

**PILOT LOCAL GOVERNMENT
PARTNERSHIP PROGRAM**

**GUIDEBOOK FOR TECHNOLOGY-
BASED ECONOMIC
DEVELOPMENT**

Prepared for

East European Regional Housing Sector Assistance Project
Project 180-0034
U.S. Agency for International Development, ENI/EEUD/UDH
Contract No. EPE-C-00-95-001100-00, RFS No. 613



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October 1997
UI Project 06610-613

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INTRODUCTION

Developed countries are leading the world into a post-industrial era of technology-based economic expansion. Technology-based economic development programs promote an environment that encourages and supports the development and dissemination of innovative products, services and technologies. In this economic environment, the competitive advantage lies with those locations that have strong resources of knowledge and information and use these resources to promote growth. Resources for technology-based development can include the following:

- People: a highly skilled workforce, a well educated population
- Institutions: universities, colleges, research institutes, and training schools with expertise in the sciences
- Businesses: firms in high technology industries and firms using new technologies in traditional industries

If the scan of the local economic environment finds strengths in these resources, there is potential for a local competitive advantage in technology-based economic development.

Consistent with the overall economic development framework produced by the Pilot LGPP program in January 1997, this guide describes economic development that is long-term, strategic, opportunistic, cooperative, and community-based. Thus, it assumes that technology-based economic development is best guided by a long-term strategy and should be pursued by a partnership involving the local government and the institutions and businesses that are technology resources. The strategy should be flexible enough to take advantage of new opportunities.

This guide begins by defining the terms used in technology-based economic development and then discusses how to define the project. Those sections draw upon work done for Pilot LGPP partner Gliwice. For more information, please see the Gliwice Economic Development Agency publication that is based upon the July 1997 Technology Park workshop in Gliwice. The final section of the guide describes the steps in project planning. It draws upon work done for Pilot LGPP partner Kutno, specifically an economic development presentation prepared for the March 1997 Strategic Planning Workshop Kutno. Additional information is available from that workshop report.

DEFINING THE TERMS

Terms used to describe technology-based economic development may be unfamiliar, and so this paper begins with definitions. The following definitions are based upon the US experience and describe what is typical in the US.

- **Public-Private Partnership.** A government working with business, non-government organizations and/or educational institutions to promote their common interest. The partnership may involve any combination of governmental and non-governmental entities.

- **Technology.** The method of production.

- **High Technology.** A method of production using advanced scientific knowledge.

- **Innovation.** A new way of doing something.

- **Technology Transfer.** The sharing of information about scientific discoveries to bring about innovations in technology.

- **Technology Transfer Center.** A platform for the exchange of information about scientific knowledge and needs between research and development organizations, such as universities, and potential industrial users of that knowledge.

- **Business Incubator.** "... a facility that provides small, entrepreneurial businesses with affordable space, shared support services and business development services, such as financing, marketing and management." (National Business Incubation Association, 1991.)

- **Technology Incubator.** A business incubator that restricts tenancy to high technology businesses. The technology incubator often includes a technology transfer center or works as one.

- **Industrial Park.** An area of land under the control of a single management entity and developed for industrial use by multiple firms.

- **Technology Park.** An industrial park that restricts tenancy to firms or branches of firms that conduct research and development.

In practice, each technology incubator, technology transfer center, or technology park project is unique. Modifications and mixed uses are common. For example, a facility may be used partially as a business incubator and partially as a high technology incubator. The mix may vary considerably over time.

Frequently a technology transfer center, technology incubator, or technology park has a contractual or operational relationship with one or more universities or other institutions of higher learning and/or scientific research. This promotes research and development by the university in partnership with industry by providing



a link between university science and industrial research and development. In that case the project is described as university-related.

DEFINING THE PROJECT

A technology-based project can be viewed as having three components:

- A partnership between research and government and business interests formed to use technology resources for economic development;
- An organized program of technology transfer; and
- A physical development such as an incubator, transfer center or industrial park devoted to high technology industries.

The components achieve synergy; that is, they interact so that the whole is greater than the sum of its parts. It is not necessary to do all three, and a project can be done over time rather than all at once. Technology-based development can occur in the general industrial arena. It does not require a special environment; however, it is encouraged by one.

The partnership, alone, is a worthwhile and powerful tool for promoting technology-based development. If the partnership goes on to create an organized program of technology transfer, that program provides more support for technology-based development. If the partnership develops an incubator or research park, it creates a better environment for technology-based economic development.

The components are building blocks. A successful partnership contributes to the success of organizing a technology transfer program, and those successes contribute to the success of a high technology incubator or research park. Conversely, without the partnership and the technology transfer program, it is not likely that a technology-based physical development will be a success.

Goals, organizational or management structure, financing, and target market define each component. Together, they define the individual projects. Local governments and project sponsors make the decisions about these characteristics during the planning process. The decisions should reflect the unique local circumstances, needs and resources.

Goals

The different entities that comprise the partnership have different reasons for supporting or participating in technology-based development projects. They share the goal of encouraging technology-based economic development, but each has a different emphasis and measures success somewhat differently. The following describes typical goals for various partners:

- Government wants to increase the number of jobs in the local economy, to increase its tax revenues and sometimes to find an economic use for obsolete buildings.
- A university wants prestige, good jobs for its graduates, research contracts for its faculty, income from licensing new technologies, and sometimes, to find an economic use for excess property it owns.
- A research institute wants increased prestige, research and development contracts, licensing income.
- Business wants access to new technologies that will help it stay competitive by creating new products and services and/or better methods of producing existing products and services.
- Private developers want a profitable return on their investment.

The combination of entities that support the project shape its goals and thus its definition. A successful project plan recognizes that an entity is not likely to participate in a project unless its goals are addressed.

Management Structure

The partners decide upon a management structure that will meet their needs and will work in the unique local situation. Management structure also has to meet the needs of the specific project. Individual projects within a broad technology-based development strategy often have different management structures.

If there is a single entity that develops, operates and controls the project, that entity takes all the risks and enjoys the gains. A partnership is a more popular management structure. The partnership may form a corporation or other joint venture relationship to manage the project. Details about the allocation of ownership, risk, and responsibility are negotiated by the participants.

The important point is the variety and the flexibility of management structures. For example, a technology incubator or park in Poland might be owned and managed by a local or regional development agency, a foundation, a limited stock company, a consortium of universities, or some combination of those. The management structure also has to comply with legal requirements. Financial and legal experts should be involved in decisions regarding management structure.

Financing/Capitalization



Several types of capital are needed to support technology-based economic development. Funds are required to support project planning, project implementation, operation during the start-up period, and sometimes as a subsidy for ongoing project operation.

Project funding can be from the public sector or the private sector but usually is a combination of the two. Where private investment funds are involved, the financial arrangements combine adequate return for the investors with a payback schedule that expected project revenues can sustain. A project feasibility study, which is part of the early project planning, first sets forth the parameters of project financing. Financial planning becomes increasingly specific during the planning process. Finally, implementation plans contain budgets specific to each activity.

In addition to the capital needs of the project, the small and medium-sized high technology firms that are targets of most technology-based development strategies have their own capital needs. A technology-based development strategy has to consider both the capital needs of its projects and of its target firms. Incubators usually include assistance in obtaining financing among their tenant services.

Target Markets

Marketing plans are part of project planning from the very beginning and are commonly included as part of a feasibility study. An analysis of the local research and development resources identifies the areas of greatest local expertise. Further investigation identifies which of these areas are in demand; that is, where is there a demand from industry for new technologies that will lead to innovations in production or new products. Both the supply and demand sides of the market must be considered.

There are many possible areas of technology on which to focus, and again, the choice reflects the unique local circumstances. A technology project may choose to build upon a single area of technology or on several different types. That is the first big decision in the marketing plan.

Another marketing decision is which activities will be encouraged. Possible targets range from research and development activities to manufacturing that uses high technology processes. A research park or incubator has to decide what activities will be allowed. Some allow “clean” manufacturing facilities; others allow only prototype manufacturing. Decisions about the technology focus and permitted activities shape the marketing strategy by defining the potential clients.

A third major decision addresses ownership and development responsibilities. An incubator leases its space - usually with a three- to five-year time limit for occupancy. For a research park, however, land can be sold or leased long-term to tenant firms. The developer is responsible for infrastructure improvements, but either the tenant or the park developer can build the structures. Arrangements vary to suit local needs and legal frameworks.

Organizing the Decisions

The number and variety of decisions involved in project planning is daunting. The following matrix provides a format in which these decisions can be considered. Each cell represents an area for decisions, which will define the project and move it forward. This matrix is presented only as an example. The cells are filled in with questions that illustrate some of the decisions that need to be made. In practice, the sponsoring partners would start with empty cells and fill them in as decisions and plans are made.

Defining the Technology Project

	Partnership	Technology Transfer Program	Land/Building Development
Goals & Objectives	how can we reflect the needs of all partners?	support existing industry? encourage start-ups? attract new industry?	job creation? use vacant land? re-use obsolete buildings?
Management Structure	oral agreement? written contract? lead agency? how do partners communicate?	one entity or a partnership? government or non-government? lead agency? how to allocate responsibilities?	one entity or a partnership? government or non-government? lead agency?
Financing Needs & Resources	(usually low)	how does each partner contribute? how are benefits distributed? how much money will be needed initially and for operations?	how does each partner contribute? how are benefits distributed? how much money will be needed initially and for operations?
Target Market	university? research institutes? governments? businesses?	specific industry?	research facilities? high tech firms? start-up firms? existing industry? renters or purchasers?

PROJECT PLANNING

As a project moves through the planning process, information is developed and the plans become more detailed and specific. Also, early decisions may be modified as more information is gained. Through the planning process, an idea evolves into blueprints. In Kutno, the Pilot LGPP helped design and implement a workshop to initiate the planning process for a proposed agro-industrial park. The agenda focused on developing an initial action plan, partnership goals and management structure. A strategic planning SWOT process designed in the January Pilot LGPP meeting in Warsaw was used to make decisions.

The action plan assigned responsibilities for next steps, and the workshop participants also considered the allocation of responsibilities in a larger context. Participants would:



- Develop a detailed action plan;
- Clarify the roles and responsibilities of the sponsoring partners; and
- Discuss partners' expectations and agree how information will be shared and decisions made as implementation proceeds.

The design and implementation of a high technology incubator or park requires similar planning.

Initial Action Plan

Once a project has been defined, the next step in moving it toward implementation is to produce the initial action plan. This action plan (1) describes the next steps, (2) assigns responsibility for each next step, and (3) sets a deadline for accomplishing that activity.

A strategic planning SWOT process can be used to develop an initial action plan. Participants identify the local economic assets, needs, opportunities, and problems that the project planning should address. Those parameters are identified for each target identified by the economic development strategy. This information prepares the participants to define next steps, assign responsibility, and set deadlines. (NOTE: Several handbooks are available in Polish that describe in detail the SWOT process.)

The action plan addresses a broad range of topics. To facilitate its development, the action plan for the Kutno agro-industrial park was divided into the following three sections:

- Physical development of the park
- Promotion of the park to potential investors
- Informing and involving citizens in the park development

That division reflected local priorities and concerns. Another locality might decide on a different breakdown. It is possible to address the action plan as a whole rather than in sections; however, dividing a complex project into sections is a useful tool.

Feasibility Study

One of the tasks assigned by the initial action plan is preparation of a feasibility study. Because the feasibility study projects costs and revenues, it is an important project management tool. Information in the feasibility study is used by potential investors and lenders to evaluate the project. A wide range of professional expertise is required to prepare a feasibility study. Thus, it requires a commitment of both time and money from the project partners. A feasibility study contains:

- An economic justification of the project
- Site and development plans
- the management, marketing and promotion plans

The economic justification is a pre-project market analysis. It defines the need for the facility by identifying the target market of potential clients and estimating their needs (demand). For example, the economic justification for a high-technology incubator would evaluate current unmet need for incubator space and the potential demand from new start-up firms that would be encouraged by the availability of an incubator. It would identify the types of firms that were potential clients and the types of facilities that would serve them best.

The site and development plans address land ownership and planned improvements. They include a map showing project boundaries and the relevant legal survey. An engineering and land development plan describes site development and utilities, a cost and development schedule for those improvements, and regulations governing land uses. If the project will proceed in phases, the site plan describes each phase. If there are environmental concerns about the property, the site plans include an environmental audit. The architectural and engineering studies and the environmental audit all require specific expertise.

The management, marketing and promotion plans address the key issues of project operation and finance. It designates the project manager and management structure. It defines the target market of potential investors and the financing mechanisms for the project. It includes a business plan that projects costs and revenues during the project development and operational stages. As the project planning proceeds, the financial plans become increasingly detailed. Fewer pieces of information are listed as “to be determined.” Expert assistance is required in this arena, preferably from professionals with experience in the specific type of project being planned.

Citizen Participation Plans

The Kutno Strategic Planning Workshop recognized the importance of citizen support for a major economic development project and included a plan to inform and involve the local citizens in the development of the project. This is consistent with the premises that economic development should be community-based. Special attention to citizen participation is important for a project that is a new concept and will require a long-term commitment. The Pilot LGPP included technical assistance in that arena, and further information is available from the Communication and Citizen Participation guide.

Implementation Plans

The feasibility study is a basis for implementation plans that are specific to each aspect of the project. Implementation plans provide much greater detail than the initial action plan; for a building, implementation plans include the architectural drawings and blueprints that show how to construct the building. Like the initial action plans, implementation plans identify the responsible entity and the project deadline. They also contain a budget that sets forth a schedule and amounts for financial needs plus the source of those funds. The implementation plan is the final step in the planning for an action and the first step in its implementation.

OTHER ASSISTANCE RESOURCES



Technical assistance in the development of technology incubators and research parks is available from the two international associations of research parks, one with headquarters in the US and one in Europe, plus numerous national associations. There is an incubator association in Poland, and one in the US that has international membership. These organizations are good sources of information and referrals for those considering development of their own research park. Their addresses and phone numbers are listed below.

Technical Assistance Resources: Membership Associations

Incubators:

Polish Business and Innovation Centres Association
ul. Polanka 3
61-131 Poznan
Poland
telephone: 61-77 17 51 FAX 61-77 18 31
President: Krzysztof Zasiadly
Contact person: Anna Garczynska

National Business Incubation Association
20 East Circle Drive, Suite 190
Athens, Ohio 45701
tel 614/593-4331 FAX 614/593-1996
Susie McKinnon, Director, Member Services

Research Parks:

International Association of Science Parks
Parque Tecnologico de Andalucia
C/Maria Curie S/N
Campanillas, Malaga 29590
Luis Sanz, Director

Association of University Related Research Parks
1730 K St NW, Suite 700
Washington, DC 20006
telephone 202/223-4735 FAX 202/223-4745