordan;



- (iii) That the agencies concerned in the public and private sectors should be called on to support the recent efforts exerted in Lebanon to establish a technology business incubator and to establish a steering committee for the incubator. The Lebanese National Council for Scientific Research volunteered to act as the focal point for the effort, pending the formal establishment of a more involved steering committee;
  - (iv) That the Chambers of Commerce and Industry in the countries of the region and other private sector institutions concerned should be called on to take the lead in supporting the projects to establish business incubators, as a successful micro-tool to support small-scale enterprises, particularly those with innovative ideas;
  - (v) That all agencies involved in the establishment of pilot incubators in the region should be called on to continue their efforts to mobilize the support of financing agencies, to assist in financing the incubator projects, and to provide credit and investment resources for projects.
- (d) *Training and training tools*

Stressing the need to take into consideration, in any incubator project, the specific business environment in each country, and even around every incubator, and stressing the important and crucial role the incubator manager played in the success of its operation, the Seminar adopted the following recommendations:

- (i) That working groups concerned with the establishment of pilot incubators in the region should be called on to give due attention in selecting and training incubator managers, with the assistance of the international agencies concerned; special attention should be given to training the manager in technology innovations and management;
- (ii) That the working groups should be called on to organize training programmes on incubation concepts and on entrepreneurial skills and management for all potential projects;
- (iii) That these working groups should be called on to include in the training of managers and tenants special training programmes relating to information technology and to access to up-to-date information available on the global level;
- (iv) That the co-sponsoring agencies and all national, regional and international agencies concerned should be called on to support the effort of developing a training kit for managers, and to produce the training kit, once developed, in Arabic, for the benefit of local groups in the region. The training kit must be flexible in order to accommodate the region-specific characteristics and the prevailing business environments.

### III. COUNTRY DEVELOPMENTS<sup>13</sup>

Progress has been achieved in a number of ESCWA countries towards the establishment of business incubators. More particularly, the business incubation concept witnessed a clear development in Egypt, Jordan, the West Bank and the Gaza Strip to be effective, a four-pronged approach is necessary:

- (a) *Design and operation.* Identifying the key factors which determine the ultimate success of an incubator system;
- (b) *Analysis and benchmarking.* Characterizing existing operations in order to understand and predict success or failure;
- (c) *Strengthened institutional capabilities.* Determining which support systems are required to permit incubators to achieve their potential;
- (d) *Strategic partnerships.* Creating links to established organizations to enhance incubators and their clients' businesses.

Further research must be undertaken to determine the conditions required for the most effective use of incubators in the context of other development mechanisms.

The developments that took place in the above-mentioned ESCWA countries during the past two years are presented below.

Besides these tangible efforts, other countries in the region have been seriously considering the establishment of pilot business incubation centres. Among the more serious efforts one may list the following:

- (a) A committee has been established in Saudi Arabia at the Research Centre of the King Fahd University of Petroleum and Minerals to undertake a specific study for an incubator in Saudi Arabia that would take into consideration the business environment and special characteristics of the country. The committee undertook a fact-finding and learning mission to Egypt, Jordan and Turkey to study the incubation experience in these neighbouring countries;
- (b) In Bahrain, the Ministry of Industry assigned a private Egyptian consultancy firm—Gebril for Training and Consultancy—to establish a private business incubator in Manama, offering government support and incentives. The firm has already set up an office in Manama and has started a detailed feasibility study;
- (c) In Lebanon, a joint private and public committee has been established to formulate a plan for a pilot incubator in Beirut. A private firm, Team International, has also undertaken a feasibility study to set up a private incubator in Beirut.

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<sup>13</sup> This chapter is partly based on papers presented by concerned institutions invited to participate in the Regional Seminar on Assessment of the Role of Business Incubators in Economic Development (Beirut, 11-13 September 1996). It is also based on direct contacts with various institutions in the region.

## A. EGYPT

The Social Fund for Development (SFD) in Egypt has, since the early 1990s, been carrying out a project to establish pilot business/technology incubators, to support the growth of small and medium enterprises, as part of a wider scheme to promote private-sector development in Egypt. The project is part of the Enterprise Development Programme (EDP) of the SFD, with the main objective being to create jobs by supporting new and existing enterprises. The EDP provides potential entrepreneurs with a comprehensive package of credit and business-support services.

Earlier, the SFD conducted studies to evaluate the suitability of the business incubation modality in Egypt. A feasibility study and a business plan were prepared in 1994 with the assistance of the New York-based international consulting firm Business and Technology Development Strategies. The social and economic environment for small enterprise development was analysed, together with policies and regulatory regimes. The profile of entrepreneurs and their support needs were then surveyed through questionnaires and interviews, as was the technical and business infrastructure in the Nile Delta. These studies confirmed that the incubator programme in Egypt has a fair chance of success, in view of the availability of entrepreneurial skills, the current environment of economic reform, the Government's announced plans to remove obstacles and to provide encouragement to small businesses, the growing awareness among universities and research institutions of the need for market-oriented approaches, and the generally supportive role of the country's Governorates.

The results of these studies indicated the possibility of establishing seven incubators at different locations in Egypt. Design and implementation plans were prepared for the following locations:

El Menofia:	Tala
El Dakahlia:	El-Mansoura
Giza:	The Sixth of October City
Aswan:	Aswan city
Assuit:	Assuit city
Cairo:	Ain Shams University, Faculty of Engineering
El Sharkia:	The Tenth of Ramadan City

The sites at Tala and el-Mansoura have been selected to establish the pilot incubators in Egypt. Local authorities at the respective Governorates provided appropriate work spaces in vacant buildings for these incubators. The implementation of the other incubators is currently under way. Other locations in upper Egypt, the Sinai and the Suez Canal area are under consideration.

It is expected that around 50 enterprises will have been served at el-Mansoura incubator by the end of the sixth year of operation (22 enterprises would still be in house, and 28 would have graduated). These enterprises are expected to create 375 permanent job opportunities.

At Tala incubator, around 140 enterprises would be supported by the end of the sixth year (50 enterprises still in house and 90 graduated). These enterprises are expected to create 1,200 permanent job opportunities.

In addition, indirect employment would be generated in activities serving the two incubators, as well as at firms assisted by the incubator managements on an outreach basis.

While the vacant building spaces were secured free of charge as donations for the project, other expenses related to the establishment of the incubators are provided by the SFD. SFD funding includes the

renovation of the allocated building, the purchase of office equipment and furniture, the shared manufacturing and services facilities (quality assurance, testing and measurement facilities, manufacturing machinery and tools), and the operating costs for the first five years of operation (salary of incubator manager and staff, training of entrepreneurs, utilities expenses, etc.). The estimated cash flows indicate that the two incubators would need SFD financing of around US\$ 1 million for investment and working capital.

It is expected that after four to five years, the income from tenant rents and services will be sufficient to cover all operating costs, enabling the facility to break even and become self-sustaining. Both rentals and service fees will start at below market levels but will be raised progressively to reflect real cost and value. In fact, the incubator eventually will be running as a business, will be market-oriented and will focus on the services that its customers want and are willing to pay for.

In this connection, it is worth mentioning that in January 1994 the SFD initiated the implementation of the Tala and el-Mansoura incubators. This involved renovation of the buildings, the appointment of managers and the establishment of independent managing boards for each facility. At both locations, the overall implementation agency was the newly formed Egyptian Incubator Association. The Tala incubator occupies an existing complex, covering 3,800 square metres, while at el-Mansoura, a new two-story building is being constructed adjacent to an existing industrial estate, giving a rentable space of about 1,250 square metres. The selection of the first group of entrepreneurs at the two incubators was planned to be undertaken in June 1997; initial operations are planned to start in December 1997.

It is planned that around 100 enterprises would have been incubated at the Sixth of October technology incubator by the end of the sixth year (40 enterprises would still be in house, in addition to 60 graduated). These enterprises are expected to create 800 permanent job opportunities. It is planned that each of the other incubators would incubate 20 to 30 enterprises in house at a time.

## B. JORDAN

The experience of an established technology incubator operating since 1990 and recent developments in the establishment of a business incubator for women are presented below.

### 1. *Technology business incubator experience*

The Jordan Technology Group (JTG) initiated a business technology incubator in 1989. JTG is a quasi-private, limited liability company whose primary purpose is to help commercialize technology-based projects in Jordan, through business incubation and venture capital, as well as transfer of technology through joint ventures and technology licensing.

The JTG incubator's main objective is to help Jordan's educated workforce, particularly university graduates, to identify opportunities and start new business in technology-oriented fields. Applicants to the incubator are invited to submit business plans that are carefully scrutinized by the incubator management before a new business is accepted into the incubator. The incubator management assists entrepreneurs from the early stages of project conception, with the aim of developing a sound business plan and identifying the risks associated with establishing the new venture.

In this regard, it is important to note that the lack of innovative technology-based projects in the region is partly due to the prevailing short-term mind-set that is oriented to trade and aimed at fast returns. Technology incubators can play a tremendous role in the development of a mind-set directed towards long-term growth through innovation, creativity and the creation of wealth.

The technological and financial background of the incubator management enables proper assessment of the technology and of the market risks of the proposed venture. If the venture's potential for commercial success looks promising, then the incubator management can help in securing seed capital, developing business plans and marketing strategies, and directing the entrepreneur's efforts in the management of the day-to-day operations of the venture. For this support, JTG often charges for the services or takes an equity stake in the venture equal to the value of the services and the venture capital provided. Finally, the incubator manager also uses his relations with banks and investors to help obtain further required investment as the venture grows.

Since its inception, JTG has established seven independent subsidiaries in technology-oriented fields. Six of these ventures have been successfully incubated. JTG has made an effort to promote joint ventures; however, joint ventures with potentially good technological benefit were difficult to implement.

The concept of an incubator alone, offering inexpensive office space, shared facilities, and marketing and administrative assistance, was insufficient to attract tenants to the facility, owing to several reasons, among which the following may be mentioned:

(a) The provision of rental space and services was of dubious value, since rental space in Jordan is inexpensive, as are salaries. There was therefore no clearly perceived advantage of using shared space, facilities and personnel;

(b) Most Jordanian entrepreneurs do not have a serious appreciation for the risks involved in the start-up phase of a business venture. This is primarily due to the trade-based mind-set which assumes quick returns and low risk. It is also due to lack of serious assessment of technological, financial and marketing risks;

(c) The success of most Jordanian companies has been based on a single person with exceptional public relations capabilities and market knowledge. Very few successful companies have well-studied organizational structures. Thus, marketing and administrative help is often deemed as moot;

(d) Jordanians are wary of sharing their ideas with other people. This is partly due to the fact that Jordan does not yet have coherent intellectual property laws; it also lacks precedents when it comes to the enforcement of these laws.

It should be noted, however, that most of these shortcomings are common in other countries in the region and in most developing countries as well. To attract good projects, JTG is offering venture-capital financing, in addition to the traditional services generally provided by the incubator to tenants. This helped in the creation of a corporate/incubator culture dedicated to long-term growth and development. After eight years of work, the concept of the incubator is becoming more attractive to selected potential entrepreneurs. Professional marketing help is increasingly requested, particularly with the recent economic downturn, as well as in the light of reduced government spending. The availability of venture capital has been the catalyst to help promote development in technology-oriented fields.

Technology incubators can act as a safety net, in that incubator management can play a proactive role in helping entrepreneurs to face the risks associated with technology start-ups. In a situation where most entrepreneurs have little or no experience in managing companies, access to the collective and cumulative experience of the incubator management is extremely effective in minimizing such risks. Furthermore, new technology-based, innovative incubated companies are usually deemed to be extremely risky because of their unconventional nature and therefore are poor candidates for conventional bank financing. The credibility of the incubator may help in securing some investment financing.

## 2. *The Business Incubator, for women*

The Business and Professional Women's Club has taken several steps towards the establishment of a business incubator for women in Amman. The main purpose of the incubator is to promote and support small businesses initiated by women, especially young women and more specifically new university graduates with innovative ideas, but no business experience. It is also contemplated that established businesses would also benefit from services offered by the incubator. The United Nations Development Fund for Women (UNIFEM) and ESCWA have been providing technical back stopping in the initial stages of the planning and implementation of the project.

The Business Incubator has been designed to provide a variety of counselling and support services to selected start-up and/or to early-stage businesses, particularly those with value-added advantages. Some of the selected clients will be provided with limited working space on affordable terms within the incubator, while others will be serviced in their own locations. Priority for incubation will be given to tenants with professions that are most in demand and that need to be upgraded and enhanced, such as software technicians, accountants, information systems analysts, marketing specialists and others. A small incubator management staff will supervise the operations, drawing very heavily on the connections and experience of the incubator manager and the incubator board, as well as on local facilities and on professional services from the local community and from outside. The incubator will be service-oriented, with defined entry and exit criteria for the tenants. It will be run in a businesslike manner, to break even and become self-supporting in four to five years.

The specific objectives of the business incubator for women are as follows:

- (a) Upgrade the managerial and entrepreneurial skills of women entrepreneurs within and outside the incubator, through the provision of support and advisory services;
- (b) Better utilize existing facilities and capabilities in Jordan (faculty, researchers, laboratory equipment, support institutions) by developing easy access and links to these facilities for the incubator tenants, with assistance of the manager;
- (c) Support innovative products that may increase exports;
- (d) Link small businesses to larger enterprises, through subcontracting and spin-offs;
- (e) Focus on selected subsectors such as agribusiness, computer-aided design for garments, etc.

During the period 1996-1997, the Business and Professional Women's Club (BPWC) carried out a number of activities related to the implementation of the preparatory phase of the business incubator project. The following activities were undertaken:

- (a) Collection of information on international incubator experiences through participation in regional meetings on business incubators. The BPWC participated in the ESCWA/UNDP Regional Seminar on Assessment of the Role of Business Incubators in Economic Development, which was held in Beirut from 11 to 13 September 1996;
- (b) Organization of a one-day workshop in Amman to disseminate the incubator concept among government and private institutions;

(c) Mobilization of broad-based support for the project from the Government and the local community, and initiation of contacts with potential project sponsors;

(d) Negotiation with the Development and Employment Fund, which was established by the Jordanian Government to provide credit for small and micro enterprises, on the establishment of a revolving fund to be managed by the BPWC. The incubator's prime objective will be to provide women entrepreneurs with better access to funds and credit. It will bridge the gap between potential entrepreneurs and financial institutions, in view of the high collateral required by these institutions and the complexity of procedures involved in the loan process;

(e) Procurement of office equipment and furniture. A grant of US\$ 100,000 was provided by the Japanese organization Nippon International Cooperation for Community Development (NICCO) to cover the cost of the equipment and furniture necessary for the proposed incubator;

(f) Purchase and renovation of a building adjacent to the Club's present location to be used as a permanent site for the business incubator. Three hundred square metres of building space has been renovated with the financial assistance of the Industrial Development Bank. The office space, with all its facilities and related utilities and services, will be provided to tenants by the BPWC;

(g) At the end of June 1997, the BPWC was in the process of recruiting a suitable manager and developing a board for the incubator. The incubator is expected to become operational by the end of 1997.

### C. THE WEST BANK AND GAZA STRIP

Since the earlier work of ESCWA to promote the incubator programme in the Palestinian territories,<sup>14</sup> there has been growing interest in this concept, and there have been expressions of support by the Palestinian Authority, local municipalities and private-sector institutions and communities in Nablus and to a lesser extent in Gaza. There were also indications of potential interest on the part of the donor community. An unpublished May 1995 World Bank study entitled "Industrial Estates and Enabling Environment for Private Sector Development" recognized the need for incorporating "incubator-type services" in the industrial zones that have been proposed for establishment, particularly in the municipal industrial complexes, and for linking these to the incubator programme initiated by the United Nations (that is, ESCWA).

A revised report on the design of pilot incubators in Nablus and Gaza, together with updated project documents having to do with technical assistance, was prepared and circulated by ESCWA in early 1996. The report also provided a provisional business plan, which was essentially a "road map" indicating the current overall situation and the path the incubator projects might take to reach the desired goals. It was suggested that as more information became available on the selected work sites, on the specific needs of the entrepreneurs—based on further field work—and on the predilections of the sponsors and donors, this draft plan would be updated and improved by the respective management teams. This approach, it was believed, would enhance the sense of participation and would make it possible to incorporate previous experience, upon which further implementation activities could be based. The plans can also be used as management tools and as a prospectus to attract further financial support.

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<sup>14</sup> See ESCWA, *Establishment of Business Incubators in the ESCWA Region: the Cases of the Syrian Arab Republic and the Palestinian Territories* (E/ESCWA/ID/1995/1).

The report covered both Nablus and Gaza, as most of the issues were common, and as the implementation activities may proceed more or less in parallel. The organization and management arrangements were specially elaborated upon, in order to clarify any confusion on the respective roles of the boards and of the local implementing agencies in Gaza and Nablus.

Overall, the incubator programme has now developed momentum. The main obstacle that remains is to secure the needed financial resources, which have been delayed, mostly by the security conditions in the West Bank and the Gaza Strip. The preferred option is to secure up-front the full commitment of funds for the establishment and initial operation of the programme, for the four-year project cycle.

Even before these pilot incubators reached the implementation stage, interest was expressed in establishing such facilities within or adjacent to the inland industrial estates, and at Al-Quds University outside Jerusalem. Another incubator, in Nablus for women entrepreneurs, was being seriously considered. Once a few nuclei have been well established, it would be useful to link them and harmonize approaches at the national level, through the establishment of a Palestinian incubator association. Eventually a regional incubator network/association may be considered.

Significant progress has been achieved in the preparations for the Nablus business and technology incubation centre (NIC), covering identification and involvement of local sponsors, initial study of local business profile, locating the work space, elaboration of NIC by-laws, and some movement on mobilizing resources particularly from An-Najah National University. There has been slower development at the Gaza business incubation centre (GIC). The building for the incubator, as well as strong sponsors and financing, has yet to be identified in Gaza.

Between January and December 1995, ESCWA carried out a number of activities related to the preparatory phase of the business incubator project, including the following tasks:

- (a) Conducting field surveys of a sample of industrial enterprises in Nablus and Gaza, to identify local industrial needs;
- (b) Organization of one-day workshops in Nablus and Gaza, to disseminate the incubator concept among governmental and private institutions;
- (c) Establishment of a steering committee and a provisional managing board for each incubator;
- (d) Preparation of the by-laws of the managing board for NIC and drafting of by-laws for GIC;
- (e) Preparation of the business plan and the plans of action for each incubator.

#### 1. *The Nablus business and technology incubation centre (NIC)*

Nablus is fortunate to have the strong commitment and technical infrastructure of An-Najah National University, which is the principal local sponsor and implementing agency. It is the largest university in the occupied territories, with over 5,000 students and 500 faculty members, in engineering, the sciences, agriculture and humanities. Access to university faculty assistance, laboratories (chemistry, physics, biology, civil engineering, computer) and other support services would be provided at cost to the incubator "beneficiaries" and to out-reach companies.

An-Najah National University was selected for the following reasons:



(a) Strong community support, particularly from the private sector in Nablus, where the University, the Municipality and the Chamber of Commerce and Industry have long traditions of cooperation and have successfully worked together in the past. The three institutions have expressed willingness to join efforts to secure the success of the project;

(b) The serious offer made by Al-Najah National University to provide initial space for the incubator. Office space, with all the relevant facilities, together with working space for the tenants of the incubator, was provided, consisting of 300 square metres; related utilities and services were also provided;

(c) The commitment made by Al-Hijawi Institution to provide 1,000 square meters of building space, with furniture and equipment, in the new campus of the College for Science and Technology, due to be completed in the near future. This space will be offered on a permanent basis as working space for the incubator;

(d) The need to locate development projects in areas of the West Bank away from the centre, as most of the projects implemented and/or funded by donors' agencies have been concentrated in the central part of the West Bank, that is, the Jerusalem area, Ramallah and Bethlehem;

(e) The proximity to the Nablus industrial estate and related services, such as vocational training centres;

(f) Finally, the strong support expressed by the Palestinian Authority and the interest of the Geneva-based Welfare Association in the Nablus project.

Given the conducive environment for technological entrepreneurship around Nablus, An-Najah University and the NIC provisional board were selected to direct the incubator to service mainly early-stage businesses in knowledge-based goods and services, particularly those that may be linked to research undertaken by An-Najah faculty and students. This will cover subsectors such as microelectronics and computer software, pharmaceutical and medical supplies, light engineering, chemicals and food-processing. It is also planned to provide advisory and training services on an outreach basis to enterprises outside the NIC building and to clusters of rural communities in the northern West Bank, for example by linkage to the ongoing UNDP-assisted Local Rural Development Programme.

The specific objectives of the Nablus business and technology incubation centre, within the framework of the 1994-2000 development programme for Palestine, are as follows:

(a) To stimulate technological entrepreneurship and help commercialize the results of scientific research;

(b) To better utilize the University faculty, researchers and graduate students, as well as University equipment and facilities, linking these to societal needs;

(c) To attract foreign investment, technology and business skills, particularly from expatriate Palestinians.

Progressively, as the skills of the management team are being developed, the services offered can move beyond the conventional incubator to a "second generation model", which would pre-incubate potential entrepreneur groups before entry into the incubator and follow through with services to those who have graduated from the incubator.

The provisional managing board of the incubator includes representatives of government and private institutions, namely:

Ministry of Industry  
Ministry of Planning and International Cooperation  
Nablus Municipality  
Nablus Chamber of Commerce  
Standards and Measurements Institute  
The Scientific Foundation of Hisham Adeeb Hijjawi  
Zafer El-Masri Institution  
Palestinian Development and Investment Co. (PADICO)  
Arab Insurance Company  
Arab Technical Development Corporation  
Al-Sukhtian Pharmaceuticals Company  
Palestine Economic Policy Research Institute

Once resources for the incubator establishment and initial operations are in hand, special efforts must continue to secure start-up and working capital for the technology-based businesses within the incubator. While several local credit agencies for SMEs are being developed in Palestine, there will be a need for a special micro-loan facility in Nablus, with a revolving fund of perhaps \$500,000, possibly linked to the managing board to assist tenants of the incubator.

As the Palestinian incubators mature, possibilities would be explored for loan guarantee programme, royalty-based seed capital, networking of equity investors and special relations with venture capitalists.

## 2. *Gaza incubator*

The Development Resource Center (DRC), a Gaza-based consulting group, serves as the implementing agency for GIC, even though it lacks the capabilities and facilities of a university or a government agency.

The Palestinian Ministry of Industry in Gaza has taken a lead role in mobilizing, jointly with DRC, other supporters such as Al-Azhar and the Islamic universities, the Ministry of Local Government, the Chamber of Commerce, the Union of Industrialists, the Municipality, the local office of the Welfare Association, TEAM International (a consultancy group), the National Foundation for Investment and Development (NAFID) (training agency), EDG and ATDC (the last two of which merged into the Palestine Development Fund). UNRWA, with its small business credit and entrepreneurship programmes in Gaza, is a source of continuing support. The Ministry of Planning and International Cooperation has expressed support for the Gaza incubator and has recommended the possibility of linking it to the Industrial Estate at Carni and of developing it as the nucleus for a future technology park.

Based on preliminary surveys, the specific objectives of the Gaza business incubation centre were set as follows:

(a) To promote the development of innovative products and services, particularly in agribusiness, computer software, garments/"artisanal", and construction fields;

(b) To link small, early-stage businesses to medium-sized and large businesses in the occupied territories and to its industrial estates, through subcontracting, spin-offs, know-how licensing and other arrangements;

(c) To prepare small companies to form alliances with foreign companies, particularly expatriate Palestinians, to stimulate investment, technology acquisition and exports.

Keeping in mind the site and building selection criteria outlined above, the project document for the Gaza incubator has estimated that for the early period, the project may start by renting a suitably located apartment in Gaza City (300-500 square metres) for common services, after which it would seek to locate a few selected tenants. Other (affiliate) businesses would be served in their own premises, since good accommodation is readily available in the city. After a few years, construction of a new building with initial space of 1,000 square metres would have to be completed on a plot of land of at least 4 dunums (to be provided without cost by the sponsors).

PADICO has indicated that it has allocated rental space for incubator use inside its proposed industrial estate at Carni; however, the rental costs would make this proposal uneconomical. More important is PADICO's offer to cooperate with the GIC manager and to offer support to its tenants.

#### D. CONCLUDING REMARKS

The Governments of most of the countries of the ESCWA region lack the necessary drive, mechanisms and infrastructure to support SEs—particularly those just starting; nor are the private-sector institutions presently prepared to provide such support. A sustained sensitization and promotional drive is needed to publicize the concepts and benefits of incubators and of small-scale enterprises in general. All concerned agencies must make a consolidated effort to mobilize the necessary resources to establish pilot incubators in selected countries in the region.

To ensure the success of a pilot incubator project, it is necessary to mobilize the support of central and local government institutions, private-sector institutions and the local business community. Serious efforts should be made to garner support for the first project, as the success of the pilot experiment is crucial.

Because incubation is still an unfamiliar concept, it is extremely important to stress at all times, at all levels and at all stages that the incubator is a micro-mechanism with a limited scope and a limited impact. One single incubation project cannot by itself be a policy tool; however it may gradually evolve into a policy tool if the first pilot experiment is successful and if the programme can be expanded horizontally and vertically to affect a very large number of starting and operating SEs and related businesses. At such a stage, networking and the use of a newly created national incubator association supervisory board are likely to become the real tools of a government policy to support small-scale enterprises.

In promoting an incubation project, and in designing the pilot incubator, it is important to stress that all supporting agencies, institutions and working groups will benefit not only from the incubator projects, but also from the incubator experience itself. Successful incubators will benefit the business community as a whole, both directly and indirectly, a fact that has to be experienced tangibly by all the supporting groups.

If a pilot incubator is to be successful, priority must be given to incubating/servicing the following types of projects:

(a) *Export-oriented projects.* With the exception of Egypt, the countries of the region have very small local markets;

(b) *Innovative projects targeting niche markets.* Projects focusing on traditional products and services will face fierce competition and will not have a spectacular impact, even if successful. Conversely, innovative projects are likely to be more distinctive and impressive, even if their success is limited.

It should be pointed out that innovative projects do not have to be glaringly “new”. They may, and *generally* should be, based on incremental innovative ideas, with limited objectives, such as increasing local input, increasing local value-added, reducing cost or responding better to local and/or export needs.

Because the concept of incubation is very new in the region, the selection of a suitable, dynamic manager for the pilot experiment is critical, as is the provision of appropriate training for both the manager and the tenants, as well as the mobilization of all possible international support for the former. Later on, the experience gained is likely to be very useful in training other local managers.

Again, because the concept is new in the region, it is very important to start by surveying and listing all facilities and capabilities that can be called upon to service the incubator and the incubated projects (even at cost). Possibilities include: industrial workshops and tools; industrial, public and academic laboratories; scientific, technological and academic expertise; and consulting firms involved in all relevant fields.

Subcontracting links with existing larger-scale industries and/or outside contractors should be established. Both the incubated projects and the business community as a whole will profit from such a relationship, which will provide tangible proof of how a successful incubator can extend its benefits beyond the projects themselves to external companies.

As to various laws, traditions and norms currently prevailing in the host countries, it is imperative that the legal status of a pilot incubator be clearly defined from the very beginning, preferably through its establishment as an independent legal entity—in the form of an association, institution or even company—so that any legal complications that may result from linking the incubator with another, existing entity may be avoided.

Legal steps must also be taken to ensure “graduation” (i.e., the evacuation) of incubated projects after a suitable, but limited, incubation period. An incubator is basically meant to serve SEs just starting up. While a pilot incubator may be designed to include services to SEs operating outside, the bulk of services must be directed towards the incubated projects located on the premises. Proper provisions must be made to secure the mobility of each incubated project once it successfully reaches the take-off stage or once it is realized that a project is doomed to failure.

Finally, to ensure the success of a pilot incubator, the supervisory working group must establish the following:

- (a) Well-defined, specific and attainable objectives;
- (b) Well-defined target group(s);
- (c) A suitable and affordable package of services;
- (d) A clearly determined and attainable support budget that can sustain the incubator during its take-off stage. The incubator must be designed to become self-sustaining within a reasonable period. However, during the start-up phase, subsidies must be provided at a rate sufficient to ensure take-off.

**PART TWO**

**SELECTED PAPERS OF THE REGIONAL SEMINAR  
ON ASSESSMENT OF  
THE ROLE OF BUSINESS INCUBATORS IN ECONOMIC DEVELOPMENT**



## IV. PROMOTING THE INCUBATOR CONCEPT IN WESTERN ASIA

by  
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The concept of business incubation has been gaining ground worldwide as one of the most successful mechanisms for supporting the start-up of small-scale enterprises (SEs). Many developing countries have chosen this mechanism as an effective means of enhancing entrepreneurship and providing support to selected target groups. The number of successful incubators in developing countries has steadily increased, offering a variety of service packages and covering a wide range of target groups, specializations and specific conditions.<sup>15</sup>

In the countries of the ESCWA region, the incubation concept has been diffusing very slowly.<sup>16</sup> Experts stress that the characteristics of an incubator and the requirements for its successful operation are country-specific, or even site-specific; every incubator constitutes a unique case of its own and cannot be replicated elsewhere. The establishment and operation of a successful incubator require careful preparation and the existence of certain conditions. While a review of the relevant region-specific characteristics<sup>17</sup> suggests that conditions in most ESCWA member countries are not yet ripe for the support of incubator projects, the concept of incubation has gained increased understanding and acceptance in most quarters. It is clear that more concerted and sustained efforts and greater dedication are needed before the region is ready to support successful incubators. For every incubator project proposed, selecting the target group and the service package to be offered requires very careful, detailed consideration of the characteristics of the host country, of the supporting community and of the site itself.

### A. SOME SALIENT FEATURES OF THE BUSINESS ENVIRONMENT IN THE REGION

The countries of the ESCWA region are characterized by definite and clear variations in their business environments. However, there are some salient common features that directly affect an incubator project in any one of these countries and have already contributed significantly to the stagnation of all initiatives to establish pilot incubators in the region. The most important of these features are described below.

For some time the region has relied on one major economic sector, namely oil and gas and their related fields. The revenues generated within this sector have also had a profound effect on the non-oil-exporting countries, which have been able to benefit from the remittances of expatriate workers, the export of agricultural and manufactured products, financial assistance and aid received from the oil-exporting countries, spending by Gulf tourists, and business contracts/subcontracts with companies operating in the Gulf.

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<sup>15</sup> Rustam Lalkaka and Jack Bishop, "Business incubators in economic development: an initial assessment in industrializing countries", included in the present publication.

<sup>16</sup> ESCWA, *Establishment of Business Incubators in the ESCWA Region: the cases of the Syrian Arab Republic and the Palestinian Territories* (E/ESCWA/ID/1995/1 in English and E/ESCWA/ID/1995/1/Rev.1 in Arabic).

<sup>17</sup> Ibid.

This dependence has created a unique business environment based on a runtier mentality, rapid-return investments, commissions, and the practical separation of work, effort and income. This environment, prevailed during the oil boom era, but has been dampened lately by the serious drop in oil income. However, the business traditions acquired as a result of the oil boom are still affecting most economic activities in the region; more to the point, they are seriously hampering the development of entrepreneurship, innovation and investment, particularly at the level of small-scale enterprises.<sup>18</sup>

In most of the countries in the region, with one or two exceptions, the State has been the most important economic actor, serving as income provider, purchaser, investor, regulator and so on. Thus, with the possible exception of Lebanon, the public sector has dominated the economy, leaving little opportunity for entrepreneurship or private-sector initiatives, even at the SE level. Further, for reasons which vary between countries, central government planning has also prevailed, with a clear bias towards large-scale public-sector projects. Little attention has been given to private-sector support institutions.

With the negative business environment prevailing in many countries of the region, the maintenance of entrepreneurial traditions and the development of entrepreneurial skills and initiatives have been curtailed or are very limited; most people would rather secure employment with established public or private agencies than become self-employed or employ others. This is even more apparent when it comes to industrial ventures, which are often characterized by longer-term returns, higher risk and the need for more specific skills and qualifications for success, even at the SE level.

Consequently, the important industrial ventures in the region have mostly been medium- to large-scale businesses employing more than 100 people and dealing with problems that are different from those generally faced by small-scale enterprises which employ only a few people. Such circumstances have obscured the need for those SE support services required to enhance the establishment of incubators and other support mechanisms geared mainly towards small-scale enterprises.

For all of the above (and various other) reasons, community support for the start-up of small-scale enterprises is almost non-existent. Communities generally understand the need to support charitable activities, but it is more difficult for people to understand the need to support other people's efforts to make a profit—a tradition that must be developed systematically and continuously over a long period so that it becomes an inherent and prevailing social value.

It should also be pointed out that there is a lack of mutual cooperation and support among medium- and large-scale enterprises on the one hand and small-scale enterprises (particularly those just starting up) on the other hand. The realization that successful business "spill over" to other businesses has not yet been made; nor have the benefits of subcontracting services and of sharing machines, services and skills (even at cost) been recognized.

In a region where medium- and large-scale enterprises dominate and where industrial small-scale enterprises are still perceived by the community to have little economic impact, it is not surprising that the banking and credit systems are reluctant to cater to the needs of SEs, particularly start-ups. Most new enterprises have to come up with a relatively large proportion of their financing on their own—sometimes 100%—in order to meet the needs of their start-up phase. Few chances to obtain credit are available—and

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<sup>18</sup> ESCWA and others, *Selected Proceedings, Expert Group Meeting on Industrial Strategies and Policies [and] Managerial and Entrepreneurial Skills under Conditions of Global and Regional Change*, Bahrain, 20-23 November 1995 (E/ESCWA/ID/1996/2).



certainly not for extended periods, as is necessary for industrial ventures expecting medium- to long-term returns.<sup>19</sup>

One major feature is that the region has experienced economic and political instability and unpredictable changes in the environment over the past few decades. The ESCWA member countries have been plagued by various types of military conflicts, unexpected changes in their economic and/or political systems, the far-reaching effects of fluctuations in oil revenues, and a host of other problems. As a result, long-term planning, particularly in the private sector, is rarely practised. The major concern of most starting entrepreneurs is how fast they can recover their investments before new changes in the political or economic systems put the whole venture at risk.

Finally, it must be pointed out that the region as a whole lacks an innovative spirit and the will to search for and develop new ideas, products, processes and services. The countries of the region have relied heavily on imported turnkey projects which have had a minimal impact on the development of local technological skills. There is also a serious gap between academic circles, the few research and development institutions that exist, and the production sector, reducing opportunities for the exchange of services and thus for the creation of new ventures based on locally developed innovations—a subject that will be further elaborated below.<sup>20</sup> Many incubators worldwide have been established to support the commercialization of successful research results—a need that is rarely felt in any of the countries of the ESCWA region.

All of the region-specific features mentioned above apply to varying degrees to the ESCWA member countries and are among the more important reasons why the response to the United Nations promotion drive to establish pilot incubators, though positive and encouraging, has been so slow. However, while no tangible results have yet been realized, it is important for all concerned regional and international agencies to continue their consolidated efforts in cooperation with national institutions and agencies that have expressed their interest and concern. Any future efforts must take into consideration the experience gained thus far and the main obstacles faced by each particular country.

## B. SELECTIVE COUNTRY-SPECIFIC FEATURES

While all the features mentioned above, particularly the inadequacy of the financial and credit system, apply to all countries of the region to varying degrees, it is necessary in preparing for the establishment of pilot incubators and in designing the services to be offered, to identify which obstacles are most relevant in each specific country where an incubator is being set up and to address them directly. The following is an attempt to summarize the major obstacles identified both in the countries where incubation efforts have been carried out in the past few years and in other countries where the main difficulties may be easily identified from the experience gained.

### 1. *Egypt*

Egypt has the largest population among the countries of the region as well as the oldest and largest established industrial base. Yet the business environment in Egypt is facing most of the obstacles described above, to the extent that it may be difficult to point to one single major factor contributing to the success or

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<sup>19</sup> ESCWA and others, *Proceedings of the Expert Group Meeting on Creation of indigenous Entrepreneurship and Opportunities for Small- and Medium-scale Industrial Investment* (E/ESCWA/ID/1994/1).

<sup>20</sup> ESCWA *Proceedings of the Workshop on the Integration of Science and Technology in the Development Planning and Management Process in the ESCWA Region* (E/ESCWA/NR/1994/12).

failure of SEs in Egypt. The following are among the most striking features of Egypt's business environment:

- (a) A heavy, well-entrenched bureaucracy that is very difficult to modernize and overcome;
- (b) The dominance of the public sector in various economic activities, and the enduring influence of Egypt's long-established central planning;
- (c) Inadequate support services, particularly the lack of finance and credit systems geared towards SEs;
- (d) Egypt's large pool of university graduates in various fields, most of whom lack any practical experience; many might have very good ideas for innovative projects, but they are incapable of conveying these ideas to potential business supporters/partners.

It may be safely stated that a successful pilot incubation mechanism established in Egypt must have the capability (granted, if possible, through special government exemptions) to operate as a one-stop shop for the incubated projects, handling all bureaucratic procedures, obtaining permits, and carrying out the other tasks required to start these businesses. It must also be capable of helping incubated projects gain reasonable access to credit and financing. Further, incubator management should be competent enough to facilitate subcontracting links between the innovative incubated projects and the medium- to large-scale public and private industrial firms operating in Egypt, and between the projects and potential outside contractors.

## 2. *Jordan*

Jordan's business environment is characterized by the following:

- (a) A very limited natural resources base;
- (b) A newly established industrial tradition;
- (c) A very small local market;
- (d) An inadequate financing and credit system, particularly for SEs;
- (e) An officially supportive government policy that has not been translated into tangible measures;
- (f) The availability of a large pool of qualified personnel, particularly among university graduates, at a relatively cheap cost in comparison with surrounding areas;
- (g) The availability of a newly established subcontracting unit addressing the needs of SMEs in industry and other sectors.

Taking these features into consideration, it appears that the real potential for growth in Jordan lies in the establishment of innovative small- and medium-scale enterprises (SMEs) that can cater to niche markets in the neighbouring countries, benefiting from the well-educated, skilled and relatively cheap labour force available.

It is strongly suggested that any effort in this regard be preceded by a careful and critical study of the incubation experience of the Jordan Technology Group— an exercise which provides the opportunity to identify the specific difficulties faced and to enhance the successful factors already developed.

### 3. *Lebanon*

Though Lebanese industries and businesses have suffered heavy losses from the armed conflict that raged in Lebanon for more than 17 years, the business environment in this country can still be described as the most friendly in the region in terms of its support for the private sector and for SEs.

Lebanon has a large pool of well-qualified and skilled human resources, excellent links with the outside world, a well-established banking system and a very old tradition of entrepreneurship and related support services. While the overall atmosphere in Lebanon is more positive than that in other countries in the region, there are still a number of obstacles faced by small-scale enterprises starting up:

(a) There is no finance and credit system which caters specifically to the needs of SEs. The existing system provides mostly short-term loans, has very demanding collateral requirements and gives no special consideration to the value of the machinery and know-how that may be involved in starting up a small-scale enterprise;

(b) The support provided to SEs and other business is still very limited; it is generally restricted to family and close acquaintances. The need to support new ventures has not yet been recognized as an important social value, even among private-sector institutions such as the Chamber of Industry and the Association of Industrialists, which provide some support and services to established members but have no mechanisms for assisting non-member SEs during their start-up phase;

(c) There is no serious cooperation between qualified academic circles and the production sectors. Innovations developed locally by scientists and engineers rarely, if ever, reach the stage of commercialization and production, in spite of the large pool of well qualified and skilled human resources.

In setting up a pilot incubator in Lebanon, one or more of these important obstacles would have to be specifically addressed, but particular attention should be given to the elaboration of friendly financing and credit schemes for starting SEs and for establishing a support mechanism for innovative ideas.

### 4. *Syrian Arab Republic*

The business environment in the Syrian Arab Republic is characterized by a large and dominant public sector, a centrally planned economy, a controlled banking system, and the almost complete lack of support services and institutions catering to small-scale enterprises.

In spite of this relatively unfriendly environment, Syrian entrepreneurial traditions, skills and initiatives have been kept alive, and a flourishing private sector has been developing over the past few years which revolves mainly around well-established, traditional Syrian skills in the textiles and clothing and related industries and which has been able to benefit from a new government trend to support the private sector.

Additionally, a few public-sector research institutes have been able to develop numerous innovative projects and services which respond directly to the needs of Syrian society, but have failed to gain enough support to reach the producing stage and commercialize their efforts, mainly owing to the lack of resources and managerial and marketing skills.

A pilot incubator was proposed in 1994 to serve as a link and a bridge between the flourishing private sector, represented by the Damascus Chamber of Industry, and the innovative researchers of a successful public research institute, the Higher Institute for Applied Science and Technology. This project deserves to be reactivated and supported.

### 5. *Gulf countries*

Though there are variations in the business environment among the various Gulf countries, some common features can be easily identified, including the following:

- (a) The availability of floating capital;
- (b) Newly established traditions of business and production;
- (c) Heavy dependence on expatriate skills and imported turnkey projects;
- (d) Small and limited local markets, except perhaps in Saudi Arabia;
- (e) The lack of an entrepreneurial tradition, translating into the lack or limited availability of entrepreneurial and managerial skills;
- (f) Heavy dependence on imported products and services.

Taking all of these facts into consideration, the first priority for an incubator project in a Gulf country should be to enhance and develop the entrepreneurial drive and managerial skills of the local citizens—to encourage them to look for business opportunities within the framework of their own small-scale businesses, to provide them with opportunities to acquire the necessary entrepreneurial and managerial skills, to help them develop an innovative spirit, and to assist them in their search for suitable market niches.

### C. IMPORTANT REMARKS AND RECOMMENDATIONS

1. The Governments of most of the countries of the ESCWA region lack the necessary drive, mechanisms and infrastructure to support SEs—particularly those just starting; nor are the private-sector institutions presently prepared to provide such support. A sustained sensitization and promotional drive is needed to publicize the concepts and benefits of incubators—and of small-scale enterprises in general; all concerned agencies must make a consolidated effort to mobilize the necessary resources to establish pilot incubators in selected countries in the region.
2. To ensure the success of a pilot incubator project, it is necessary to mobilize the support of central and local government institutions, private-sector institutions and the local business community. Serious efforts should be made to garner support for the first project, as the success of the pilot experiment is crucial.
3. Because incubation is still an unfamiliar concept, it is extremely important to stress—at all times, at all levels and at all stages—that the incubator is a micro-mechanism with a limited scope and a limited impact. One single incubation project cannot by itself be a policy tool; however it may gradually evolve into a policy tool if the first pilot experiment is successful and if the programme can be expanded both horizontally and vertically to affect a very large number of starting and operating SEs and related businesses. At such a stage, networking and the use of a newly created national incubator association supervisory board are likely to become the real tools of a government policy to support small-scale enterprises.

4. In promoting an incubation project, and in designing the pilot incubator, it is important to stress that all supporting agencies, institutions and working groups will benefit not only from the incubator projects, but also from the incubator experience itself. Successful incubators will benefit the business community as a whole, both directly and indirectly, a fact that has to be experienced tangibly by all the supporting groups.

5. If a pilot incubator is to be successful, priority must be given to incubating/servicing the following types of projects:

(a) *Export-oriented projects.* With the exception of Egypt, the countries of the region have very small local markets;

(b) *Innovative projects targeting niche markets.* Projects focusing on traditional products, processes and services will face fierce competition and will not have a spectacular impact, even if successful. Conversely, innovative projects are likely to be more distinctive and impressive, even if their success is limited.

6. It should be pointed out that innovative projects do not have to be glaringly “new”, they may, and *generally* should, be based on incremental innovative ideas, with limited objectives such as:

- Increasing local input
- Increasing local value-added
- Reducing cost
- Responding better to local and/or export needs

7. Because the concept of incubation is very new in the region, the selection of a suitable, dynamic manager for the pilot experiment is critical, as is the provision of appropriate training for both the manager and the tenants, as well as the mobilization of all possible international support for the former. Later on, the experience gained is likely to be very useful in training other local managers.

8. Again, because the concept is new in the region, it is very important to start by surveying and listing all facilities and capabilities that can be called upon to service the incubator and the incubated projects (even at cost). Possibilities include: industrial workshops and tools; industrial, public and academic laboratories; scientific, technological and academic expertise; and consulting firms involved in all relevant fields.

9. Subcontracting links with existing larger-scale industries and/or outside contractors should be established; both the incubated projects and the business community as a whole will profit from such a relationship, which will provide tangible proof of how a successful incubator can extend its benefits beyond the projects themselves to external companies.

10. As to various laws, traditions and norms currently prevailing in the host countries, it is imperative that the legal status of a pilot incubator be clearly defined from the very beginning, preferably through its establishment as an independent legal entity—in the form of an association, institution or even company—so that any legal complications that may result from linking the incubator with another existing entity may be avoided.

Legal steps must also be taken to ensure “graduation” (i.e., the evacuation) of incubated projects after a suitable, but limited, incubation period. An incubator is basically meant to serve SEs just starting up. While a pilot incubator may be designed to include services to SEs operating outside, the bulk of services must be directed towards the incubated projects located on the premises. Proper provisions must be made

to secure the mobility of each incubated project once it successfully reaches the take-off stage, successfully, or once it is realized that a project is doomed to failure.

11. Finally, to ensure the success of a pilot incubator, the supervisory working group must establish the following:

- (a) Well-defined, specific and attainable objectives;
- (b) Well-defined target group(s);
- (c) A suitable and affordable package of services;
- (d) A clearly determined and attainable support budget that can sustain the incubator during its take-off stage. The incubator must be designed to become self-sustaining within a reasonable period. However, during the start-up phase, subsidies must be provided at a rate sufficient to ensure take-off.

#### D. INCUBATION AND TECHNOLOGY INNOVATIONS IN THE ESCWA REGION

World experiences show that incubators may cover a wide range of businesses, production and services sectors, target groups, objectives and scopes, service packages, and management and working group structures. From among the large variety of successful incubation experiences, the technology-business incubators (those designed to encourage technologically innovative projects) are of special interest to the ESCWA region and should be elaborated further, as they have played a vital role in promoting local technological innovations and have enhanced the development of national technological capabilities and infrastructure.

Technology innovation is an increasingly important factor in economic development and in building up the competitive advantage of firms and of nations. In the countries of the ESCWA region, technology innovations in the production and services sectors are scarce and have had almost no impact on the respective economies. Almost all industrial projects are based on turnkey importation agreements. The design of the products and processes, the technologies, the machines, the spare parts, the maintenance, and many times even the operating personnel are brought in from outside. Local scientists and engineers are given little to do, though they may be asked to perform certain operational or minor maintenance tasks. As a result of this situation, the development of national technological capabilities and infrastructure has been slow, there have been very few applied research and development projects that have reached the commercialization/production stage, skilled scientific and technological personnel have left the region for greener pastures, and the production and services sectors are almost completely isolated from the academic and research community.

Technology innovation—particularly the role of technological innovations in enhancing the competitive advantage of a country and the need to elaborate and implement plans to enhance the development of national technological capability and infrastructure—is a comprehensive topic requiring consideration that is beyond the scope of a single seminar; within this context, however, it is important to point out that many countries in the world, including industrialized countries, have adopted the incubation modality as one small microtool to enhance technological innovation and to help starting ventures based on bright and innovative ideas overcome the hurdles faced at the take-off stage. Many universities and research centres have established affiliated technology incubators to assist in the commercialization of their successful research and development projects and to encourage and support those of their students, staff and graduates with innovative ideas. Evidence is mounting that properly designed and supported technology incubators constitute a very promising small-scale mechanism for promoting technological innovations in the region.

The technological innovations which affect economic activities in any one country may be either radical or incremental. In the case of the former, a totally new concept, product, process or service is introduced and has a profound impact on the economic cycle related to the radical change (the invention of the transistor is one example). Incremental innovations tend to have more limited effects, which may include one or more of the following:

- (a) Improving the quality, performance or functioning of an existing product, process or service;
- (b) Reducing the cost of a product, process or service;
- (c) Increasing the market acceptability of a product, process or service.

While radical changes are still introduced in the marketplace, they are increasingly the result of systematic, sustained and highly expensive R&D efforts. In the past several decades, more than 99% of these radical innovations have been concentrated in the richer, more advanced industrialized countries; a few have been developed in the newly industrializing countries of the Far East.

For the time being at least, the Arab countries (like other developing countries) have to limit themselves to developing limited, incremental innovations which suit their markets and their prevailing economic, social, technical and industrial conditions. Incremental innovations in Arab and other developing countries must aim at fulfilling one or more of the following objectives:

- (a) Increasing the local value-added;
- (b) Increasing local input (to replace imported feeder, parts, subsystems and raw materials);
- (c) Increasing local technological input, especially in the areas of design, redesign, adaptation and maintenance;
- (d) Responding more effectively to local needs and to the local market;
- (e) Improving acceptability in existing and potential export markets (i.e., increasing the competitive advantage).

Incremental innovations—limited changes in existing products, processes and services—may be achieved through one or more of the following mechanisms:

New research and development efforts  
Imitation and reverse engineering  
Improving and upgrading local traditional techniques  
Enhancing local design capabilities and contributions

Each of these mechanisms deserve detailed consideration; however, the present study will focus on issues related to incubation and technology incubators.

Technology incubators can effectively promote and sustain the development of incremental innovations, since they provide the following:

- (a) *Individual and direct attention.* People who have promising technical ideas but no access to resources or markets are provided with encouragement, consultancy services and advice in various fields, and very often, access to resources and credit;

(b) *A network of support facilities, capabilities and expertise.* The incubator management must develop a network linking incubated projects to a wide range of supporting facilities and expertise in the surrounding area, including; larger industrial firms and workshops; university faculties and laboratory services; research centre laboratories, workshops and expertise; and consultancy services;

(c) *Skilled project managers.* The main objective of incubation is to reduce the difficulties associated with the take-off stage; this is even more important for ventures with innovative ideas, since the owners of such ventures might have sufficient technical expertise but inadequate experience and/or skills in business and management to translate their ideas into viable businesses. The incubator manager should be able to provide all necessary support to an innovative venture, allowing each “incubated owner” to concentrate on developing his ideas into such a successful, commercially viable product, process or service;

(d) *A link between the incubated innovative ventures and potential beneficiaries/clients/investors.* This is in the form of the incubator manager. With his wide experience and contacts, the incubator manager should be able to identify potential beneficiaries and can work to develop a connection between the two parties, drawing the attention of the end-user to the innovative idea, and helping the incubated business owner adapt his product or service to the needs and tastes of the end-user;

(e) *An incubation-friendly environment.* The prevailing social values and business practices in most Arab countries reflect the region’s long-time dependence on imported turnkey projects. Locally developed innovations usually fail to generate much interest—an attitude which dooms a new idea right from the start. A totally different environment—one that is very supportive and encouraging—must be created and developed within any technology incubator to sustain the creative spirit and fulfill the other needs of the innovative projects.

One very important aspect of incubation is communications access. Incubators should be prepared to facilitate the transfer and acquisition of the information that innovative ventures need to keep up with the dynamic, fast-changing nature of technological innovation. One of the most important services that the incubator can provide—either directly or through access to collaborating universities, research centres and firms—is ready access to current technical, scientific and industrial information. The world’s accumulation of knowledge and know-how is increasing at an exponential rate. With today’s more efficient means of disseminating information, a new discovery or invention, anywhere in the world, can trigger a number of practical and innovative ideas which may lead to the creation of new materials with special properties, new tools with greater flexibility, and new products with special functions, to name just a few. Many of these “new” ideas, when combined with local resources and initiative, may be developed into successful economic activities. Providing access to up-to-the-minute information is a vital function of any technology incubator.

Finally, incubator management must provide each incubated project with whatever information and/or training it may need to translate a good idea into a commercially viable activity and to transfer the necessary technology horizontally to the production sector.

A number of advantages and benefits of technology incubators are described above. However, they are not simply assumptions, nor are they recommendations to imitate the experiences of other nations. They are meant to answer the specific needs of the Arab region, determined through careful observation of and direct contact with various countries in the area over the past decade or so. Some of the region- and country-specific innovative ideas that have been partially developed during this period should be given priority for incubation; only a few have ever reached the stage of producing an operational prototype and even fewer have achieved commercialization. These ventures and many others could have developed into successful enterprises had they been given the chance to receive suitable incubation and support.



The following ideas relate mostly to applications in microelectronics-related areas because the author has some personal experience in this field. A thorough search would reveal a large number of similar innovative ideas in other fields with region-specific features and applications.<sup>21</sup>

(a) *The computer field*<sup>22</sup>

The arabization of computer software and related accessories (including keyboards and printers) is a region-specific application, and greater initiative and effort could produce a host of innovative ideas and products.

- (i) The first arabized telex was developed at the Kuwait Centre for Scientific Research but was never commercialized. The basic breakthrough—the use of contextual analysis in the design of the keyboard—was rapidly exploited by enterprising manufacturers. It is now applied with varying degrees of success, by all manufacturers of arabized microcomputers, computer terminals and similar machines;
- (ii) Computer processing in the Arabic language is still far behind commercially in comparison with other languages;
- (iii) Arabized educational software is a wide area where returns on the huge effort and investment required are guaranteed once promising new ideas are seriously developed and exploited;
- (iv) Arabized interactive toys and games represent another area that is region-specific, yet most of the commercialized products in this category are currently developed and produced outside the region, generally by Arab expatriates living abroad.

(b) *Microprocessor applications*<sup>23</sup>

There is such a wide range of possible microprocessor applications that each country can develop specific applications to respond to specific local needs. The following are among the more interesting applications developed in the region:

- (i) The remote reading of electric power consumption meters. In most countries of the region individual meters are installed for every household, generally inside the building in a place accessible for reading but outside the living area, to avoid disturbing residents. In Egypt, however, for reasons relating to the lack of space and the need for protection, most meters are installed inside the apartments themselves, seriously inconveniencing both residents and readers. A local company has developed a “remote reader” that the electricity companies

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<sup>21</sup> All information obtained on the cases below was collected by personal contacts: some were described in various ESCWA publications that are now out of print, for example, the report of the Expert Group Meeting on Managing Technological Changes within the Context of Electronics Firms.

<sup>22</sup> This subsection is based on information obtained from Selected Proceedings of the Workshop on Computer Processing of the Arabic Language (Dar Ar-Razi, 1989). التقرير النهائي، المؤتمر الثاني حول اللغويات الحاسوبية العربية، معهد الكويت للأبحاث العلمية، ١٩٩١.

<sup>23</sup> The information in this subsection is based on information obtained from the *Final Report of the Expert Group Meeting on Automation and Microprocessor Controls* (E/ESCWA/ID/1994/2).

can provide to their employees to allow them to determine power consumption without invading anyone's privacy;

- (ii) Traditional Damascus embroidery. Damascus is world-famous for its embroidery industry, which relies on intricate skills that combine personal know-how with traditional techniques and tools passed on as trade secrets from one generation to another. Skilled labour in this field is becoming very scarce, and there is a real risk that the industry will disappear completely. Special software linked to modernized tools and techniques has been developed that can be controlled by locally programmed microprocessors—a sort of “expert system” designed to apply the accumulated know-how and techniques of traditional embroidery and mimic the operation of traditional tools. The project has not been a commercial success, however;
- (iii) Sensors and controls for electric appliances. In many countries of the region there are factories where various types of electrical appliances (such as washing machines, refrigerators and fans) are assembled. Most of these factories import virtually all of their parts and feeder subsystems, including the controls. In certain countries, including Egypt, the Syrian Arab Republic and Iraq, small firms have been developing equivalent controls that can be substituted for the imported ones at a much lower cost, also freeing up hard currency that may be needed for more urgently required imports. One specific example in this regard is the elevator controls commissioned by the Jordan Lift Company from the Royal Scientific Society (RSS) in Jordan;
- (iv) There are numerous other regional ventures that have been involved in developing similar processor-based controls and applications, and these could be sited at incubators where they would be given the support they need to realize their goals. Many of these projects have been able to reach the operational prototype stage, but have never had the chance to commercialize their efforts; examples include taxi meters in the Syrian Arab Republic, programmable traffic-lights in the Syrian Arab Republic and Jordan, and home thermostats for air conditioners in Egypt.

(c) *Reverse engineering*<sup>24</sup>

One very important area with high regional potential for incremental innovation is reverse engineering, particularly for the maintenance and manufacture of application-specific spare and replacement parts.

Most production and service machines used in the region are imported, either individually or for turnkey projects, from a very wide range of technology sources. Provisions are rarely made for maintenance or support beyond the terms of the original import contract, which usually provides for a minimum maintenance period of one or two years and limited supply of spare parts, selected at the direction of the supplier. Most of these imported machines represent a very small market share for the technology supplier. Consequently, requests for maintenance are usually answered slowly, with the lengthy delays causing long periods of work stoppage; frequently these requests receive no reply at all, and the machines are left idle for a good part of their useful life. When maintenance is performed by the supplier, it is often prohibitively expensive.

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<sup>24</sup> The following subsection is based on information provided in E/ESCWA/ID/1993/7:

تكيف التقنيات الهندسية العكسية بما يلائم صنع الآلات اللازمة للصناعات الزراعية الغذائية.

Reverse engineering for regular maintenance and for the manufacturing and replacement parts represents a very important area for incubated projects, if the experiences of many countries in the region are any indication:

- (i) Hospital/medical electronics. Expensive and fast-changing electronic hospital and medical equipment is being acquired very rapidly in most countries of the region. These machines are frequently imported without proper long-term provisions for maintenance and many of them face problems, some of which are serious enough to put the machines out of service long before they should be.

Jordan's Royal Scientific Society has signed maintenance contracts with most of the public hospitals in the country, agreeing to maintain all of the electronic medical equipment, regardless of their import sources, their complexity, or the availability of authentic spare parts or diagrams.

Through reverse engineering, using off-the-shelf components and locally improvised parts and subsystems, the RSS has for the past few years been able to fulfill all maintenance requests, extending the service life of the equipment and reducing maintenance costs tremendously;

- (ii) Food industry machinery. The most notable example in this area relates to a sugar company in Egypt.<sup>25</sup> Built and operated by a French company in the early 1900s, the company was turned over to the public sector in the late 1950s. In the 1960s, the company was boycotted by most European technology sources and faced severe maintenance and parts-replacement problems. Using reverse engineering, the company's national experts were eventually able to resolve all of these problems. They acquired enough experience to redesign and improve upon the original imported lines; eventually they were able to set up their own lines, designed and manufactured entirely on a local basis. This experience is now being replicated in other areas (such as the bottling of soft drinks) and in other countries;
- (iii) Industrial controls.<sup>26</sup> The cost of industrial controls imported to the region is estimated at billions of US dollars every year. These controls are usually embodied in imported turnkey projects connected with petroleum and petroleum-related industries, chemicals and pharmaceutical, cement industries, and automated and computer numerical control (CNC) engineering industries, machines and machine tools to name a few. The turnkey nature of most of these controls means that the commissioning agencies rarely have any say in choosing the types or complexity of the controls used, a situation which creates tremendous operation- and maintenance-related difficulties later on.

There is a huge amount of capital involved in these controls, particularly in the petroleum and petroleum-related industries, a fact which led to the establishment of ARICSON, a pan-Arab maintenance and parts-replacement company based in Bahrain. The company was set up in the 1980s and made huge profits during that decade but was dissolved in the early 1990s owing to political difficulties;

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<sup>25</sup> Ibid.

<sup>26</sup> Ibid.

- (iv) **Improvised spare and replacement parts.** In many countries of the region where importation is difficult (owing to hard currency restrictions, the high cost of imported items and so on) local experts have been developing ways to improvise, manufacture and/or adapt spare parts and replacement parts for various types of machinery and equipment. The Syrian Arab Republic, Iraq and Egypt have done some outstanding work in this regard, in the field of automotive maintenance. Their experiences ought to be studied in depth so that their knowledge and expertise can be applied in other areas and in the development of other products and services. A technology incubator would be an effective mechanism for promoting these types of activities.

#### E. CONCLUSION

The examples cited above indicate that the region is quite capable of developing innovative ideas that respond to local needs. What it lacks are the mechanisms for commercializing the results of successful research, for transforming operational laboratory prototypes into commercial products and services and for marketing these products and services both locally and abroad. Technology business incubators are among the more successful mechanisms in this regard, particularly when they receive the attention and support of a wide range of concerned private and public institutions and when experienced, dynamic and well-connected incubator managers are recruited—even at a relatively high cost—to facilitate the lateral transfer of technology from research labs to commercial markets.

## V. ENTREPRENEURSHIP DEVELOPMENT, BUSINESS INCUBATORS AND THE BUSINESS ENVIRONMENT

by  
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### Introduction

Business incubators are useful tools for nurturing small enterprises and increasing their chances of success. They provide a favourable “micro-environment” in which start-up businesses can receive managerial, legal, technical and various other types of support. The establishment and operation of incubators in several ESCWA member countries is, however, hindered by the existence of an unfavourable business environment and by weak entrepreneurial behaviour among the population. Although the business incubator can be a useful tool, its success depends to a large extent on the level of entrepreneurship and entrepreneurial motivation existing in the countries concerned. The establishment of business incubators should be accompanied by other interventions and mechanisms to ensure their success.

#### A. AN UNFAVOURABLE BUSINESS ENVIRONMENT FOR SMALL ENTERPRISES

Several studies have focused on the problems faced by small enterprises in the countries of the ESCWA region. These problems are related to governmental macroeconomic policies that favour large enterprises over small ones and to the complexity of governmental administrative procedures related to the establishment and running of a business, as well as the inadequacy of support services and institutions for small enterprises. Under these difficult conditions, business incubators can: offer an adequate micro-environment for small businesses; assist entrepreneurs in reducing the difficulties created by government regulations, bureaucracy and procedures; provide entrepreneurs with an integrated package of support services (mainly advisory and business counselling services and training); and facilitate access to information and finance.

##### 1. *Biased macroeconomic policies*

Manufacturing industries in the ESCWA region are generally concentrated in the public sector, and Governments have devised strategies and policies that favour large enterprises over small ones. Despite widespread privatization efforts, the Governments of most ESCWA member countries are still heavily involved in the manufacturing industry, either through the control of heavy and large industries or through direct and indirect participation in the equity capital of mixed industrial companies. While most of these countries have introduced changes in their industrial strategies and policies—reflected mainly in the encouragement of the private sector and the provision of various promotional policy measures and incentives—the private sector still shows a reluctance to invest in manufacturing activities. The low level of entrepreneurship in several ESCWA countries constitutes another impediment to the launching of industrial projects by the private sector.

Through their monetary, financial, trade and fiscal strategies, macroeconomic policies generally discriminate against new and existing small firms through the imposition of considerable entry barriers. For example, in several ESCWA member countries, investment laws provide various incentives and exemptions from income tax, but only to projects with a certain level of capital investment. Macroeconomic policies and measures strive to maintain a general equilibrium in the economy, giving little consideration to the individual

circumstances of small firms or to their impact on economic development as a whole<sup>27</sup>—despite the fact that small firms have proven to be a major source of innovation, employment generation and economic growth. Unexpected single, isolated events have brought about radical changes in the economy.<sup>28</sup> A radical innovation by a small firm may destroy the general economic equilibrium and existing market structures while creating wealth. The process by which entrepreneurs use innovations to create wealth has been described by Joseph Schumpeter as “creative destruction”.<sup>29</sup>

## 2. *The complexity of administrative procedures*

One of the most significant barriers to enterprise development in a number of ESCWA member countries is the complexity and number of procedures (forms and approvals) related to the establishment and operation of an industrial enterprise. The problem is made worse by long delays in the processing of such forms and the fact that the issuance of licenses and approvals is dealt with by several institutions. Many entrepreneurs also have difficulty obtaining information on the approvals and forms which are required to establish and operate a business and on the authorities that should be approached in this regard. In Egypt, for example, some private industrialists claim that it takes up to 30 official approvals before start-up is possible, resulting in lost time and added expense.<sup>30</sup> The government bureaucracy thus increases the transaction costs for firms, which in turn reduces their competitiveness and discourages investors from starting up a business. Transaction costs relate to the processing of business documents, the negotiation and conclusion of contracts, litigation related to violated contracts, and so on.

Several attempts have been made by a number of countries to simplify the administrative procedures involved or to establish one-stop shops for the administration of approvals. However, these attempts have generally been unsuccessful, as many public institutions have a vested interest in the process, and considerable difficulties have therefore been faced in reducing the level of bureaucracy inherent in the government institutional set-up.

## 3. *The inadequacy of support services to small entrepreneurial ventures*

Various institutions in the region are attempting to remedy the relative absence of support for small enterprises by providing business counselling and credit facilities and by devising training programmes. However, these institutions are not yet able to contribute effectively to solving the major problems faced by small businesses, as the support services provided are still limited. In several ESCWA member countries, the private-sector institutions have little experience and are not equipped to cope with the growing needs of private industrial firms—particularly small and medium-sized enterprises. Private-sector institutions must be prepared to shoulder greater responsibilities in view of the global and regional trends towards the domination of market forces and reduced State intervention in the economy.

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<sup>27</sup> See Bruce A. Kirchoff, “Entrepreneurship’s contribution to economics”, in *Entrepreneurship Theory and Practice* (Waco, Texas: Baylor University, Winter 1991).

<sup>28</sup> William D. Bygrave and Charles W. Hofer, “Theorizing about entrepreneurship”, *Entrepreneurship Theory and Practice* (Waco, Texas: Baylor University, Winter 1991).

<sup>29</sup> See Bruce A. Kirchoff, “Entrepreneurship’s contribution to economics”, in *Entrepreneurship Theory and Practice*, (Waco, Texas: Baylor University, Winter 1991).

<sup>30</sup> See ESCWA/UNDP, *Promotion of Entrepreneurship in Small-scale Industrial Enterprises* (E/ESCWA/ID/1992/1).

Small firms suffer from the relative absence and/or inadequacy of financial and non-financial support services. Their most serious difficulties derive from: the relative lack of access to business information, a critical factor in the adoption of sound decisions both in the start-up phase and in the operation of firms; the lack of access to finance; and weaknesses in entrepreneurial development, business counselling services and training.

(a) *Access to information*

Large enterprises have the resources to create their own information units and to network with a wide range of firms and institutions both locally and internationally. This is in contrast with small entrepreneurs who in most cases are owner/managers in charge of all of the management aspects of their companies (general management, marketing and so on) and who lack the time and resources to search for the information they need to make sound decisions on all facets of their operations. This situation is aggravated by the lack of ready access to information services, particularly computerized databases.

Small enterprises have little access to technical information, to information on the suppliers of equipment, technology, raw materials and products, to data on import, export and market statistics, to information on regional and international companies offering technology transfer, to schedules of international trade fairs and exhibitions or to information on competitors. These enterprises also lack information on the sources and conditions of loan financing, on support institutions (such as training bodies and consultancy firms) and on government regulations governing business activities.

(b) *Access to finance*

With the new regional trend towards the encouragement of private initiatives, several financial institutions, development banks and credit schemes have been established to meet the increasing financial needs of the private sector, particularly those of small enterprises. Financial support is being provided to small enterprises by a number of development and industrial banks in the region (in Egypt, Jordan, Oman and Saudi Arabia) and by specialized financial and credit institutions such as the Social Fund for Development and the Alexandria Businessmen's Association in Egypt, the Development and Employment Fund in Jordan, the Small Enterprise Development Unit in Yemen, and certain credit institutions in the occupied territories. Some credit guarantee schemes have recently been created in Egypt and Jordan, through which up to 50% of the total loan provided by a commercial bank can be guaranteed.

Although financial resources are available, access to finance is hindered by the complexity of the procedures followed by most of these institutions, the large collateral required of borrowers, the scarcity of credit guarantee schemes, and the weak capabilities of credit officers in managing loans and evaluating the business plans and feasibility of projects. Such constraints are limiting the effectiveness of these agencies and their impact on the development of entrepreneurial initiatives.

(c) *Business counselling and advisory services*

Medium-sized and large enterprises benefit the most from the advisory services that are provided by public and private development agencies and by consulting firms; start-up and existing small businesses find very little support from public- or private-sector institutions. In many cases where counselling services are offered, conventional approaches still dominate; these approaches aim exclusively at solving client problems and providing the needed prescription, rather than at client learning. The counsellor should actually be more of a facilitator and adviser than an executor, so that counselling can become a learning vehicle for small entrepreneurs.

There is not much coordination among small-enterprise development agencies, and very few use an integrated approach or strategy in providing their services. In many cases, managerial and entrepreneurial training is not integrated into technical training programmes; training courses are generally considered an objective in themselves, and little follow-up of trainees is undertaken. Counselling and advisory services are also provided separately, and again, little follow-up is carried out by the training institutions.

Little coordination or cooperation exists between credit institutions and the institutions providing training and advisory services.<sup>31</sup> Counselling should be coordinated with the provision of financial support to small enterprises (SEs). Such coordination has a double advantage: sound business recommendations are more likely to be heeded if finance is secured at the same time, which in turn renders the loan less risky to the financial institution.

The operation of an outreach-oriented business incubator is hindered by the existence of numerous and scattered small enterprises. The organization of SEs into mutual support groups or associations by occupational status would facilitate the provision of consultancy and advisory services and the sharing of experiences among entrepreneurs; common problems faced by owners/managers could be addressed within a particular support group or association. For individual enterprise problems, counselling services should be provided, preferably at the work place. In sum, specialized associations should be established for producers in all branches of industry in order to facilitate the delivery of services (particularly by business incubators) to small enterprises.

The integration of services for small enterprises is even more important in countries where entrepreneurial behaviour is generally weak or lacking, as the institutions providing assistance in such countries are likely to face more serious obstacles and constraints. The business incubator has an advantage over other support institutions in that it can facilitate such coordination, securing financing for tenants and providing advisory, counselling and other support services—all at the same time and in one affordable and integrated package.

#### B. ENTREPRENEURSHIP, THE BUSINESS ENVIRONMENT AND UNCERTAINTY<sup>32</sup>

There is currently some discussion regarding the potential of start-up businesses to succeed, survive and grow within an unfavourable macro-business environment and under conditions of uncertainty. Different approaches to the issue of enhancing entrepreneurial activities have been adopted by various groups concerned with economic development.

According to the “situational approach”, largely adopted by macroeconomists, entrepreneurial initiatives can only be stimulated and developed through adjustments in economic policies and reforms and through the creation of a favourable policy environment and a liberal market. Supporters of this approach stress that although entrepreneurship programmes can produce people with entrepreneurial behaviour, these people do not necessarily start their own enterprises or successfully overcome business take-off problems.

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<sup>31</sup> ESCWA, *Industrial Strategies and Policies in the ESCWA Region within the Context of a Changing International and Regional Environment* (E/ESCWA/ID/1995/7).

<sup>32</sup> This part is based on Antoine Mansour, “Characteristics of a segment of Palestinian would-be entrepreneurs in the West Bank and Gaza Strip”, in *Les Cahiers du CERMOC* (Centre d’Etudes et de Recherches sur le Moyen-Orient Contemporain), No. 17, entitled *Palestine, Palestiniens, territoire national, espaces communautaires* (Beirut, 1997).



The “trait approach”, criticized by partisans of the situational approach, promotes the concepts of the conventional entrepreneurship development programme (EDP),<sup>33</sup> which holds that the economic growth of a country is a function of the level of the population’s “need for achievement”<sup>34</sup> or “urge to improve”. The supply of entrepreneurs depends on the entrepreneurial traits of the population and can be increased through training programmes that are specifically designed to increase entrepreneurial attitudes (self-confidence, motivation and so on). Under such a scenario, entrepreneurship training programmes that focus on increasing the population’s “achievement motivation” (its motivation to accomplish things) will produce more energetic entrepreneurs, who will bring about rapid economic development.

Neither approach is a panacea. The situational approach does not give sufficient consideration to the personal traits of individuals, and the trait approach—which is intended to develop a profile of entrepreneurs to identify those who might become successful—is not applicable in all cultures, since it is not yet known which characteristics are indispensable or sufficient, or which are uniformly associated with success.<sup>35</sup> Another criticism directed at the trait approach relates to its exclusive focus on *who is an entrepreneur* and on his/her personal traits and characteristics. The focus needs to be expanded to include *what the entrepreneur does*. Entrepreneurship is, in actual fact, the creation of new organizations and involves a change in the external environment, an indication that personal traits alone cannot lead to entrepreneurship; the focus should instead be on the entrepreneurial process—the perception of an opportunity and its translation into the creation of a firm, and the pursuit of innovations.<sup>36</sup>

There is no doubt that both the business environment and the existence of entrepreneurial traits among the population are important factors, but neither by itself can lead to economic growth and development. There are many examples of entrepreneurs who have succeeded in harsh environments. For example, Lebanese entrepreneurs were able not simply to operate and survive during the 17 years of civil war, but also to generate new business ideas and exploit numerous business opportunities; for example, exports of garments and shoes grew significantly during the war. Further, a number of successful Palestinian entrepreneurs have operated under very difficult conditions, both during occupation and in the current situation characterized by the frequent closure of the occupied territories. The success of Lebanese and Palestinian entrepreneurs stems from their ability to exploit their personal talents and to transform the relatively severe problems facing them into business opportunities.

There are also examples of mediocre private sectors with weak entrepreneurial initiatives, particularly in manufacturing activities, that have been unable to flourish despite the fact that they have operated in a favourable business environment and have enjoyed various incentives such as exemption from income tax and customs duties on imported inputs (such as in the Gulf countries). In these countries, the private sector has been oriented mainly towards routine activities. Since it has generally been used to operating in an easy environment, with extensive support and large subsidies from the Government, it would face enormous difficulties operating under harsh circumstances and having to adapt to fast-changing conditions. In the Gulf

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<sup>33</sup> Sabine Hartig, “Entrepreneurship training: State of the art of training techniques for enhancing industrial entrepreneurship”, paper presented to the ESCWA Workshop on Motivation, Orientation and Training Techniques for Enhancing Industrial Entrepreneurship in the ESCWA Region, Amman, 20-25 April 1992.

<sup>34</sup> David McClelland, *The Achieving Society* (Princeton, New Jersey: D. Van Nostrand, 1961).

<sup>35</sup> See John J. Kao, *Entrepreneurship, Creativity and Organization* (Englewood Cliffs, New Jersey: Prentice Hall, 1989).

<sup>36</sup> See William B. Gartner, “Who is an entrepreneur? is the wrong question”, in *Entrepreneurship Theory and Practice* (University of Baltimore Educational Foundation, 1988); and William D. Bygrave and Charles W. Hofer, “Theorizing about entrepreneurship”, in *Entrepreneurship Theory and Practice* (Waco, Texas: Baylor University, Winter 1991).

countries, the State has traditionally played the dominant role in economic activities, particularly through its large investment in infrastructure and heavy oil-based industries, but the situation is slowly changing with decreasing returns from oil revenues. One may speak here of the “State Entrepreneur”,<sup>37</sup> though it should be noted that the entrepreneurial capabilities of the State are limited by the nature of the frontier economy in which it operates.

While individuals with weak entrepreneurial traits may experience anxiety and stress when faced with ambiguous situations, the successful entrepreneur is one who has the ability to deal with his/her surroundings, particularly with uncertainty, and to perceive ambiguous situations in a positive and challenging way (“tolerance for ambiguity”).<sup>38</sup> What makes entrepreneurs successful is their ability to exploit their personal qualities (talents, skills, education, motivation) and available resources (assets) under any given situation (business environment, government policies) and to adjust their strengths and weaknesses to a particular economic situation so that they can identify business opportunities and come up with an appropriate strategy. In the absence of a favourable macroeconomic business environment, business incubators can provide a friendly micro-environment and assist those entrepreneurs who have perceived an opportunity to start a business, in reducing the obstacles of the entrepreneurial process—the creation of a firm.

### C. ENTREPRENEURSHIP DEVELOPMENT: A REQUISITE FOR THE SUCCESS OF BUSINESS INCUBATORS

#### 1. *The “Start Your Own Business” concept*

ESCWA has conducted a number of activities to assist start-up entrepreneurs in reducing the obstacles to the creation of a firm. These activities are directed towards assisting institutions in the region in finding new or improved methods and techniques to support and promote the creation of indigenous entrepreneurship, particularly through institution-building and training programmes aimed at upgrading entrepreneurial and managerial skills and encouraging potential entrepreneurs to start their own businesses. Training for potential entrepreneurs can enhance their motivation to succeed and help them develop the skills they need to identify opportunities; such training can stimulate business activities, especially if the right type of programme is designed. A number of Start Your Own Business (SYB) courses for potential entrepreneurs, and for the training of trainers, have been conducted by ESCWA in cooperation with local institutions, particularly in Jordan, Lebanon, the West Bank, Gaza and Egypt. Several of these courses have been implemented in cooperation with UNDP, UNIFEM and the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA). It is worth mentioning that almost all such courses have been implemented with the assistance of local trainers, including those who have attended the ESCWA-sponsored training of trainers workshops linked to the Start your Own Business programme. Through the implementation of these courses, ESCWA has been able to transfer SYB training techniques to a number of institutions in the region, thus enhancing local training capabilities. Local trainers are now able to run their own training courses for potential entrepreneurs.

ESCWA activities related to the promotion of entrepreneurship through the upgrading of the entrepreneurial and managerial skills of start-up entrepreneurs are filling an important gap in the region. Many training institutions and small-enterprise development agencies in the countries of the region have faced difficulties in dealing with would-be entrepreneurs, and this has led them to concentrate more on established

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<sup>37</sup> Philippe Béraud, “Industrie sans entrepreneurs dans les hydrocarbures arabes”, in *Entrepreneurs du Tiers Monde*, ed. Philippe Béraud and Jean-Louis Perrault (Paris: Editions Maison Neuve et Larose, 1994).

<sup>38</sup> A. Bakr Ibrahim and Willard H. Ellis, *Entrepreneurship and Small Business Management* (Dubuque, Iowa: Kendall/Hunt Publishing Company, 1990).

businesses than on new start-ups. In cases where training is addressed to potential entrepreneurs, the content is rarely associated with the upgrading of entrepreneurial skills; management training programmes tend rather to focus on aspects such as marketing, accounting, costing and production, paying little attention to the latest developments in behavioural science such as achievement motivation, self-confidence building, risk-taking, decision-making, leadership, innovation and creativity, and the identification of opportunities. Moreover, traditional approaches are still being used in the provision of training services; management courses are in most cases academically oriented (classroom- and trainer-centred), with little participation of the trainees in problem-solving. The participatory approach, simulation, and action-learning methods are rarely employed. The application of the participatory approach in training is very important, as it has been proven (in several countries) to be more effective and less costly than the traditional approaches used in the more conventional credit and extension programmes.<sup>39</sup>

The major problem faced in providing training courses to potential entrepreneurs is identifying and locating these entrepreneurs. The approach adopted for the SYB courses could provide one effective means of identifying would-be entrepreneurs. The SYB approach places great emphasis on pre-course activities; courses are promoted (through advertisements in local newspapers, circulars and posters) and interviews are conducted to identify and select individuals as potential entrepreneurs who already possess certain character traits.

It is worth mentioning that the response to the publicity campaign announcing an SYB course provides an indication of the size of the demand for courses on starting up businesses. The demand varies from one country to another; the implementation of SYB courses in various countries of the region has shown that the greater the entrepreneurial motivation and behaviour among the population, the greater the demand for such courses.

The application forms filled out by the candidates contain a number of questions related to their personal and professional characteristics. Participant selection is based on criteria such as the candidate's entrepreneurial traits, competencies and history (personal and family), and the innovativeness and feasibility of the proposed business idea. In the course of implementing SYB courses, it was observed that the entrepreneurial motivation among the candidates for the course in Lebanon was stronger than that among the candidates in the occupied territories and Jordan. Among different female target groups in every country, entrepreneurial motivation (in Jordan, for example) was far more advanced among university graduates than among disadvantaged women. Past application forms also indicate that very few candidates have innovative business ideas; most have proposed repetitions of existing businesses.

SYB courses aim at enhancing the spirit of self-employment and increasing the number of new businesses. They assist selected potential entrepreneurs in: assessing their own qualities, competencies and deficiencies; setting their goals by capitalizing and refining their visions; developing and strengthening their entrepreneurial competencies; and transforming their business ideas into real projects. The courses also enable candidates to carry out detailed studies covering the marketing, production, organizational and financial aspects of their projects, and to prepare comprehensive business plans for their proposed projects to be submitted to financial institutions for evaluation and/or loan purposes. SYB training programmes therefore enable new start-up entrepreneurs to increase their self-confidence, to discover their strengths and develop their potential, and to operate in a real business environment (even if it is inadequate). It is important to note that without the proper training, new start-up businesses are more likely to fail.

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<sup>39</sup> See Robert E. Nelson, "Promotion of small enterprises", in *Small Enterprise Development: Policies and Programmes*, ed. Philip A. Neck and Robert E. Nelson (Geneva: International Labour Organization, 1987).

## *2. Follow-up measures*

The number of participants who start a business after attending an SYB course depends to a large extent on the follow-up measures undertaken by the hosting institution. Follow-up is as important as the course itself; SYB graduates need to be provided with support and advice for a period of about a year after the course has ended. While ESCWA has stressed how important it is, few hosting institutions have conducted any sort of systematic follow-up of their SYB graduates, and in the end, these budding entrepreneurs are left without the assistance they need. The reasons for such behaviour might relate to the following:

- (a) The inexperience of local institutions in supporting small enterprises, in view of the fact that such support is relatively new in the region;
- (b) The absence of focus in the activities of these institutions.

This has been the case for a number of local institutions that have been involved in hosting and organizing SYB courses, including the Business and Professional Women's Club in Jordan, the Ministry of Social Development in Jordan and in Lebanon, the Business Development Centre at Bethlehem University, the Economic Development Group in Gaza, and an institution known as Al-Ufoq in Nablus. It should be noted, however, that the Business and Professional Women's Club in Jordan, and the Ministry of Social Development in Lebanon are currently making serious efforts to establish small-business counselling units that will also provide services to SYB graduates. ESCWA and UNIFEM are together assisting these two institutions in the establishment of small-business counselling units.

## *3. Problems faced by SYB graduates*

The SYB programme provides participants with an opportunity to present their business plans (prepared during the course) to a panel of financial institutions during the last day of the course. However, although graduates consider their major problem to be access to finance, few graduates have been able to take advantage of the intermediary role played by the hosting institution in order to secure loan financing. The graduates generally complain about the complexity of the financial institutions' procedures and regulations, the conditions of loan financing, and the collateral required. In this respect, it is worth mentioning that the negative reaction of some financial institutions may be at least partially related to the limited capabilities of credit officers to evaluate business plans and manage loans; such weaknesses were often observed during the presentation of business plans by SYB graduates to the above-mentioned panels. Other problems faced by the SYB graduates relate to the complexity of government regulations, the level of bureaucracy, and the relative absence of support services.

A follow-up meeting with the entrepreneurs who attended the SYB courses in the West Bank and Gaza was held a few months after those courses ended. These entrepreneurs indicated that the major problems they faced in starting their businesses were related to difficulties in obtaining loans from credit institutions (for the reasons mentioned above), political uncertainties, Israel's frequent closure of the occupied territories (and the consequent difficulties in securing raw materials), the bureaucratic procedures of the Palestinian Authority, the absence of protection for local industries and the absence of adequate support from local institutions. The needs identified by the SYB graduates during the meeting were mainly related to: further training and counselling of all kinds (marketing, computer-based accounting, SME management and technical training); assistance in securing finance; networking with local and foreign institutions and firms; access to information on government regulations and on sources of equipment and raw materials; and assistance which would allow them to attend conferences and exhibitions.

#### 4. *Entrepreneurship development and business incubators*

Preparing potential entrepreneurs to start an entrepreneurial venture is a major factor in the success of a business incubator. Following from this, the tenants of an incubator could be selected from among the graduates of SYB courses. The application forms completed by the SYB candidates would provide a solid basis for studying and evaluating their entrepreneurial characteristics and the types of projects envisaged; such records also indicate which practical needs should be considered in selecting the services to be offered by the incubator. There are other obvious reasons for assessing the characteristics of would-be entrepreneurs. Such assessments can contribute to the formulation of suitable recommendations for enhancing entrepreneurial behaviour among the population, to the design of educational programmes on entrepreneurship for all sections of the population, and to the design of more appropriate training programmes for start-up businesses. Enhancing entrepreneurial behaviour among the population is especially important in countries where business awareness is weak. In these countries, training programmes should concentrate on creating a first generation of entrepreneurs and should aim at increasing entrepreneurial attitudes, motivation, abilities and behaviour, as well as the sense of becoming "independent". Such programmes can help in creating and increasing the demand for start-up businesses and in generating innovative business ideas among individuals. Creating a first generation of entrepreneurs, upgrading the skills of potential entrepreneurs and assisting them in starting businesses are requisites for the successful establishment of a business incubator.

As mentioned above, SYB graduates require follow-up, and the business incubator could be one appropriate instrument for following up on those trainees who have innovative business ideas. Follow-up activities might include assisting the trainees in revising and finalizing their business plans, obtaining permits, registering their companies, negotiating with suppliers, undertaking joint ventures with foreign companies, and securing loans from financial institutions. SYB training can be integrated quite well with the establishment of business incubators. Like business incubators, SYB training courses increase the chances of success for small business and thus reduce the failure rate.

#### D. SUMMARY AND CONCLUSION

Support services for small enterprises are limited and inadequate; an integrated approach is rarely used, and little coordination exists among small-enterprise development agencies such as business counselling centres, credit institutions and (management and technical) training institutions. The integration and coordination of services for small enterprises would facilitate the process of creating a business. In the absence of a favourable macrobusiness environment and of adequate support services and infrastructure for small businesses, business incubators can offer a suitable micro-environment, providing support services in one affordable and integrated package. Business incubators can assist entrepreneurs in reducing the difficulties associated with government regulations, bureaucracy and procedures, provide them with advisory and business counselling services and training, and facilitate access to information and finance. They have an advantage over other support mechanisms, in that they can play the role of intermediary, facilitating coordination among all support institutions, and can mobilize extensive community involvement through their boards of directors and their networks of cooperating institutions and agencies.

The establishment of a business incubator really depends, however, on the level of entrepreneurship and entrepreneurial motivation among the population. Enhancing entrepreneurship awareness and creating a first generation of entrepreneurs in countries characterized by weak entrepreneurial behaviour will help to create and/or increase the demand for business start-ups among the population. Upgrading the skills of potential entrepreneurs and preparing them to start a business also contribute to the successful establishment of a business incubator. The business incubator could be one important follow-up instrument for SYB graduates who have innovative business ideas, since it could provide them with the assistance they need to succeed in their start-up businesses. SYB training can be integrated well with the establishment of business incubators, as both increase the chances of success for small businesses, thus reducing the failure rate.

## VI. THE ADAPTATION AND REPLICATION OF BUSINESS INCUBATORS IN WESTERN ASIA

by  
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### Introduction

The locus of attention for economic development planning has shifted from large multinational firms to small and medium-sized enterprises. Such enterprises are recognized as the generators of new products and new processes, employment, revenues, profits and wealth, but they are also characterized by high failure rates. Economic development professionals are now seeking better instruments to promote small-enterprise creation and growth.

Business incubators have been set up to support the emergence and development of small enterprises. However, little is known about the cost and effectiveness of this tool, particularly outside the United States and Europe. A recent study has found that the performance of incubators in seven industrializing countries varies widely, but on the average they are effective in developing new enterprises (as measured by jobs created) and in helping the enterprises achieve sustainability without ongoing subsidies. These incubators have been adapted to suit local conditions, but they also share a number of characteristics: work spaces are enriched by business development support, and financing and assistance are often provided to the incubated enterprises.

Adapting this modality to individual countries remains a challenge. Part of the adaptation process involves recognizing the strengths and weaknesses of family-focused enterprises; families are willing to support initial efforts, but they also constrain growth (the transition from a smaller to a larger enterprise). Further, for small enterprises to achieve their potential, the traditional independence of the small business must yield to the integrative requirements of the entrepreneurial venture.

Incubators are being developed in Western Asia; one pilot incubator programme is enrolling its first tenants in the Nile Delta under the auspices of the Social Fund for Development in Egypt. For this and other programmes to be effective, a four-pronged approach is necessary:

- (a) *Design and operation.* Identifying the key factors which determine the ultimate success of an incubator system;
- (b) *Analysis and benchmarking.* Characterizing existing operations in order to understand and predict success or failure;
- (c) *Strengthened institutional capabilities.* Determining which support systems are required to permit incubators to achieve their potential;
- (d) *Strategic partnerships.* Creating links to established organizations to enhance incubators and their clients' businesses.

Further research must be undertaken to determine the conditions required for the most effective use of incubators in the context of other development mechanisms.

## A. BACKGROUND

The public and the private sectors are both interested in business development and economic growth, but from different perspectives. Governments and non-governmental organizations (NGOs) generally focus on issues of industrial performance and job creation, while enterprises are concerned with sales, revenues and profits. Small enterprises are acknowledged to be a major source of jobs, innovations and income. They are being increasingly recognized as the prime ingredient for building a dynamic economy, with knowledge-based enterprises receiving special attention for their ability to become significant players on the global stage.

To establish an environment which facilitates the creation and growth of new enterprises, action should be taken on a host of interrelated issues; for example, investment, education and trade policies should be developed, and public-private partnerships encouraged within countries and across borders. A number of industrializing countries now have the basic technical and social infrastructure, human resources and financing mechanisms necessary to enter the global arena. In many countries in Western Asia, entrepreneurial businesses can establish strong positions in niche markets by providing innovative products and services. Incubators can offer support to enhance opportunities for entrepreneurial survival and growth.

### 1. *Trends in technology innovation and venture creation*

#### (a) *Technological innovation*

For the past 150 years, technological innovation was the first wave of economic growth. In fields ranging from agriculture to industry, technologies for new products and processes have raised living standards by improving the nutrition, the health and the quality of life of many (though not all) on the planet.

With the computing and communications revolution of the last decade, traditional production factors are giving way to a new paradigm characterized by informal networking to mobilize resources, time-based competition, total quality management, and prompt, flexible response to change. Low wages are no longer a significant advantage, particularly if they are accompanied by low productivity.

For many countries in Western Asia, the 1980s represented a lost decade. According to a perceptive economist, "the Arabs have weak manufacturing structures, high illiteracy rates, limited industrial skills, poor savings ratios, small manufacturing exports, inadequate R&D, high indebtedness, small companies with limited experience, limited regional cooperation and trade, heavy dependence on Government, inefficient bureaucracies, limited private-sector participation, and above all, a very unfavourable and hostile international economic environment. . . The framework for an industrial strategy calls for cooperative efforts among all participants in the economy and among Arab States. Regional cooperation is vital. Synergies among industries are critical. Moving into higher value-added activities is imperative. Knowledge-based industries are key activities to consider for the future. Networks and linkages must be forged among firms and States".<sup>40</sup>

While the transformation from State-centred to market-oriented development opens up enormous opportunities and options, it also causes severe short-term hardships. In order to survive and prosper in these changing times, nations and enterprises need enlightened government policies, good technical infrastructure and strong cultural roots.

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<sup>40</sup> A.A. Kubursi, "A framework for an industrial strategy for the Arabs for the next century", paper presented at the Expert Group Meeting on Industrial Strategies and Policies [and] Managerial and Entrepreneurial Skills under Conditions of Global and Regional Change, Bahrain, 20-23 November 1995.

(b) *New venture creation*

The second global wave relates to the increasingly dominant role being played by small enterprises in any country's economy. In terms of the animal nomenclature of elephants (large and lumbering corporations), gazelles (nimble and quick entrepreneurial ventures), and mice (micro and informal businesses), clearly the mice have proliferated. In many countries, small enterprises constitute 99% of the total number of firms and are responsible for over 50% of employment. Such enterprises are typically active in trade, in food-processing and in the manufacture of metal products, textiles, chemicals, leather products, and garments.

Small enterprises have the advantages of lower capital intensity, local resource utilization, efficient networking, niche products and markets, and responsiveness to changing demand. However, the operation of most small enterprises at low technological levels is a serious constraint. Such enterprises lack the management skills to identify and/or address their technical problems and generally have insufficient finances to pay for information, consulting, research or training services.

2. *Current status*

The growing realization of both the importance of small enterprises to economic growth and the severe constraints under which they operate has given rise to new forms of support for starting and sustaining new ventures. One such recent innovation is the business incubator. A study of incubator experiences in seven industrializing countries, sponsored by the United Nations Development Programme (UNDP), the United Nations Industrial Development Organization (UNIDO) and the Organization of American States (OAS), provides some preliminary answers<sup>41</sup> to several questions that have been raised about entrepreneurial business development and the incubation modality (see table 1).

TABLE 1. THE MAIN FEATURES OF INDUSTRIALIZING COUNTRY INCUBATORS

Country	No. of incubators (sample size, total)	Building (square metres)		Tenant firms	Tenant firm employees	Average investment (US dollars)
		Gross	Net			
All (median figures for columns 2-6)	142	2 500	1 521	12	94	236 000
Brazil	16	1 225	600	10	43	..
China	32	6 100	3 036	22	318	78 000
Czech Republic	17	..	2 230	16	105	175 000
Mexico	6	1 550	420	7	98	468 000
Nigeria	2	2 700	1 860	7	44	864 000
Poland	19	1 603	1 593	11	58	..
Turkey	4	2 086	974	19	82	441 000

Note: Two dots (..) indicate that data are not available.

<sup>41</sup> R. Lalkaka and J. Bishop, *Business Incubators in Economic Development: an Initial Assessment in Industrializing Countries* (New York: UNDP, 1996).



Incubator experiences in countries ranging from small to very large and from industrializing to industrialized vary so widely that few absolute rules emerge, but some tentative conclusions can be drawn. Neither the size of an incubator nor its sponsorship appears to be associated with its financial self-sustainability. Table 2 reveals that the incubator experience in industrializing countries is similar to that of the United States in terms of numbers of graduates and discontinued businesses, the size of operations, and the level of programme support. The industrializing country incubators are newer and the reported cost of development is modest. Some significant differences provide a contribution to the global incubation modality. For instance, two thirds of the industrializing country incubators report a technology orientation, compared with one third of those in the United States. Incubator financing ranges from heavy government agency support (Turkey) to financing by private chambers of industry (Brazil). The incubator management in China provides some debt and equity financing for tenant firms.

TABLE 2. INCUBATORS IN INDUSTRIALIZING COUNTRIES AND IN THE UNITED STATES

Incubator status	Industrializing countries	United States
Years of operation		
Less than seven years	94	54
Seven years or more	6	46
Gross building area		
Median sq m	2 500	..
Mean sq m	3 900	5 500
Tenants per incubator (median)	12	10
Employees per tenant (median)	7	10
Graduates per incubator (median)	8	8.5
Discontinued businesses per incubator (median)	2.5	3

Note: Two dots (..) indicate that data are not available.

Given the varied national policy frameworks, adaptation to local needs and opportunities, commitment of sponsors, and skills of management teams, the wide variations in incubator performance among countries is not surprising. Nevertheless, there is a certain commonality in the approaches taken and in the results achieved. While many questions remain unanswered, this initial assessment serves as a contribution to the characterization of incubators and their effectiveness as agents of economic development.

## B. ADAPTING BUSINESS INCUBATOR SYSTEMS

Based on the experiences of various countries and the results of the incubator assessment study, it is possible to identify the core characteristics of an effective incubator. These basic features may later be adapted to suit particular local and regional conditions.

### 1. *Incubator characteristics*

The distinguishing characteristics of a business incubator can be summarized as follows:

- (a) A managed work space provides shared facilities, focused advisory services and interaction among tenants, with affordable rents and fees;

- (b) There is a defined selection process for entry into the incubator and flexible exit requirements;
- (c) A small management team with core competencies provides early diagnosis, treatment and/or referrals for business threats and opportunities by tapping a comprehensive network of professionals and friends in the local community;
- (d) The business incubator itself runs as a business, with the prospect of becoming financially self-supporting;
- (e) Initial support is almost always provided by Governments or NGOs in the form of planning and training, low-cost (or no-cost) building and renovation, equipment and initial operating subsidies, until rents and fees from tenants match operating expenses;
- (f) In addition to nurturing its own tenants, the incubator can provide outreach assistance to external businesses on their own premises (if it has no tenants within its walls to benefit from the interaction and focused attention, then it lacks the defining features of an incubator and is more like a traditional small business development centre).

Many incubators provide targeted support for technology-based businesses (sometimes referred to as “knowledge-based” enterprises). While this is more common in developed countries, many industrializing countries are adopting a technology theme as well. This orientation provides self-generated employment in firms led by local (or expatriate) scientists and engineers, while also enabling society to reap rewards from investments in universities and research institutes.

The incubator not only helps to create new businesses, it also more than trebles their chances of survival. There may be, say, 20 surviving businesses with 200 workers within the incubator, but the real benefits come from the companies that leave and grow (some incubators have sustainable graduation rates of 20-30% per year). These flourishing businesses stimulate economic activity, with collateral growth and employment for both suppliers and customers. Significant tertiary effects come from the incubator’s catalytic role in developing entrepreneurial skills, modifying the culture of university-research-industry relations, and influencing national policies towards small private businesses (a major role in former centrally planned economies such as Uzbekistan).

Specific instances of incubator success seem to have a common denominator of broad government support for the development of small enterprises. The Czech Republic has implemented almost a dozen SME support programmes, providing the basis for incubator success; some 440 businesses are reported to have received support over the last few years. Similarly, Turkish incubators operate in an environment enriched by government programmes designed to help support the evolution of a strong, vibrant technology-based SME sector.

## *2. Incubator assessment*

No two areas seem less well defined than the appropriate objectives for incubators and measures of performance. The major stakeholders must agree on clear objectives for an incubator programme as the basis for developing the strategy, support tactics and operational services. Measures of performance force the incubator staff to focus clearly on the objectives; cavalierly developed and carelessly applied measures provide neither a standard for operation nor a basis for assessing effectiveness.

(a) *Incubator objectives*

A common government goal is employment. However, the incubator must be viewed as a process where “traditional evaluation criteria such as cost-per-job ratios are inappropriate.” From the perspective of the tenant, four critical requirements can serve as goals to assess incubation programmes:<sup>42</sup>

- Develop credibility.
- Solve problems faster.
- Shorten the learning curve.
- Provide access to the business network.

Within the context of these general goals, specific programmes have individually articulated objectives. For instance, according to the *1992 State of the Industry Report* of the National Business Incubator Association (NBIA), the primary objective of American incubators is to promote economic development (91%), including diversification of the local economy (61%); other priorities include the commercialization of research (33%), the transfer of technology (23%), generating income for the sponsoring organization (20%) and contributing to neighbourhood revitalization (12%).

(b) *Measures of performance*

Measures of performance for incubators cover three classifications:<sup>43</sup>

- (i) *Efficiency of incubator operations*: the number of firms assisted and the different services provided; the number of tenants in the incubator and employees per tenant; tenant occupancy and exit rates; and an evaluation, by tenants, of management and services;
- (ii) *Viability of the incubator*: in comparison with business plans, projections for actual income per year, actual expenses per year, years to break even, and years to show cumulative surplus; the match of tenants to entry and exit criteria; the enhancement of real estate value; the number of graduating and failed firms over a given number of years; and an evaluation, by sponsors, of incubator effectiveness;
- (iii) *Social and economic impact*: jobs created directly and indirectly by incubator tenants; the added value of tenant firms; the level of research commercialization; the utilization of university/laboratory staff and services; specific services provided to disadvantaged groups; the increase in the tax base; the growth of regional economic activity; and an evaluation by the community of the incubator's impact.

The subject of assessment criteria may be considered within the context of practices in the selected industrializing countries mentioned above. Measures such as those listed in table 3 have to be applied when the tenant-businesses graduate from the incubator (three years from start-up, for instance) and again when they have reached a certain level of maturity (three or more years after graduation).

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<sup>42</sup> Raymond W. Smilor and Michael Doud Gill, Jr., *The New Business Incubator: Linking Talent, Technology, Capital and Know-How*, (Lexington, Mass., Lexington Books, 1986), p. 36.

<sup>43</sup> Rustam Lalkaka, “Incubating small businesses in economies in transition”, vol. 5, No. 3 (September 1994), p. 17.

TABLE 3. STANDARD MEASURES OF PERFORMANCE IN SELECTED INDUSTRIALIZING COUNTRIES

Tenants
- Ventures created
- Direct jobs (and other, indirect employment)
- Annual business revenues
Community
- Sustainability of the incubator (income after expenses)
- Entrepreneurial culture, university-industry linkages
- Other semi-quantifiable benefits

According to the latest NBIA survey, the three most important measures of incubator performance are jobs created, clients served and graduates.<sup>44</sup>

### 3. *Basic requirements for incubator operation and adaptation*

Incubators have proven their ability to support business development in both industrialized and industrializing countries. Greater attention must now be given to adapting the incubation concept to particular circumstances; individual incubators must have the ability to respond to a wide range of local opportunities and requirements and to accommodate the local constraints and culture. The challenge is to understand the essence of the incubation process so that adaptations do not compromise its defining characteristics and effectiveness.

#### (a) *An agribusiness focus*

In rural areas, entrepreneurship promotion may be directed towards the support of food processing businesses as a focus for local economic development. There are significant potential benefits related to the creation of such value-added production activities, including new employment opportunities outside of the central cities and higher incomes for farmers as a result of the increased demand for higher-value crops. The lower population density, lack of infrastructure and limited educational support make an incubator both more needed and more difficult to implement in such areas. For the Western Asian States, a community incubator model must be developed which incorporates a central “hub” facility offering core services and an outreach programme that can be administered to outlying areas through satellite centres.

#### (b) *“Out-wall” tenants*

Offering incubator-based services to non-tenant (affiliate) entrepreneurs who conduct business on their own, non-incubated premises is an effective way to increase the reach and enhance the financial sustainability of an incubator. However, any attempt to move away from the incubator facility and develop what is mainly a non-tenant process ignores the lessons learned from traditional programmes. Without the daily personal contact afforded by its professional staff, an incubator’s early diagnosis capabilities, proactive business support activities and tenant interactions are seriously compromised.

<sup>44</sup> Dinah Adkins, “A decade of success” (Athens, Ohio: National Business Incubation Association, 1996), p. 15.

(c) *Cost per job*

While important to policy makers, the calculation of cost per job is complicated by the near impossibility of identifying or quantifying the exact role and contribution(s) of each of a wide variety of support structures involved in the development of an entrepreneurial environment. This task is made even more difficult by the fact that the major job growth comes after the tenant has left the incubator. The associated programmes are so diverse—ranging from education and training to small-business tax incentives and loan programmes—that simple cost and benefit calculations become quite complicated. Further, there are benefits of skill development and changes in university-industry linkage cultures which are difficult to quantify. The intensive support afforded by the incubation process can result in what appears to be a high cost per job. However, focusing on businesses with value-added product or process technologies increases the potential for significant growth, which can dramatically lower the cost per job.

(d) *Entrepreneurial training*

At best, traditional schooling provides a basis for employment in established industries or Government, but it may fail to instil the thought processes or provide the tools necessary for the development of vibrant and inventive entrepreneurial activities. Entrepreneurial training concentrates on developing more open modes of thought and behaviour. Eschewing the “specialization” of the traditional corporate approach, entrepreneurial training is more intensive and extensive, focusing on the process of aggregating human, fiscal and technical resources to create a new enterprise. Techniques have been developed to identify entrepreneurs, sharpen their skills and orient them toward success.

(e) *Management skills*

Beyond basic entrepreneurial training, a variety of increasingly complex management skills must be mastered to turn a newly hatched venture into a major enterprise. Technical and administrative specialization is needed to facilitate the transformation of a small, often family-owned partnership into a modern corporate structure with external equity and debt financing.

(f) *Financing*

Early-stage businesses often require financing from external sources. However, because they are considered high risks, they must pay significant premiums. Further, the fixed costs of evaluation and processing are quite high in proportion to the small initial capital needs of these enterprises. The successful implementation of an incubator strategy calls for a full continuum of readily available financing vehicles (both debt and equity), and the ability of the incubation process to deliver the desired results is seriously imperilled by gaps in this continuum or by the imposition of high costs or administrative delays.

A variety of debt instruments is required in addition to traditional asset-based financing. From long-term equipment leasing to short-term accounts receivable factoring and purchase-order financing, the needs of growing enterprises for both fixed and working capital must be met to enable businesses to achieve their economic potential.

Both incubators and incubatees need sources of long-term capital. Debt capital requires long-term maturities so that businesses can meet their investment needs, while equity capital requires well-functioning private and public markets for exit. There has been some experimentation with providing equity financing that is “bought out” through the return of a fixed percentage of revenues, an option which offers valuable flexibility.

(g) *Government policy*

Government policies frequently reflect an implicit bias that constrains the development of small enterprises into larger and more viable firms. The technical labyrinth of administrative rules and regulations, as well as reporting requirements that necessitate the employment of a large staff, and other such factors force small enterprises to operate in the shadows of the economy. Carefully crafted and sensibly administered government policies can protect the interests of society without constraining the ability of small enterprises to contribute to the economic development and well-being of that same society.

*Summary*

The incubation process incorporates certain essential characteristics which allow it to function effectively under a variety of political and economic systems. There are times, however, when business incubators have to be modified in response to the needs and opportunities of various countries.

C. SPECIAL INCUBATION ISSUES IN WESTERN ASIA

The Arab States appear to face common and unique challenges in creating a support structure for developing of new ventures with high growth potential.

1. *Special cultural factors*

Strong family structures both support and constrain the development of enterprises capable of functioning in what is increasingly a global market. Full participation either in the global market or in areas of technological complexity requires financial capital which is out of the reach of all but the wealthiest families. Meeting the challenges of business development frequently requires management expertise and equity financing which are beyond the capabilities of even the extended family structure. Traditions of self-sufficiency do not provide a very good basis for the entrepreneurial agglomeration of talent and resources required to compete in the technologically complex world of modern enterprises.

Concern for the protection of intellectual property has resulted in the development of an elaborate web of trade secrets, a situation which imperils the development of a robust competitive structure that compels its participants to achieve their potential in the areas of innovation, cost and value to the customer.

Egalitarian inheritance traditions result in the micronization of developed wealth in fields ranging from agriculture to industry. While perhaps desirable as a social policy to reduce the concentration of wealth, such traditions also reduce the ability of enterprises to amass the resources necessary to compete in the global market.

2. *Incubator initiatives*

There are a number of cases which illustrate the potential for achieving success with the incubator modality in Western Asia.

(a) *Egypt*

The development of a successful micro lending programme is one example of a major initiative to attack persistent unemployment and underemployment in a country struggling to provide a smooth and reasonable transition from decades of central planning to free market participation. Among the programmes developed by the Social Fund for Development are two pilot incubators in the Nile communities of el-

Mansoura and Tala. Addressing the challenges of supporting economic development and job creation, these facilities are expected to draw on indigenous metalworking and agribusiness capabilities in el-Mansoura and Tala respectively. Business plans were developed for both facilities in 1994 and were nearing implementation as of 1996.

(b) *Lebanon*

A resilient economic system is emerging from the devastation caused by a decade of conflict. The project to rebuild the central business district of Beirut represents a unique public-private partnership to overcome both devastation and adversity. Lebanon Invest (a US\$ 100 million investment fund), the Audi Banque, and the Middle East Capital Group provide significant funding for new entrepreneurial ventures as well as restructured existing operations. Two private incubators being developed in Lebanon by a private American firm, Technology Parks International, are now in the early planning stages—proof of emerging support for new entrepreneurial ventures which contribute to the technological base. With the potential to link up with a private industrial park under development and an emerging university programme, these incubators promise to contribute to both national and international efforts to restructure the country's economy.

(c) *Syrian Arab Republic*

Since 1993, a pilot technology business incubator has been planned in Damascus as part of the Government's effort to stimulate private-sector development, foreign investment and technology commercialization. A unique partnership has been envisaged between the Chamber of Industry in Damascus and the country's educational/research system, represented by the Higher Institute for Applied Science and Technology. The project has made only halting progress, however, because the contributions expected from both the Chamber and the Institute have not materialized; those who were the strongest proponents have either moved on to other activities or retired, and the Government has not given this type of activity sufficient priority in the face of other emergent needs.

(d) *Palestine*

Given the economic turmoil in the occupied territories, the progress that has been made in establishing business incubators in Gaza City and the West Bank city of Nablus is truly remarkable. The Nablus incubator has a strong sponsor in An-Najah National University, which has earmarked building space for initial operations and larger premises in 1999 at the College of Technology (under construction). In Gaza, the prime mover is the Development Resource Centre, and there is a possibility of linkage to the border industrial estate. Business plans were prepared for both incubators with the support of ESCWA, the Friedrich Ebert Stiftung, the Welfare Association and UNDP. At both locations, most of the momentum generated earlier has been lost owing to the political situation and the delays in mobilizing financial resources.

*Summary*

While plans have been put in place in many Western Asian countries, the lack of a single functioning incubator anywhere in the region raises concerns regarding the potential for this modality and the necessary government support. Incubators can make a substantial contribution to economic development in developing countries—note the positive results documented in countries such as Brazil and China. Therefore, the key obstacles to progress in the Arab context need to be better understood and remedial actions formulated.

Table 4 summarizes some of the key obstacles being encountered in establishing, adapting and replicating business incubators in industrializing countries.

TABLE 4. KEY INCUBATOR OBSTACLES IN INDUSTRIALIZING COUNTRIES

Problem	Action
<b>Macroeconomic conditions</b>	
<ul style="list-style-type: none"> <li>- Political pressures in site selection</li> <li>- Bureaucratic regulation inhibiting new businesses</li> <li>- Political and economic instability</li> </ul>	<ul style="list-style-type: none"> <li>- Independent, non-national site analysis</li> <li>- Regulatory reform as part of an economic development programme</li> <li>- Departisanization of SME programme</li> </ul>
<b>Finance</b>	
<ul style="list-style-type: none"> <li>- Foreign exchange/budgetary constraints</li> <li>- Overall distrust of government agencies</li> <li>- Lack of finance for tenants</li> </ul>	<ul style="list-style-type: none"> <li>- Private investment incentives</li> <li>- Private sponsorship and operation</li> <li>- Development of seed venture funds</li> </ul>
<b>Inadequate sponsors</b>	
<ul style="list-style-type: none"> <li>- Weak private-sector participation</li> <li>- Inadequate "culture" of university-business partnerships</li> <li>- State support comes with strings attached</li> </ul>	<ul style="list-style-type: none"> <li>- Mobilization of key business leaders</li> <li>- Development of alumni organizations and university centres for business</li> <li>- Strong private business support</li> </ul>
<b>Weak human resources</b>	
<ul style="list-style-type: none"> <li>- Lack of "entrepreneurial" incubator managers</li> <li>- "Nascent" entrepreneurial climate</li> <li>- Need for extensive entrepreneurial development courses and "pre-incubation"</li> <li>- Special needs of youth and women entrepreneurs</li> </ul>	<ul style="list-style-type: none"> <li>- Establish leadership-loan programmes for aggressive private-industry middle-managers</li> <li>- Recruit successful expatriates</li> <li>- Development of Junior Achievement programmes at the high school and college levels</li> <li>- Training programmes for incubator managers, and targeted measures of performance</li> </ul>
<b>Operational constraints</b>	
<ul style="list-style-type: none"> <li>- Excessive secrecy on the part of tenants</li> <li>- Unwillingness/inability to pay rental and service fees</li> <li>- Pressure to use university staff member as incubator manager</li> <li>- Preference for "out-wall" versus "in-wall" incubator</li> <li>- Hardships in exiting from incubator</li> <li>- Expansion/replication</li> <li>- Failure to formulate a business plan</li> <li>- Political decision made to expand without transferring lessons from pilot</li> </ul>	<ul style="list-style-type: none"> <li>- Develop confidence-building programmes</li> <li>- Independent venture funds and investment clubs</li> <li>- Empower a strong, independent incubator board of directors</li> <li>- Develop independent funding to enhance affordability and market attractiveness</li> <li>- Post-incubation services</li> <li>- Careful planning and benchmarking to establish basis for expansion/replication</li> <li>- Develop local funding or in kind support</li> <li>- Strong, independent, business-dominated board of directors</li> </ul>

#### D. STRATEGY FOR REPLICATION

The implementation of an incubation system can constitute a strategic component of national SME programmes. Such programmes aim at enhancing the contribution of small businesses to development, focusing on the production of high-quality goods and services by profitable enterprises in growing markets. A successful incubator programme requires the following;

- (a) Effective SME-support policies and institutions covering design, production and marketing aspects;
- (b) Continuous upgrading of the skills, experience and attitudes of the total enterprise;
- (c) Strong partnerships among the tenants, the incubator facility and other service agencies, both at home and abroad.



Cooperation across national boundaries provides enterprises with the opportunity to exchange experiences and to penetrate markets that would not be accessible under a more parochial system.

1. *Main elements of an incubation support programme*

The incubation support programme proposed here is based on the following strategic elements:<sup>45</sup>

- (a) *Preparation, design and operation of incubation systems*
- (i) For new projects, the requirements would include the full range of steps listed in the next subsection on determinants of success (from preliminary surveys to the development of macroeconomic policy structures);
  - (ii) For existing projects, services would cover the sourcing of technology partners for higher-value-added products, diagnostic surveys and technical advice to improve productivity and quality, investment promotion, marketing and management training, and innovation strategies.

Possible partners: bilateral donors, UNDP, UNIDO, the United Nations Educational, Scientific and Cultural Organization (UNESCO), the International Labour Organization (ILO), UNIFEM, United Nations regional economic commissions.

- (b) *Analysis, benchmarking and special programmes*
- (i) Characterizing the operations of existing (and discontinued) incubators;
  - (ii) Developing programmes to test hypotheses related to alternative operating paradigms to include tailoring programmes to specific local needs and opportunities;
  - (iii) Developing new “products” such as international business incubators (now requested by China) and rural incubators (for poverty alleviation).
- (c) *Strengthening the institutional capabilities of the entire incubation system*
- (i) Initiating a publications programme including the UNDP-UNIDO-OAS business incubator assessment;
  - (ii) Publishing good-practice manuals based on international project experiences;
  - (iii) Developing dedicated software for incubator businesses;
  - (iv) Establishing research programmes (for linking topics for research, verified by the incubator assessment study);
  - (v) Setting up innovative business arrangements and systems such as the franchising of incubators and linkages to larger enterprises;

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<sup>45</sup> Business and Technology Development Strategies, “Development of Business Incubators” (New York: UNIDO, December 1995).

- (vi) Facilitating the development and accreditation of consultants and service providers;
- (vii) Publishing a quarterly newsletter to share experiences and set challenges.

Possible partners: EBN, NBIA, the German Association of Business and Technology Centres (ADT), UNDP, UNIDO, bilateral/multilateral agencies, private enterprises.

- (d) *Partnerships among the key players in incubation programmes to encourage the exchange of information, experiences and commercial opportunities*
  - (i) Promoting private-public partnerships;
  - (ii) Facilitating subcontracting exchanges between tenant companies and larger enterprises;
  - (iii) Setting up databases and information networks to facilitate access to technology, expertise and finance;
  - (iv) Forming incubator associations at the national and regional levels and linking them internationally;
  - (v) Publishing directories of incubators, tenants and service providers;
  - (vi) Establishing incubator networks in developing countries and economies in transition.

Possible partners: EBN, NBIA, ADT

The key services and activities proposed above are based on current demands; others can be expected to emerge as the programme matures.

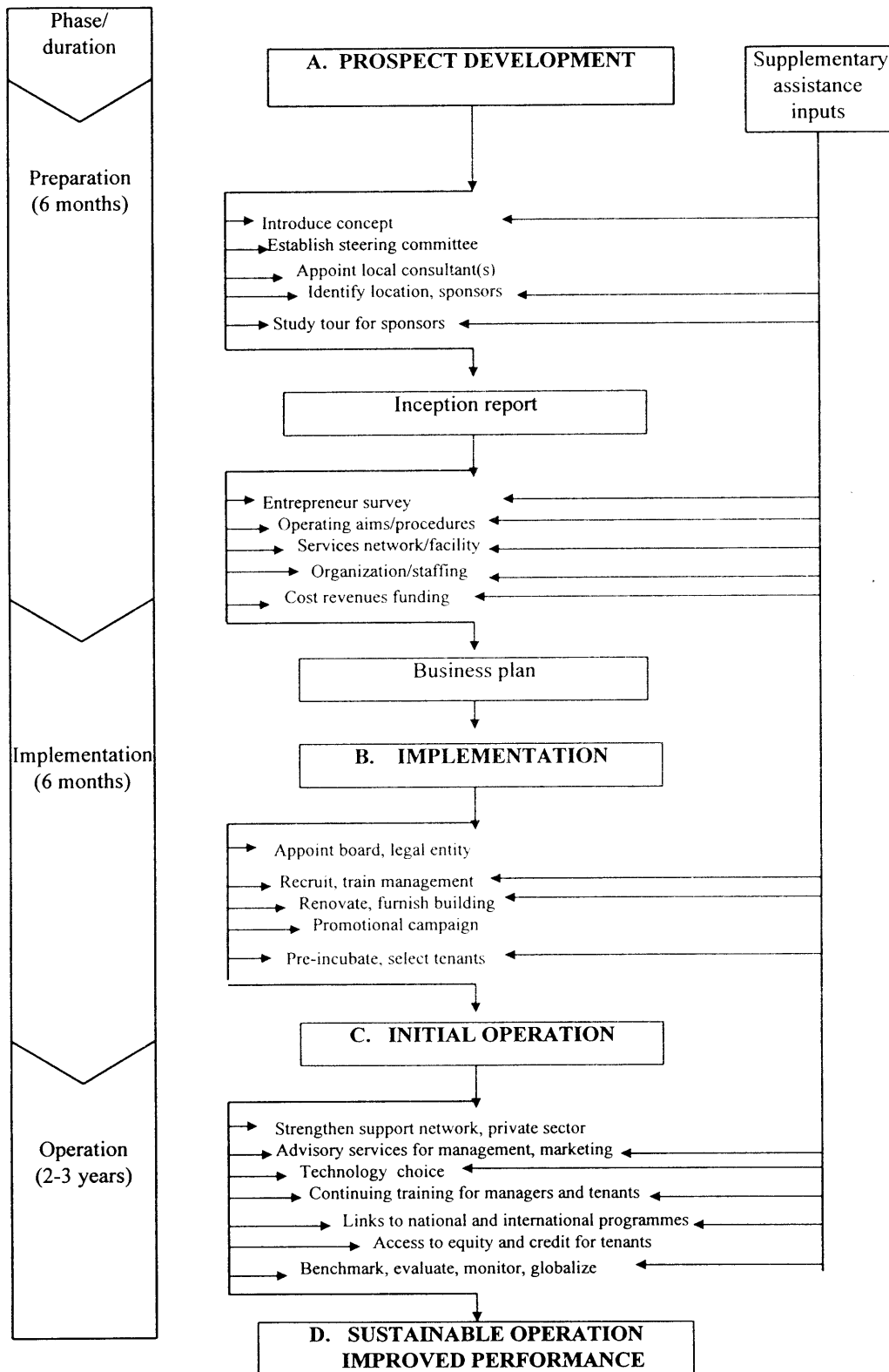
## *2. Determinants of success*

From the present authors' own experiences (consulting assignments related to the establishment of incubator programmes in some 20 countries) and the seven country studies in the business incubator assessment, some essential requirements for successful performance have emerged which cover the full progression of activities, from preparation to implementation, initial operations, monitoring and globalization:

- (a) The preparatory process requires:
  - (i) Reconnaissance surveys of selected locations, during which potential stakeholders should be briefed frankly on the probable benefits and costs of starting and sustaining an incubator, including their long-term responsibilities;
  - (ii) Local consultants who are familiar with local conditions;
  - (iii) Careful identification of strong (existing) sponsor groups to take responsibility for local implementation—including at least one that can actively champion the incubator cause;
  - (iv) Determination of feasibility, particularly analyses of the entrepreneurial pool of potential tenants, linkages to universities, the support services network, the availability of suitable (vacant) building space, and financial estimates;

- (v) A commitment from State agencies at the federal, city and provincial levels to provide policy and financial support for initial operations and to invest in facility acquisition and renovation.
- (b) The implementation process requires:
- (i) The establishment of a strong managing board with an advisory structure and the participation of this board in the development of incubator operations;
  - (ii) The creation of an appropriate legal and organizational structure for the incubator;
  - (iii) Prudent capital expenditures on building renovation and furnishings;
  - (iv) The careful selection, appropriate training (at home and abroad) and fair remuneration of the incubator manager and team;
  - (v) The implementation of a screening process to determine the technical, business and market potential of tenants;
  - (vi) A promotional campaign to mobilize community support.
- (c) The start of initial operations requires:
- (i) Access to equity and debt credit so that tenants can pay for incubator services and cover their other development needs;
  - (ii) The involvement of the private sector, through subcontracting and other business arrangements;
  - (iii) Continuing programmes for improving the management skills of tenants and incubator staff;
  - (iv) Links to other SME programmes in the country;
  - (v) The exchange of information and experiences through national and regional incubator associations and international networks.
- (d) Ensuring the sustainability of incubator operations calls for:
- (i) The proactive development of local, regional and international business opportunities;
  - (ii) Imaginative ways of developing incubator revenues, for example, through corporate memberships, barter arrangements, fees for securing finance, and equity or royalty positions in tenant companies;

## Assistance inputs in the establishment of an incubator



- (iii) An objective evaluation of the incubator experience, and replication as warranted by opportunities;
- (iv) Political stability, as well as a macroeconomic policy structure and regulatory framework that encourage entrepreneurial activity and stimulate the market for goods and services.

Experience confirms that in countries with a generally supportive environment, the preparatory and implementation steps, outlined in items (a) and (b) above, take about six months each; however, an additional three or four years may be needed to establish a successful, self-sustaining incubator, detailed in steps (c) and (d) (see figure). Without patient and continuing support from State and local governments throughout the entire programme cycle, the incubator may find it difficult to develop a sustainable level of performance that will allow it to make a positive contribution to economic development. Good international technical assistance can enhance the effectiveness of many activities, particularly those related to business planning preparation, human resources development and incubator operating practices.

## *2. Preparation, design, and initial operation*

The process of successful incubator development is both an art and a science and requires significant investments of time, talent and effort. Thoughtful preparation in the early stages can minimize the subsequent costs and contribute to the success of the programme. One of the most critical aspects of incubator development is a general acknowledgment of how important the essentials of the entrepreneurial process are in the context of local culture and conditions.

A feasibility study combined with a business planning process should help to determine the main design parameters. Careful estimation of the cost and revenues of the incubator is essential to ensure sufficient capital for its establishment and early operation. A shortage of fixed and working capital will divert management attention from the development of tenant services to institutional fund raising, setting the stage for the failure of the incubation concept. During the critical early months of operation, developing links to sources of essential services and finance establishes the basis for subsequent incubator success. The incorporation of the incubator and its tenants into the warp and woof of the business community is another essential feature of the concept. It is prudent to start with two or three pilot incubators, monitor their operations and then expand the programme, drawing upon the lessons learned.

## *3. Manager Selection and Training*

The importance of the manager and staff to the success of the incubator is well established but difficult to quantify. The manager must combine maturity with youthful enthusiasm, and business skills with an openness to new concepts. The ideal manager has sufficient business experience to diagnose emerging problems and to provide immediate "first aid" in connection with a full range of business functions. Obviously the manager cannot fulfil every expectation, so his efforts must be supported by networks of service providers, consultants and institutional linkages.

### *(a) Local consultants*

A new small business cannot possibly bring in the wide range of talent it needs to achieve its potential. Numerous specialized skills (including research, legal, recruiting, accounting and other types of expertise) are required to support product and process development and commercialization. To the extent that the necessary specialists exist, they must be incorporated and supported as part of the economic development programme. Where there are gaps, the incubator management must organize innovative programmes to support the development of these specialists. The provision of such services at nominal rates

or by individuals associated with (or resident in) the incubator simplifies the process. However, such well-meaning programmes run the risk of allowing the financial structure of the new businesses to be built on unrealistically low costs, and the development of the essential skills of supplier evaluation and selection are postponed in the business development process.

(b) *Training kits*

Training kits are being put together to support the development of incubators and their tenants. Such kits provide the essential requirements while reducing the costs of training. In addition to allowing for the training of more individuals, such programmes provide for a review of professional materials to reinforce the learning later in the development process.

(c) *Training centres in Turkey and/or China*

The establishment of formal training centres in Turkey and/or China would provide the opportunity to develop programmes that are more suited to industrializing country incubators and would also reduce the costs of training (as travel to faraway places such as Europe or the United States would no longer be necessary). Such centres would have the additional advantage of catering to the needs and concerns of a focused market.

#### 4. *The exchange of experiences*

The development of the incubation process can be enhanced by the exchange of experiences between incubator management teams. Such exchanges form the basis for establishing benchmarking to evaluate effectiveness and for the mutual discussion of alternative approaches to common problems and opportunities, building the basis for a stronger programme of incubation support beyond building, city, State and regional boundaries.

(a) *Director of incubators*

An incubator directory and/or electronic database can provide a fundamental record of the incubation process and a basis for performance evaluation. Even more important, such a directory constitutes an essential reference for schools and libraries on the nature and extent of the local incubation process. It also serves an important marketing function by allowing entrepreneurs (quite easily) to evaluate alternative incubation centres as sites for the development of their enterprises.

(b) *Benchmarking of incubator performance*

Benchmarking provides a means of comparing the performance and standards of a single incubator with those of other incubators, on a regular basis. The benchmarking process allows incubator performance to be evaluated and the effectiveness of the modality to be improved.

(c) *National and regional networks*

National and regional networks contain a number of common elements which facilitate the development of linkages between incubation professionals; frequent exchanges, via electronic mail (e-mail) and the post, supplement annual meetings. These networks provide opportunities for mutual instruction and learning and for comparing approaches with international observers.

(d) *International linkages*

The role, both current and potential, of the United Nations development system, is conditioned by the process of incubator implementation in developing countries and by emerging trends on the demand side. Importantly, the future activities of the United Nations in this field will depend on its comparative advantage in relation to the other service providers on the supply side.

5. *International technical cooperation*

The United States Agency for International Development (USAID) has an interest in supporting business incubators in specific countries as part of its small-enterprise promotion, credit and entrepreneurial development programmes. Incubator initiatives are being pursued in the wake of political restructuring in South Africa. Small business assistance centres are being set up in Poland. A number of incubators (business centres) are being supported in the former Soviet Union to help American businesses gain access to its markets. The Enterprise Funds in the former Soviet Union are providing incubator-like support; one example is the development of business planning professionalism in Uzbekistan by the Central Asian-American Enterprise Fund in concert with the Eurasia Foundation. The United States Information Agency (USIA) has supported an incubator training programme for the Baltic States at the Rutgers incubator in New Jersey. Various American foundations linked to ethnic communities have also been active in Poland and the Ukraine. Friedrich Ebert Stiftung (Germany) has supported incubator development in Palestine and the Syrian Arab Republic. The Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ), also of Germany, has well-developed methodologies for small-enterprise promotion and development. In Uzbekistan, the GTZ training programme and the UNIDO-executed incubators have established contact for collaboration. German-Polish collaboration within the Innovation Centres in Eastern and Central Europe (ICECE) Working Group has resulted in the creation of several cross-border innovation centres.

The Turkish International Cooperation Agency (TICA) has started an incubator in Kyrgyzstan, where Turkish small businesses have formed joint ventures with local entrepreneurs. TICA has also expressed interest in collaborating with the United Nations on an additional incubator in Bukhara, Uzbekistan; this would be a model arrangement, combining Turkey's geopolitical and business interests with the Government's desire to stimulate private small enterprise development.

In the past, the British Council has provided training opportunities and experts for UNIDO incubator projects in Turkey and Uzbekistan. The Council's English language programmes are of interest to both incubator staff and tenants in non-English-speaking countries. In Poland, the British Know-How Fund is involved in two incubators, and the Japanese Government has set up one as well.

Cooperation for the Advancement of Developing Countries (COSPE), an Italian NGO, is establishing an incubator for women's enterprises in Nablus, in the West Bank.

At another level, private companies, incubator associations and foundations from industrialized countries are bringing together the commercial and development agendas of developing countries. For instance, the incubators at the Rensselaer Polytechnic Institute and the University of Texas at Austin have run custom-designed courses on management for incubator personnel from Russia, Mexico, Malaysia, South Africa and Indonesia; they have also provided their staff for feasibility work in several countries.

Private consulting groups are also involved. For example, SPEDD of Pittsburgh, Pennsylvania, is participating in a joint venture on incubators in Slovenia. Control Data began with early, aggressive support for the incubation concept, but this has been discontinued owing to internal business pressures and priorities.

Annual conferences of the National Business Incubation Association (NBIA) (United States) are being attended by large developing country teams, some supported by UNDP. The NBIA recently established an international task force to increase its overseas linkages. The German Association of Business and Technology Centres (ADT) conferences in Germany have attracted considerable interest from the Commonwealth of Independent States (CIS) and Central and Eastern European countries, and the European Business and Innovation Centres Network (EBN) is expanding its activities beyond Europe towards Asia and South America.

#### *Multilateral assistance*

The large regional development banks have not yet become involved in financing incubator-type programmes, but they have provided limited support for enterprise development. The European Bank for Reconstruction and Development (EBRD) is presently supporting a technology park programme in Russia. A technical assistance component for incubators was part of a World Bank private-sector-development loan to Poland; this programme was later transferred to PHARE. The Bank presently supports micro-enterprise-development projects for employment generation with the Polish Ministry of Labour and Social Policy, including 37 small business assistance centres and 23 business incubators and enterprise development funds. The International Finance Corporation has expressed an interest in developing incubator-type arrangements in St. Petersburg, Russia, and in Pilzen, the Czech Republic.

The European Union (EU) has been extremely active in Central and Eastern Europe through the PHARE programme and in Russia through TACIS. For instance, in Poland it helped set up thirty Business Support Centres and four business incubators during the period 1991-1995. In the Czech Republic, PHARE has helped establish three Business Innovation Centres, as well as various consulting, information, training and business promotion programmes. In Hungary, PHARE supports the Hungarian Foundation through the EU Columbus programme. European universities have collaborated with Latin American incubators on training and business development.

The EBN plays a leading role in the PHARE-assisted programme to establish Business Support Centres (BSCs) and Business and Innovation Centres (BICs). For instance, Lodz (Poland) is twinned with Lyon (France) at the BSC/BIC and chambers of commerce and industry levels.

The Organization of American States, (OAS), in Washington, D.C., has supported feasibility studies on incubators in Cuernavaca and Merida (Mexico). It was also a co-sponsor with UNIDO and UNDP of their recent business incubator assessment and of the Tianjin workshop (1995). The Project on Support to Technological Entrepreneurship, under the OAS MERCOCYT programme, has actively promoted the exchange of electronic information on technology incubators; two meetings were held in Florianopolis, Brazil, in June 1994 and in Guadalajara, Mexico, in December 1994, and preparations for the development of an information system are now under way.

The ILO has a clear interest in employment and technology issues, UNESCO in university-research-industry linkages through programmes such as SIPAR and STEPAN, the Food and Agriculture Organization of the United Nations (FAO) in agribusiness development, and (DDSMS) in privatization and entrepreneurship. These agencies, however, have not been active in the development of business incubation systems to date.

The Privatization and Enterprise Development Branch of the United Nations Conference on Trade and Development (UNCTAD) organized some useful sessions for the Ad Hoc Working Group on the Role of Enterprises in Development (held during April and July 1995) covering such topics as regulatory frameworks, human resources and SME access to capital markets. In addition, UNCTAD now has joint



responsibility with DDSMS for the Empretec programme, which embodies some of the characteristics of the incubators-without-walls concept. Aiming to establish a mechanism for the continuous nurturing of its *empretecos*, UNCTAD has supported a study to determine the feasibility of setting up a technology incubator in Uruguay—and this concept has been carried forward in the MERCOSUR countries.

ESCWA has been supporting entrepreneurship development as well as incubator establishment in occupied territories, the Syrian Arab Republic and Jordan. UNIFEM is establishing an incubator for women entrepreneurs in Amman and Beirut.

UNDP, through its United Nations Financing System for Science and Technology for Development (UNFSSTD) and PSDP programmes, has been very active in initiating incubation programmes, usually with United Nations Office for Project Services (UNOPS) execution; country indicative planning figure (IPF) resources have then often been provided, as was the case in Indonesia and Malaysia (national execution) and in Uzbekistan (UNIDO execution). UNDP priorities for the future have changed significantly, however, and its voluntarily pledged resources are in decline in real terms. Nevertheless, UNDP will continue to take an interest in and to provide catalytic funding for incubators to support private-sector development, enterprise creation and employment generation.

In summary, among the multilateral agencies with current programmes and/or capabilities to develop incubation systems, ESCWA, UNIDO, ILO and UNDP have been active. The European Union has significant funds and strong capabilities through the EBN. Likewise, the technical assistance components of World Bank credit could be readily deployed for incubation systems. USAID and USIA resources, like those of the United Nations system, are under threat.

#### E. INCUBATOR RESEARCH ISSUES

While the concepts of small business development and incubation are deceptively simple, more research is needed to provide government decision makers and private investors with assessments of the expected outcomes of investment in the incubation process, particularly within the context of competing demand for funds.

There are ten simple questions (without simple answers, unfortunately) that need to be asked:

1. In the overall national policy framework, how can incubators effectively complement other small enterprise support programmes?
2. A large proportion of incubators are sponsored either by Governments or by universities. What can be done to induce the private business and professional communities to play a more significant role?
3. Given that the management team is critical to the success of an incubator, how should the team be selected, trained, and remunerated to enhance the success of the incubator?
4. Since incubators graduate only two to three tenants annually, would a decreased graduation period of less than three years improve effectiveness? How can graduating tenants be provided with continued assistance? How can non-performing tenants be identified and removed?
5. To make a greater contribution to employment, how can the selection process be strengthened to better identify businesses with real growth potential?

6. To provide incubator sustainability, how can income be augmented to cover expenses? How can the value of benefits be enhanced to exceed costs?
7. What innovative means can be utilized to finance tenant operations?
8. In liberalizing markets, how can incubator services be better promoted?
9. How can intra-national associations, newsletters, directories, and benchmarking be established and financed to support improved incubator operations? How can these and other international support systems, including “twinning” between incubators (and between tenant companies), be developed?
10. What follow-up measures are needed now to intensify and expand the assessment process begun with this project, including the dissemination of results, regional workshops, and publications?

The business incubation process has enjoyed many successes, but significant research is still needed to provide a firm basis and definition for the concept so that it may achieve its potential in the next decade.

#### F. CONCLUSION

Incubators have proven their value as a cost-effective tool for supporting economic development in both industrialized and industrializing countries. Incubators have been in the planning stages in the Western Asian countries but have not started full operations to date. Determining the cause(s) of this apparent inaction is a major challenge to economic development professionals and government policy officials in each country. Because the incubation process has proven so effective in other areas, intensive efforts must be made to evaluate and loosen all existing constraints to the speedy implementation of this modality.

## VII. BUSINESS INCUBATORS IN ECONOMIC DEVELOPMENT

### An initial assessment of industrializing countries

by  
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UNDP

#### Introduction

Business incubators are sprouting up rapidly all over the world; they number approximately 1,500 today, up from about 300 a decade ago. Around 250 of these incubators are now operating in industrializing countries, with varying degrees of success and sustainability. Given the current climate of downsizing, privatization and globalization in the world economy, the present seems an appropriate moment to assess their recent history and effectiveness, both as an instrument of development policy and in the creation of new businesses. The present study looks back at the past five to ten years of the incubator concept in action before leaping forward to consider its possibilities as a tool for generating future enterprises and economic growth.

Some background may be necessary for readers unfamiliar with this development modality. A *business incubator* is defined here as a controlled work environment designed to foster the growth of new and emerging companies. This environment is distinguished by particular characteristics which are intended to create a collegial climate for the training, support and development of successful small entrepreneurs and profitable businesses. These characteristics include: the careful initial selection of early-stage or start-up entrepreneurial firms with the potential for growth; designated work-spaces provided for each tenant; shared facilities necessary for business operations, such as communications and administrative support; a small management team which trains, develops and assists new entrepreneurs; access to critical professional services such as legal and financial assistance; affordable rents and fees for services; and the “graduation” of businesses after three or four years of residence at the incubator. While local, regional and/or national government agencies usually help establish the facility and support its early operations, the incubator is generally managed as a business itself, often with a plan for achieving fiscal self-reliance following its initial years of operation.

Typically an incubator has 10 to 30 selected “tenant companies”. Most of these will survive, and a few will become very successful, generating large sales and much employment. The rationale for the use of an incubator system in economic development is that it is a remarkably flexible instrument which supports fledgling enterprises in a variety of ways. At the local level, incubators are supervised by an autonomous board of sponsors from area institutions, both public and private. By design, incubators are created to speak to local community values and aspirations. Locating client businesses on-site fosters a more profound learning and problem-solving experience. Organizations with no tenants on their premises lack the critical distinction that makes incubators effective; such institutions are more like traditional small enterprise development centres than incubators. Incubator-like arrangements are not considered in this assessment; however, if their numbers were combined with the incubators themselves, the worldwide total would exceed 3,000.

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Rapid growth invites critical attention. The incubator concept is both praised as a useful tool for creating enterprises and damned as an expensive fad that does little for economic development. Rhetoric aside, firm empirical assessments that support one or the other verdict, or something in between, are still wanting. It is into this gap that the present study is introduced.

#### A. METHODOLOGY

This study analyses a common set of issues in the experiences of incubator programmes in Brazil, China, the Czech Republic, Mexico, Nigeria, Poland, and Turkey. Countries were selected which had incubators in operation for at least three years, and could offer a variety of experiences, both positive and negative. In the interest of objective analysis, the range of experts consulted was also balanced, with half involved in incubator management and half representing a broad spectrum of industrial development experience.

A UNDP/Private Sector Development Programme steering committee in New York guided the work of this study, whose objectives are: to shed empirical light on the characteristics of incubator programmes; to assess the role they are playing in creating entrepreneurial businesses and related employment as a complement to other small enterprise development mechanisms; and to draw broad conclusions about how incubator performance and contributions to economic growth might be enhanced under the difficult conditions prevailing in industrializing countries and in others *en route* to becoming market economies. This assessment has benefited from the review carried out at the Tianjin workshop and from peer appraisal by independent experts familiar with the business development and policy environments.

#### B. CONSTRAINTS

Owing to time and funding constraints, the national consultants and co-managers were not able to meet at the start of the study to plan a uniform method of data collection. Coordinating the work of consultants thousands of miles apart was a daunting task, even in this age of electronic communications.

Compounding the problem of informational and methodological inconsistencies in the country studies was the dearth of available performance data. Incubators and small business support projects the world over generally have little time and few resources to devote to record-keeping. Furthermore, the relatively new incubator programmes in developing countries are currently at the maturity level of those in the United States a decade ago. Had this exercise been postponed, however, the data available at a later date would probably have been no better. Undertaking the assessment at this time should contribute to further research and more thorough analyses.

#### C. CONTRIBUTIONS

This is a first step in evaluating the effectiveness of incubators in relation to other small-enterprise support modalities, and in identifying ways of better defining the role of incubators in the developing country environment. The study also alerts managers to the need for better records documenting both incubator and tenant operations, and provides timely advice to planners of small business programmes. It is expected to contribute to positive action among emerging incubator associations and other forums, forming the basis for more informed decisions related to starting, operating and sustaining successful incubator programmes.

The first part of this report begins by placing the business incubator within the overall context of small enterprise development, support programmes and policy environment. The operating characteristics of incubators are delineated for each country represented in the study. Thereafter, an attempt is made to assess the effectiveness of incubator programmes according to the criteria of new enterprise creation, employment

generation and sustainability. The conclusion considers some implications for future policy research and follow-up action.

The second part provides summaries of the studies conducted in the seven selected countries. These nations are home to almost two thirds of the total number of incubators established in developing and transitional economies. Case-studies of selected incubators are included, demonstrating the wide variety of actual conditions under which the modality operates.

#### D. OVERVIEW

The seven countries studied have some 140 business incubators among them, representing a significant percentage of the estimated total of 250 incubators in all industrializing countries and transitional economies. These countries differ markedly in policy orientation and technical infrastructure, and their incubators cover a wide range in terms of size, characteristics and performance.

##### 1. *Incubators in the context of small enterprise development*

All the countries examined here have a variety of technical assistance and credit facilities to promote small enterprises (SEs). Over the last five decades, many millions of dollars have been spent on such programmes, but there are practically no cost-benefit assessments of their effectiveness. The incubator, a relatively recent development, has not been seriously evaluated either. It is therefore not yet possible to make quantitative comparisons between the incubator and other SE support schemes.

The incubator should be considered one additional device in the tool-kit of small enterprise support modalities. It has been derived from these modalities but has some distinguishing features. It also has a special niche—that of nurturing selected early-stage ventures through focused assistance within a supportive environment. An incubator complements other policy instruments.

##### 2. *Characteristics of incubator programmes*

A business incubator, like other systems, may produce excellent or poor results depending on its adaption to local needs, the commitments of its sponsors, the skills of its management team, and the policy framework within which it operates. Meaningful analyses of incubator effectiveness can best be made by in-depth studies of selected facilities and programmes with similar purposes. The main features of the incubators studied in this project are summarized in table 1.

*The reported median investment of US\$ 236,000 to develop the incubator is modest; this figure does not include the support provided by public or donor agencies (buildings, feasibility studies, training, initial operating costs and so on).*

While the process of establishing and operating an incubator may be similar in various environments, the results vary widely depending on its objectives and other local factors. For instance, *the character of the leading sponsor and the form of sponsorship influence the desired goals*, as follows:

#### **Sponsor/form of sponsorship**

University/research organization  
Public/private partnership  
Private-sector initiative  
Venture capital

#### **Desired goals**

Innovation, research commercialization  
Investment, employment, social focus  
Income from services, tenant profitability  
Winning enterprises

TABLE 1. THE MAIN FEATURES OF THE INCUBATORS STUDIED

Country	Sample total	Building size		No. of tenant firms	No. of tenant firm employees	Investment (US dollars)
		Gross (m <sup>2</sup> )	Net (m <sup>2</sup> )			
All (median)	142	2 500	1 521	12	94	236 000
Brazil	16	1 225	600	10	43	..
China	32	6 100	3 036	22	318	78 000
Czech Republic	17	..	2 230	16	105	175 000
Mexico	6	1 550	420	7	98	468 000
Nigeria	2	2 700	1 860	7	44	864 000
Poland	19	1 603	1 593	11	58	..
Turkey	4	2 086	974	19	82	441 000

Note: Two dots (..) indicate that data are not available.

Multiple sponsors or types of sponsorship bring a variety of orientations and strengths, but also potentially place incubators in the position of striving to meet conflicting goals.

In general, the incubators in industrializing countries are quite young. Among the incubators studied, the median number of graduates was eight, after a three-year residence period, with two to three firms having discontinued their operations (see table 2). A comparison of these and other parameters with those for American incubators demonstrates that in spite of their youth, the industrializing country incubators have similar graduation and discontinued business ratios to those in the United States. In general, the incubators in industrializing countries are smaller and tend to support more and smaller tenant companies.

TABLE 2. COMPARISON OF INCUBATORS IN INDUSTRIALIZING COUNTRIES AND THE UNITED STATES

	Industrializing countries	United States
Years of operation	94	54
Less than seven years		
Seven years or more	6	46
Gross building area		
Median square metres	2 500	..
Mean square metres	3 900	5 500
Tenants per incubator (median)	12	10
Employees per tenant (median)	7	10
Graduates per incubator (median)	8	8.5
Discontinued businesses per incubator (median)	2.5	3

Source: National Business Incubation Association, 1996.

Note: Two dots (..) indicate that data are not available.

The types of programmes offered are also observed to be similar. Some of the incubators surveyed provide their clients with a wide range of support services, including debt guarantees and direct equity financing. Most provide traditional services such as business planning, accounting and management development, together with shared office facilities.

### 3. *Assessment*

The broad criteria used to assess the incubators in the seven industrializing countries were as follows:

- (a) The kind and number of new ventures created in the incubator;
- (b) The number of jobs directly generated by the incubator;
- (c) The contribution made to the development of an entrepreneurial culture and to the promotion of research commercialization.

The linkages between technology incubators and universities/research institutes appears to be effective. Business incubators benefit from private-sector participation through mentoring, spin-offs from larger enterprises and subcontracting. With the notable exception of Brazil, private corporations have been slow to support incubators. The development of new sponsors for incubators should be a fruitful area for continued effort.

The economies of scale which apply to the modality indicate that smaller incubators are less likely to develop financial sustainability. Incubators of less than 2,500 square metres face difficulty in raising rental and other revenues sufficient to cover expenses.

*The importance of tenant finance as a key component of a successful incubator programme* has been recognized. There is a strong need for a portfolio of financial instruments, possibly imbedded in the incubator programme, with a role for incubator-based counselling in the development of financial strategies. Interestingly, the management teams of several Chinese incubators are taking equity positions in tenant firms.

A careful tenant selection process and viable exit criteria are found to be essential. Above all, *the role of the manager is recognized as pivotal to incubator success*. Finding skilled, entrepreneurial managers has been a serious problem in many of the countries studied.

### 4. *Determinants of success*

The incubator in Tianjin, China, posting an enviable record of financial sustainability, attributes its success (56 tenants, 12 graduates, no losses and increasing profitability) to six factors:

- (a) *Government support*: policy guidance and financial support from the national TORCH programme through the municipal government and the Tianjin Science and Technology Committee;
- (b) *Location*: a technology-industry zone providing a knowledge-intensive environment adjacent to well-known universities that offer the necessary technological infrastructure;
- (c) *Service*: the ability to provide a range of services for new enterprises;
- (d) *Management*: keen-witted and capable management with high levels of efficiency in providing whole-hearted service to tenant enterprises—not solely profit-driven;

(e) *Networking*: extensive communication with all walks of life; support from departments of industry and commerce, as well as from tax, banking, utility and security agencies;

(f) *Enterprise development*: careful selection and optimization of tenant enterprises; detailed assessment of both a firm's project and its management; attention to funding and marketing problems.

### 5. Impact

Business incubators face significant challenges in countries where there has been recent economic and political turmoil. In politically stable environments, *incubators are establishing a record of success in creating enterprises—and in supporting economic restructuring*. In addition to their direct support of enterprise (and job) creation, incubators provide planners with a window to observe the process of venture formation, and to assess the effectiveness of regional development tools.

Incubator programmes in countries such as China, the Czech Republic and Poland have produced strong results. Incubators in some of the other countries studied are still having difficulties, and their operations have not yet reached maturity. In all cases, the incubator has to be seen as a *social investment by Governments, with a clear understanding of the extent and duration of the initial financial support that is required*.

While the concept is relatively new (the median year for the start-up of incubator operations was 1992), the study demonstrates that *incubators in industrializing countries are having a significant impact on economic development*. For example, 17 incubators in the Czech Republic were associated with the creation of 440 enterprises—an average of about 26 companies and 100 jobs per incubator—over approximately three years. Incubators that responded to the survey question concerning business creation (142), claimed to be supporting 3,000 new businesses. Among the 78 incubators reporting employment figures for their client companies, a total of 26,000 jobs have been created. Although only a small number of incubators responded to the question regarding survival rates, the responses indicate that *an enviable 80% of graduated businesses are succeeding*.

While the incubators studied share many characteristics, the varying circumstances in each country affect the nature and extent of the various incubation systems. Consider China, for instance. Starting modestly in the late 1980s, China has developed the largest business incubation systems outside of the United States, occupying 23 million square metres of space and serving 1,969 enterprises, with gross sales of almost US\$ 200 million in 1993 and 159 graduates to date. The system is being expanded from the current 73 to a total of 200 incubators by the year 2000; these facilities are expected to serve 10,000 new enterprises and graduate 1,200 businesses per year.

Incubator performance varies. What emerges from the data is a prototypical incubator profile based on the information obtained from those studied. This hypothetical incubator, with 2,300 square metres of space (gross area), has 17 resident companies with a total of 136 workers and sales of almost US\$ 1 million at the end of year three. At the end of year six, there are some 25 companies located in the incubator, 18 graduates, 600 employees and sales of US\$ 1.4 million. With the provision of a renovated building and a total initial investment of around US\$ 500,000, the cost per job amounts to US\$ 3,676 in year three, dropping to US\$ 2,500 in year six. This excludes indirect employment as well as jobs at companies serviced outside the incubator.

Visits to incubators in the countries studied revealed other benefits, including the following:



(a) The incubator, when possessing a technological orientation and linked to a technical university, has a strong impact on the *utilization of facilities, faculty and students, as well as on the culture of university-industry relationships*;

(b) The incubation process *markedly increases the survival rates* of early-stage businesses (in comparison with those started outside of the incubator). This focused attention on a small, selected group benefits both the entrepreneurs and the community;

(c) The incubator produces *other, non-quantifiable benefits* by stimulating a culture of entrepreneurship and influencing national policies towards the support of small private enterprises.

A business incubator is not necessarily capital intensive; it could reach the break-even point in about three to four years under the right conditions, although it would take longer to recover the initial investment. The incubator is, however, *human-resource intensive*, requiring an experienced management team and a network of professional support.

One criticism of business incubators is that they attempt to do too much with limited resources, a situation which both sponsors and management must guard against. It can also be argued that *the incubator is elitist* in targeting a selected group for support. This is necessarily so, but ways can be devised to increase the throughput of companies, to serve businesses outside the incubator, and to make the facility a focal point of entrepreneurial activity and assistance within the community.

The picture that emerges in this analysis, confirmed at the workshop in Tianjin, is one of *the incubator as a study in contrasts*. Frequently supported by the Government, incubators are charged with a social agenda. A balance is needed between the sponsor's patience in waiting for results and the entrepreneurial drive to achieve these results on the part of the incubator staff. While incubators should not be characterized as a magic potion which provides universal success in small enterprise development, they have produced good results when the following conditions have existed:

- Political stability and the existence of a basic business infrastructure
- Supportive regulatory and legislative frameworks
- Initial State financial support
- A strong board and management team
- A willingness on the part of all parties to adapt the concept to local culture and community needs

If current trends continue, incubators in industrializing countries may well double in number, to more than 500, within the next five years.

## 6. Data limitations

Since many of the incubators studied have been operating for only three to four years, it has not yet been possible to gather reliable data on the growth of sales, employment or innovations (or on future bankruptcies) from the companies which have graduated. The effects of additional jobs, sales generated and survival rates could be significant and would enhance the overall performance of the incubator. A time series of expenses and revenues is also needed over a longer period to determine the point at which incubators become self-sustaining. At present, most incubators in industrializing countries depend to some extent on operating subsidies, as is the case for the majority of incubators in industrialized countries.

The potential to develop a "second generation incubator" is becoming apparent. This incubation system would de-emphasize low rents and focus on enhanced business services both for tenants and for non-

resident affiliates on an outreach basis. Further, such a programme would “pre-incubate” nascent entrepreneurs and would also help those who have graduated.

### *7. Follow-up action*

This assessment is a first step in the process of determining the real role of business incubators as a complement to other SE development and support schemes. The analyses now begun need to be intensified and continued in the coming years.

At the Tianjin workshop, the participants declared that “the rich exposure and interactions now begun deserve to be sustained,” and requested that continuous dialogue be facilitated through the organization of an informal network which could be formalized at a later date. Participants proposed a quarterly newsletter, benchmarking activities, and an incubator directory. Regional workshops are now being planned to pursue this agenda in the future, specifically in Africa, Western Asia and Latin America, and in the economies of Eastern Europe and the newly independent states of the former Soviet Union which are currently being restructured.

The roles played since 1987 by UNDP and other United Nations agencies in initiating business incubators in various countries are recognized with appreciation. Similar catalytic inputs are needed from other agencies within the United Nations system and from entities such as the Organization of American States, the European Business and Innovation Centres Network, and the National Business Incubation Association in the United States.

## VIII. THE TURKISH EXPERIENCE

by  
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KOSGEB-METU Technology Development Centre

### Introduction

Small and medium-scale enterprises (SMEs) occupy a significant position in the economic and social structures of all countries. In most economies, more than 90% of the total number of firms are SMEs; they account for more than 50% of employment and sales, and are key contributors to job creation, innovations and exports.

SMEs are important because they do the following:

- Help create political, economic and social stability
- Mobilize untapped resources and skills
- React more readily to economic upswings
- Ensure regional and sectoral balances
- Respond more easily to market forces
- Support and complement large-scale industries

They also provide needed flexibility, as they promote product diversification (both qualitative and quantitative) and allow the economy to become more competitive in both the domestic and the international market.

#### A. THE STATUS OF SMEs IN TURKEY

Table 1 indicates that small and medium-scale enterprises account for almost 99% of the overall manufacturing industry and 53% of total employees. Relative to these figures, the value-added contribution of SMEs to manufacturing is low, at 25%.

TABLE 1. THE DISTRIBUTION OF SMALL AND MEDIUM-SCALE ENTERPRISES IN TURKEY'S MANUFACTURING INDUSTRY

	Small (0-20 employees)	Medium (20-100 employees)	Large (100+ employees)
Enterprises	96.7%	2.23%	0.90%
Employees	40.63%	12.20%	47.17%
Value added	15.71%	9.13%	75.16%

It is becoming increasingly clear that SMEs must be supported and strengthened if developing economies are to grow and prosper. A concerted effort must be made to create and foster an environment that will enable small and medium-scale industries to reach their full economic potential.

As small and medium-sized industries form the backbone of a healthy economy and are a prerequisite for balanced development, serious attention should be given to ensuring their survival. KOSGEB was established in April 1990 for this very purpose, incorporating the previously established Small Industry Development Organization (KUSGET) and the Industrial Training and Development Centre (SEGEM), which had been set up as joint projects of UNIDO and the Turkish Government to deliver all types of non-financial services needed by small-scale industries. KOSGEB naturally assumed responsibility for existing functions, but it also developed new programmes aimed at strengthening the SME component of Turkey's industrial structure.

## B. PROGRAMMES DEVELOPED FOR THE SUPPORT OF SMES

### 1. *KOSGEB*

The main responsibilities of KOSGEB are:

- (a) To improve the efficiency of SMEs and increase their competitive capacity;
- (b) To improve the performance of small and medium-sized manufacturing establishments through well-conceived and properly tailored technical assistance programmes which include skill upgrading and accelerated training;
- (c) To help SMEs in adopting modern management methods and production processes, specializing in production, improving product designs and achieving higher product quality;
- (d) To promote the development of closer links between larger manufacturing firms and small enterprises (the latter may serve as subcontractors and/or ancillaries);
- (e) To support innovations;
- (f) To encourage entrepreneurship;
- (g) To direct and orient investments.

In order to realize these objectives, KOSGEB has established the following types of service centres:

- Consultancy and quality improvement centres
- Development centres
- Marketing research centres
- Training centres
- Information centres
- Common workshops

### 2. *The General Directorate of Industrial Estates*

The General Directorate of Industrial Estates is attached to the Ministry of Industry and Trade and is responsible for coordinating the establishment of small-scale industrial sites and organized industrial estates.

The industrial estate constitutes a popular instrument for creating employment, raising the productivity of industrial enterprises, stimulating regional and local development, and relocating industry away from overcrowded areas. The idea is that it is easier to support industrial enterprises if they are placed closer

together on industrial estates than if they are scattered all over the region. Common facilities and services, testing and quality control centres, business advice services, and training centres can also function more efficiently if they are located inside the industrial estates; most of these types of services are offered through the KOSGEB centres located on the industrial estate premises.

### 3. *The People's Bank of Turkey (Türkiye Halk Bankası, or THB)*

No single financial institution exists to provide financial support to SMEs; however, the THB currently carries out this function. The THB was originally established to support handicrafts, but its focus and its activities have been expanded to include SMEs. The Bank basically provides SMEs with the following types of credit:

- Cooperative credit
- Industrial credit
- Fund credit
- Credit for female entrepreneurs
- Credit for young entrepreneurs

### 4. *The Turkish Foundation for Small and Medium-Sized Businesses (TOSYÖV)*

TOSYÖV was established in Ankara on 21 February 1990 for the purpose of providing support and services to more than 60,000 small- and medium-scale enterprises in Turkey. The aims of TOSYÖV are as follows:

- (a) To contribute to the creation of a healthy infrastructure;
- (b) To establish an equitable incentive system;
- (c) To provide adequate financial resources;
- (d) To develop appropriate investment opportunities;
- (e) To provide or help businesses acquire suitable advanced-technology equipment (tools, materials and apparatus);
- (f) To provide the training, consultancy and services that enterprises need to produce high-quality goods and services;
- (g) To provide training activities which facilitate the adoption of contemporary management and administration practices;
- (h) To promote efficient relationships between main and ancillary industries;
- (i) To provide widespread education that will facilitate Turkey's integration into the European Union (EU) Customs Union;
- (j) To improve public opinion and create political support;
- (k) To create large organizational network for small-and medium-scale enterprises in Turkey.

TOSYÖV has already created an organizational network which includes 1,500 registered members, 17 support associations and two branches (in Istanbul and Izmir) to provide support to its members and other SMEs.

#### 5. *The Technology Development Foundation of Turkey (TTGV)*

The TTGV was established as a collaborative effort between the private and public sectors on 1 June 1991. There were 40 founding members who donated a total of US\$ 300,000, and an additional US\$ 43.3 million has been obtained through a loan agreement between the World Bank and Turkey.

The aims of the Foundation are as follows:

- (a) To encourage Turkish industry to increase its investment in research and development (in real terms) and to carry out all activities in accordance with the requirements thereof;
- (b) To provide funds and expertise in support of industrial technology projects with the aim of enhancing technology and technological infrastructure;
- (c) To identify technological research requirements and to carry out research and projects in these areas (either by itself or by contract) to bridge the technology gap between Turkey and other nations and to strengthen Turkey's position in some global trade sectors;
- (d) To strengthen Turkish industry's ties with higher-education institutions, the National Scientific Research Institute (TÜBİTAK) and other public and private research organizations.

#### 6. *The Small- and Medium-Scale Enterprise Board (OKIK)*

OKIK was established in 1988 under the aegis of the Union of Chambers (TOBB). This advisory board is composed of Union of Chambers executives and a large number of representatives from government agencies. OKIK has a subcommittee called the Marketing Group which focuses on improving the marketing ability of SMEs, disseminating market-related information among SMEs, and organizing fairs and exhibitions. However, the Board is not equipped to play a major role in small- and medium-scale industry (SMI) promotion.

#### 7. *The National Productivity Centre (MPM)*

The MPM was established as a public agency in the early 1950s to improve the productivity of industrial enterprises. The Centre does not provide services to individual enterprises, and its activities are geared towards all enterprises without priority.

#### 8. *The Turkish Standards Institute (TSE)*

The TSE was created through the passage of a special law, to establish Turkish standards and to contribute to the standardization of industrial products by conducting quality control. KOSGEB has a cooperative relationship with this Institute, which has the potential to play a crucial supporting role, particularly for ancillary industries and in the promotion of SMI exports.

### 9. *The National Scientific Research Institute (TÜBİTAK)*

TÜBİTAK was established on 24 July 1963 as a public research institute with a mandate to conduct scientific research, to follow technological developments in other countries and collect related information, to pursue the technological development of specific products, to conduct seminars on scientific issues, and to provide technical advice. Most of the staff of TÜBİTAK are high-level scientists; because of the theoretical nature of their research, their services as consultants are generally unsuitable for SMIs. However, TÜBİTAK may still play an important role by undertaking SMI-related research studies (through KOSGEB) which correspond directly to SMI requests, concentrating on pursuing new commercial technological developments and their applications, studying the interaction of research development institutions with SMIs in developed countries, and so on.

### 10. *The Foreign Economic Relations Board (DEİK)*

DEİK was created in 1986 by the Union of Chambers, the Turkish Foreign Trade Association, the Chamber of Agriculture, the Association for Foreign Capital Coordination, and the Istanbul and Izmir exporters unions as a mechanism for improving Turkey's external economic relations and facilitating the country's integration into the world economy through bilateral business council linkages.

### 11. *The Export Promotion Centre (IGEME)*

IGEME was established to prepare reports on the development of trade in foreign markets, to coordinate business relations between national and foreign companies, and to organize fairs and exhibitions.

### 12. *The Ministry of National Education/General Directorate of Apprenticeship Training*

The General Directorate of Apprenticeship Training aims to provide general and vocational training for apprentices. By law, apprentice training centres must be set up at all industrial estates having more than 100 enterprises. The services offered to the apprentices and workers of the estate programmes can satisfy not only the technical and theoretical requirements but also the vocational and practical needs of the SMEs.

## C. THE CURRENT STATUS OF BUSINESS INCUBATORS IN TURKEY

### 1. *Number and location*

There are three incubators currently in operation in Turkey:

- The Marmara Research Centre Technopark (MRCT)
- The ITU-KOSGEB Technology Development Centre (ITU-KOSGEB)
- The ODTU-KOSGEB Technology Development Centre (ODTU-KOSGEB)

Two incubator companies have been established, namely Anadolu Technology Research Park, Inc. (ATAP) and Izmir Technopark, Inc. (ITAS). Both have buildings and facilities but no tenants as of yet. ATAP has been operating as a counselling company, but the two centres are expected to be fully involved in incubator operations within a short time.

Three planned incubators were expected to be in operation by late 1995. Feasibility studies are currently being carried out for another eight incubators, and separate studies are being conducted for three technology park (technopark) projects. The table and figure below provide an indication of the stages reached by most of the projects just mentioned.

TABLE 1. THE STATUS OF INCUBATION PROJECTS IN TURKEY

Status	Abbreviation	Location
Incubators currently in operation:  Marmara Research Centre Technopark Technology Development Centre Technology Development Centre Anadolu Technology Research Park Izmir Technopark	MRCT ITU-KOSGEB ODTU-KOSGEB ATAP ITAS	Istanbul Istanbul Ankara Eskisehir Izmir
Incubators planned:  Technology Development Centre Technology Development Centre Technology Development Centre	KTU-KOSGEB AÜ-KOSGEB BU-KOSGEB	Trabzon Ankara Istanbul
Feasibility studies being carried out:  Ankara Technopark Istanbul Technopark Alaçati Technopark	METU-TECH	Ankara Istanbul Izmir

Feasibility studies are also currently being carried out for five small-business incubation centres in different provinces of Turkey under the Labour Adjustment Programme, which forms part of a comprehensive World Bank project<sup>46</sup> to provide technical assistance to the Turkish Government in its privatization of State-owned enterprises (SOEs). Under this programme, small-business incubators constitute an important tool for economic and employment development in localities affected by privatization and restructuring.

The tenants of the incubator will be primarily displaced SOE workers who wish to start their own businesses. Second preference will be given to the displaced workers' family members, and last priority to other members of the communities in which SOEs are located. At least 79% of tenants should be displaced workers or their families.

## 2. Facilities

The sizes of the various incubators and the distribution of space within each facility are described in table 2.

<sup>46</sup> The Privatization Implementation Assistance and Social Safety Net Project (a World Bank-Turkey loan agreement dated 5 May 1994).



TABLE 2. SIZE AND DISTRIBUTION OF INCUBATOR FACILITIES

Incubator	Number of floors	Gross building area	Net rentable area	Space used by management	Space for common use
		(Square metres)			
MRCT	1	..	..	..	..
ITU-KOSGEB A	2	1 149	594 (52%)	114 (10%)	441 (38%)
B <sup>a/</sup>	1	1 493	496 (33%)	..	387 (26%)
ODTU-KOSGEB	2	3 250	1 362 (42%)	207 (6%)	1 681 (52%)
ATAP	2	1 458	858 (59%)	158 (11%)	442 (30%)
ITAS	3	1 530	494 (32%)	90 (6%)	946 (62%)
KTU-KOSGEB (planned)	1	650	207 (32%)	50 (8%)	393 (60%)
AÜ-KOSGEB (planned)	2	570	216 (38%)	192 (34%)	162 (28%)

Note: Two dots (..) indicate that data are not available.

a/ Half of the building is being used by KOSGEB for training purposes.

### 3. Organizational structures

#### (a) MRCT

The MRCT has an Advisory Committee and an Executive Committee. The Advisory Committee includes 20 representatives from industry, higher education institutions and financial bodies. The head of the Advisory Committee is the President of the TÜBİTAK Marmara Research Centre; his responsibilities include approving Committee members and calling for a meeting at least once every six months. The Advisory Committee advises the Executive Committee to ensure that the Centre is run according to its objectives.

The Executive Committee is comprised of eight members and is also headed by the President of the TÜBİTAK Marmara Research Centre. Other members include MRC Vice-Presidents and managers of MRC institutions, as well as two representatives from the Istanbul and Kocaeli Chambers of Commerce. The Executive Committee is responsible for MRCT operations.

#### (b) The ITU-KOSGEB and ODTU-KOSGEB Technology Development Centres

The management models for the ITU-KOSGEB and ODTU-KOSGEB Technology Development Centres are the same. Both Centres operate on university premises and according to the protocols signed by

each university and KOSGEB. The two also share the same organizational structure, which includes three committees: the Consultative Committee, the Executive Board, and the Examination and Selection Committee.

#### 4. *Criteria for incubator entry and exit*

All of the centres have similar entry and exit criteria. The common denominators are technological innovation, economic value and entrepreneurship.

Business ventures which are not engaged in technological innovation are not permitted at the centres. Applications for entry include a written summary of the project; factors such as applicant background, financial requirements, and the applicant's own resources are taken into account as well. All operating centres use the same method to select tenants. A prospective tenant is interviewed by the centre manager, and the project document is submitted to the evaluation committee for consideration. The ODTU-KOSGEB Centre invites the applicants to the Evaluation Committee meeting and allows them to present their projects; this way the Committee has a chance to judge the entrepreneurial spirit of the prospective tenants, as well as their ability to explain themselves to a group of people from whom they hope to obtain financing, support and/or other types of benefits.

At the ITU-KOSGEB Centre, tenant selection is based on the expectation of project completion within a predetermined time period. When a project has finished it is expected to leave the Centre. The main emphasis in selection is on the technological aspects of the project; the applicant's business plan is considered second priority. At other centres, technological innovation, entrepreneurship and the wealth the companies are expected to generate are seen as equally important factors in tenant selection.

At all operating centres the tenants must be legally established companies, though in some cases the applicant is given a grace period (usually six months from the entry date) to form his/her company. The rationale behind this idea is that waiting for the outcome of the evaluation process can save a lot of time, effort and expense, as under the current Turkish laws, forming and dissolving a company are both quite difficult.

Exit criteria are similar, though not identical. The MRCT has relatively flexible exit criteria: a contract is made with the tenant for a three-year period; if an extension of this period is required by the tenant, the rental fee is raised by 15%. For other centres, tenant residency is limited to three years, though this period can be extended for another two years if the executive board of the centre in question approves.

#### 5. *Company selection criteria (common among the operating centres)*

The following criteria determine the type of company selected to receive assistance:

- (a) Its field(s) of activity must be geared towards generic technology applications;
- (b) The company's activities should have a significant—and evident—economic value;
- (c) The company's owner must have technical capabilities and entrepreneurial talents;
- (d) The company must demonstrate its ability to employ a qualified labour force;
- (e) The company's products must have the potential for widespread usage and be likely to influence the outputs of other companies;

- (f) The company must have the ability to generate capital.

#### 6. *University-industry cooperation*

One additional function of the ITU-KOSGEB and ODTU-KOSGEB centres, as stated above, is to act as a bridge between universities and industry. KOSGEB has SME support centres in 36 provinces in Turkey, and nearly all of these centres are located within industrial estates, giving the industrial establishment ready access to their services. Industries can request help with technology adaptation or quality improvement problems, or may simply require technical assistance. The KOSGEB centres convey these inquiries to the Technology Development Centres situated at the universities, and the Technology Development Centres try to find ways of solving the industry problems in coordination with the universities. The main reason for this process is that industries are usually unaware of the capabilities of universities and generally do not know where to go or who can help them. On the other hand, those associated with universities do not usually venture out into the industrial sector.

#### 7. *Business incubator assessment*

Table 3 provides various facts and statistics which can be used to assess the incubators currently in operation in Turkey.

### D. CONCLUSION

Entrepreneurship and the creation, development and growth of new technological firms are areas of great interest, not just to those directly involved in industry, but also to investors, academicians and Governments. Although each group has its own agenda and approaches the subject from a different perspective, there is a shared interest in understanding and encouraging the process.

Although the business incubator concept is new to Turkey as a tool for economic development, the importance of the SME sector has long been recognized, and a variety of programmes have been developed and implemented. Turkey's privatization drive and its efforts to enter the EU Customs Union are the two most important issues to the current Government and have given SME development a much-needed boost; a substantial amount of funding is available from the Government, and interest in incubation is increasing in every province of Turkey as an effective means of enhancing job creation, local economic development and technology transfer. Business incubators currently receive financial assistance from the central Government through the Small- and Medium-Scale Industry Development Organization.

There are three good reasons to set up incubation centres in Turkey (particularly those which are university- and technology-based):

- (a) Forty-eight per cent of the population is under 22 years of age, and unemployment currently stands at 12%; new jobs are urgently needed;
- (b) Within the context of the Government's privatization and EU Customs Union integration efforts, private enterprises that can compete in the world market are urgently needed;
- (c) Human resources are the key to development, and it takes time to create these resources. More attention should therefore be focused on universities, where most of these resources can be found and developed.

TABLE 3. VARIABLES FOR ASSESSING INCUBATOR OPERATIONS IN TURKEY

	MRCT	ITU-KOSGEB	ODTU-KOSGEB
<u>Total number of tenants</u>			
1991		3	
1992		7	4
1993		13	7
1994		19	18
1995	10	16	20
<u>Number of graduating companies</u>			
1991			
1992			
1993			
1994		3 <sup>a</sup>	
1995	None		3 <sup>b/</sup>
<u>Number of companies that export</u>			1 <sup>c/</sup>
<u>Total number of start-up companies</u>			
Total number of companies	10	16	20
Start-up companies	None	5	13
Start-ups as percentage of total	0%	31.2%	65%
<u>Average age of owners</u>	Unknown	37	31.2
<u>Employment created to date</u>			
Total number of jobs created	Unknown	34 <sup>d/</sup>	111
Total expenses over three years (per employee)	Unknown	US\$ 11,083	US\$ 1,809
<u>Number of companies that have failed</u>			3 <sup>e/</sup>

a/ On a project basis.

b/ Companies are still occupying spaces at the Centre during the transit period at the end of their third year, but have already arranged to move to their own premises outside the Centre.

c/ Kardiosis Ltd. is the only company which exports its goods; total exports reached US\$ 235,000 during the period 1993-1994. The companies at the other centres are not yet in a position to export, but many have the potential to do so in the future.

d/ This figure may seem low, but it should be noted that these are people working on a project basis. The amount of employment that will be generated by the implementation of the finished projects is not yet known.

e/ The first company changed its line of work and started a catering business on the METU campus; the second company halted operations, and the owner is currently looking for a partner to start up the business once again; the last company moved to another province in Turkey and became a public company. No companies have failed at either of the other two centres.

The Middle East Technical University (METU) and the Istanbul Technical University (ITU) are the first of their kind in Turkey to recognize that technology development centres are important tools for economic development, and each has cooperated with KOSGEB in establishing such centres on university premises. METU has given its centre a lot of support, and with the experience it has gained, METU has

decided to go a bit further and set up a “technopolis” called METU-TECH. The success of such incubator-type modalities indicates how desperately entrepreneurial support is needed. The planned technopolis will be established in an area around the existing Technology Development Centre, on about 520 acres. This effort underlies the importance of creating and supporting technology-based companies, a goal the University is very keen to achieve.

Although it is still far too early to judge the success of business incubators, everyone believes that establishing a supportive, growth-oriented environment for start-up business is an effective means of increasing their chances for survival. Full support is needed from public authorities to sustain incubator operations; it should be noted, however, that “politics” often require quick results, which business incubators cannot always provide.

Unlike the centres studied abroad, ITU-KOSGEB and ODTU-KOSGEB have a second mission which is just as important as the first: to act as a bridge between universities and industry. Along these lines, the two KOSGEB centres are instituting a system similar to the Teaching Company Scheme (TCS) being used in England.

While progress has been steady, there are still some problem areas. The term “technology development centre” often confuses people with regard to the objective of the centre; the name gives the impression that these centres are involved in basic and applied research and development. A better term would be “business innovation centre”.

There is no real financial support available for the tenant companies; venture capital, seed capital, credit guarantee funds and some types of revolving funds are needed.<sup>47</sup> Only five of the 36 KOSGEB centre companies are using bank credit, mainly because interest rates are very high and the guarantees asked by the banks are usually the mortgages for the start-up companies.

Business consultancy services are inadequate and lack quality, mainly because small business management experts are extremely difficult to find.

The difficulties described above are relatively minor. In the final analysis, it may be confidently asserted that these centres presently constitute the most effective system for supporting technology-based start-up establishments in Turkey.

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<sup>47</sup> As the present study was nearing completion, the Turkish Vakif Bank made an agreement with the KOSGEB-METU Technology Development Centre to provide venture capital to the Centre’s tenants; this arrangement will serve as a “test”. This is the first time venture capital has been offered under such circumstances in Turkey and serves as an indication of the positive effect incubators are having on economic development.