

PN-ABD-255  
62737

**FINAL REPORT**

**COOPERATION BETWEEN A.I.D. AND THE STATES  
IN TECHNOLOGY, TRADE AND INVESTMENT:  
MARKET AND TECHNOLOGY ACCESS PROGRAM PHASE II**

**Prepared for  
U.S. Agency for International Development  
Bureau for Science and Technology  
Office of Rural and Institutional Development  
under  
Contract No. DHR-4053-C-00-7015**

**October 20, 1988**

**by  
Paul B. Phelps  
David E. van Tijn**

**TvT Associates**

## **LIST OF ACRONYMS**

<b>A.I.D.</b>	<b>Agency for International Development</b>
<b>BFP</b>	<b>Ben Franklin Partnership</b>
<b>CBI</b>	<b>Caribbean Basin Initiative</b>
<b>CINDE</b>	<b>Costa Rican Coalition for Development Initiatives</b>
<b>CPA</b>	<b>Certified Public Accountant</b>
<b>DDO</b>	<b>Delaware Development Office</b>
<b>DOC</b>	<b>Department of Commerce</b>
<b>ITA</b>	<b>International Trade Administration</b>
<b>ITO</b>	<b>International Trade Office</b>
<b>LDC</b>	<b>Less-developed Country</b>
<b>LSU</b>	<b>Louisiana State University</b>
<b>MTAP</b>	<b>Market and Technology Access Project</b>
<b>NASDA</b>	<b>National Association of State Development Agencies</b>
<b>NGA</b>	<b>National Governors' Association</b>
<b>NIC</b>	<b>Newly Industrialized Country</b>
<b>ODU</b>	<b>Old Dominion University</b>
<b>OIT</b>	<b>Maryland Office of International Trade</b>
<b>OTA</b>	<b>Office of Technology Assessment</b>
<b>OTTO</b>	<b>Ohio Technology Transfer Organization</b>
<b>PRC</b>	<b>People's Republic of China</b>
<b>PRE</b>	<b>Bureau for Private Enterprise</b>
<b>PV</b>	<b>Photovoltaics</b>
<b>R&amp;D</b>	<b>Research and Development</b>
<b>RD</b>	<b>Rural and Institutional Development</b>
<b>RFP</b>	<b>Request for Proposal</b>
<b>S&amp;T</b>	<b>Bureau for Science and Technology</b>
<b>SBA</b>	<b>U.S. Small Business Administration</b>
<b>SMEs</b>	<b>Small and Medium Sized Enterprises</b>
<b>TDP</b>	<b>Trade and Development Program</b>
<b>US&amp;FCS</b>	<b>U.S. and Foreign Commercial Service</b>

## CONTENTS

	<u>Page</u>
EXECUTIVE SUMMARY.....	1
INTRODUCTION.....	6
STATE SCIENCE AND TECHNOLOGY DEVELOPMENT PROGRAMS.....	8
STATE TRADE DEVELOPMENT ACTIVITIES.....	13
RECOMMENDATIONS FOR DESIGN AND OPERATION OF A SEED FUND.....	20
 <b>APPENDICES:</b>	
A -- Contents of the Technical Library .....	A-1
B -- State Government Initiatives for Science- and Technology-Driven Economic Development.....	B-1
C -- Directory of State International Trade Directors .....	C-1
D -- Summary of Responses to NASDA Questionnaire .....	D-1
E -- State Trade and Investment Activities in Developing Countries.....	E-1
F -- Profiles of Selected States' Activities in Developing Countries .....	F-1
G -- Descriptions of Sample Projects .....	G-1
H -- Competing Sources of Federal Assistance to State Trade and Investment Programs .....	H-1
I -- Potential Members of Seed Fund Advisory Committee .....	I-1
J -- Upcoming Meetings Concerning State Initiatives in International Trade and Investment.....	J-1

## EXECUTIVE SUMMARY

### Introduction

The research described in this report was conducted under Contract No. DHR-4053-C-00-7015 from the U.S. Agency for International Development, Bureau for Science and Technology, Office of Rural and Institutional Development (AID/S&T/RD). Under the original terms of this contract, TVT Associates investigated State-level science and technology development initiatives in the United States, hoping to discover a model that could be modified for adoption in developing countries. This investigation included a review of pertinent literature and the development of a technical library, as well as a number of site visits and interviews with program officials and other experts.

On the basis of this investigation AID/S&T/RD modified the terms of the contract to explore opportunities for cooperative efforts with the States in trade development. TVT Associates has gathered information on State trade and investment programs through a questionnaire, structured interviews and informal conversations with State trade officials. Based on these investigations, TVT Associates supports AID/S&T/RD initiatives for the design, implementation and operations of an "A.I.D./State Trade Development Seed Fund" for cooperative projects of technology, trade and investment in developing countries.

### Findings

**Science and Technology Initiatives.** -- State governments have launched a rapidly increasing number of programs to promote scientific research and technological innovation for purposes of economic development. Analysis reveals six or more broad categories of initiatives, most of which are intended to create new partnerships among government, university and industry. Recent developments include the emergence of more comprehensive State strategies and the creation of regional technology consortia that link the efforts of several States.

These programs are too varied and too recent to evaluate systematically, and little evaluation research has been undertaken to date. Anecdotal evidence indicates that success requires a well developed *technological infrastructure* (including research

university, technical workforce, available venture capital, support industries, and entrepreneurial climate). In addition, the most notable successes -- Silicon Valley, Route 128 and Research Triangle Park -- are already over 30 years old. This suggests that in developing countries, even where the required infrastructure is available, the payback period for similar programs would be unacceptably long.

**Potential for A.I.D./State Cooperation.** -- TVT also found, however, that an increasing number of State governments are heavily involved in programs to increase exports and promote international trade and investment. While most of these efforts focus on developed markets, State officials were intrigued by possible opportunities in developing countries for technology-based trade, including licensing and joint ventures as well as sales of high-tech products. Since A.I.D. is also interested in trade and investment as mechanisms for economic development, there are immediate and productive opportunities for collaboration between A.I.D. and State agencies on projects that could yield benefits in the short term while building the infrastructure for long-term, sustainable technology development.

**State Initiatives and Interests.** -- A survey of State trade programs, conducted under subcontract by the National Association of State Development Agencies (NASDA), revealed that State officials are in fact interested in such collaboration. Over half of the States have trade offices, representatives or other activities in developing countries. Few of them have worked with A.I.D. in the past, but most are interested in increased interaction, particularly in the areas of procurement information, trade leads and assistance in arranging trade missions. Respondents volunteered a number of specific activities that A.I.D. might undertake. Extensive follow-up conversations with State officials have identified a number of joint projects that might be undertaken on relatively short notice. These conversations have also identified a number of additional Federal agencies that are developing similar programs of assistance to and/or collaboration with State trade and investment efforts.

## **Recommendations**

**A.I.D./State Seed Fund.** -- These findings have led AID/S&T/RD to propose the creation of a "Trade Promotion Seed Fund," to be administered by NASDA under a

cooperative agreement. TVT Associates supports this proposal. However, it has become clear from our extensive contact with State officials that three conditions will have to be met to maintain interest in and support for the Seed Fund at the State level:

- o it must be designed and operated in such a way as to be highly responsive to State interests;
- o it must have a high degree of independence and objectivity; and
- o it must leverage its efforts by cooperating with a broad range of institutional contacts and by tapping a broad range of other A.I.D., U.S. Government and private sector resources.

**Direction.** -- To meet the three conditions outlined above, it is recommended that the Seed Fund should be directed by an Advisory Committee, on which not only A.I.D. and State organizations will be represented, but also other Federal agencies and private sector groups with an interest in technology, trade and investment ties with developing nations. The Advisory Committee should assist with project development and should make all funding decisions, subject to approval by A.I.D. In addition, the Seed Fund should begin immediately to seek out additional sources of funding, both for capitalization and for co-funding of individual projects.

**Administration.** -- TVT Associates supports the decision of AID/S&T/RD to place administration of the Seed Fund with NASDA under a cooperative agreement. NASDA is in regular contact with State Development Agencies who are its constituency, and the added administrative duties of the Seed Fund are a natural extension of its present functions.

**Professional Staff.** -- In addition to administrative support by NASDA, professional staff support is required in three areas:

- o maintaining contacts, and networking with other A.I.D., other U.S. Government and private sector organizations and persons having an interest in promoting trade/investment with developing countries;

- o supporting States and other organizations in identifying and preparing proposals for submittal to the Seed Fund; and
- o obtaining "buy-ins" and other cost-sharing commitments for individual projects.

Direction of the staff support effort will be supplied by the project manager in AID/S&T/RD. In view of the magnitude and need for continuity in the task, it is recommended that additional professional support be obtained under contract.

**Priority Actions.** -- Finally, it is recommended that work on development of the Seed Fund be continued and be perceived by the States to be continued, even in the interim between this writing and formal funding. A great deal of interest has been created, and several States are poised to submit actual proposals. A hiatus in activity would dissipate this interest, making it difficult to re-start the effort in the new fiscal year. Furthermore, much preparatory work needs to be done, in order to begin the Seed Fund with real support for State activity. Activities which should be continued in the interim include:

- o develop, jointly with State personnel, a "first cohort" of State projects so that grants can be made as soon as funds are available;
- o recruit and convene the initial meeting of the Advisory Committee;
- o identify interested A.I.D. Missions and Bureaus and establish communications between A.I.D. representatives and those of relevant State trade agencies;
- o develop and publish both (1) explicit funding criteria for individual grants and (2) meaningful performance measures for project evaluation;
- o establish cooperative relations with other Federal agencies engaged in related activities, to include a "summit conference" (under NASDA auspices) if necessary;
- o identify private sector groups, foundations, multinational banks, etc., that are engaged in related activities and/or could be interested in providing additional funding or technical assistance for the Seed Fund and the projects it funds; and

- o develop a "second cohort" of project proposals, from regional and other multistate groups as well as individual States, so that a second round of grants can be made within six months.**

## INTRODUCTION

The research described in this report was conducted under Contract No. DHR-4053-C-00-7015 from the U.S. Agency for International Development, Bureau for Science and Technology, Office of Rural and Institutional Development (AID/S&T/RD). Under the original terms of this contract, the objective of the research was to develop and refine a model of regional industrial technology development in the United States, with particular emphasis on State government programs for technology development and application. TVT Associates was then to modify that model according to the conditions prevailing in developing nations, and to identify specific A.I.D. Missions interested in implementing the modified model in their host countries.

Based in part on the initial findings, AID/S&T/RD subsequently modified the terms of the contract, shifting the focus of research to include State government programs for international trade and investment. The new objective was to determine the potential for cooperation between A.I.D. and the States, and to identify possible mechanisms for supporting cooperative activities between existing State initiatives and A.I.D. Missions. The results of both phases are presented in the following sections of this report and in the appendices described below.

In the course of its research, TVT Associates developed a Technical Library containing nearly 100 items relating to regional technology development, State government technology and trade development programs, and related subjects. A bibliography of this Technical Library, which will be handed over to S&T/RD along with this final report, is attached as Appendix A.

The investigation of State science and technology initiatives included a review of pertinent literature and a number of site visits and interviews with program officials and other experts. The results of this investigation are summarized in the following section; the full text is attached as Appendix B.

The investigation of State trade and investment programs included a subcontract to the National Association of State Development Agencies (NASDA). NASDA distributed a questionnaire to its members, seeking information on their activities in developing

countries and their interest in cooperative linkages with A.I.D. Appendix C is a directory of State trade directors, and Appendix D summarizes their responses to the questionnaire. Appendix E contains a complete list of existing State activities in A.I.D. and TDP host countries, and Appendix F provides profiles of selected State programs.

NASDA and TVT Associates made follow-up telephone calls to most States, in order (1) to gather additional information on existing activities, (2) to solicit their views on the utility and desired structure of the proposed Seed Fund, and (3) to identify specific projects that would be appropriate for co-funding. Appendix G describes in some detail a number of project ideas that could be developed into proposals for funding in the first round of matching grants from the proposed Seed Fund.

Finally, we have made a concerted effort to identify and contact a wide range of trade-related organizations that might provide additional sources of financial support and/or technical assistance for the Seed Fund. Contacts included export conferences, trade seminars, State association and working group meetings, and individual interviews. In the process, TVT Associates identified several Federal agencies that are developing cooperative trade programs with the States, similar to the Seed Fund; these agencies are listed in Appendix H. The broader list of contacts, attached as Appendix I, represents an initial working network for the Seed Fund and a source of members for the Fund's Advisory Committee. And Appendix J lists upcoming meetings at which the Seed Fund concept could be marketed and its network expanded.

The findings and recommendations emerging from each phase of these activities are summarized in the sections that follow. The Appendices provide supplemental and more detailed information on specific topics.

## STATE SCIENCE AND TECHNOLOGY PROGRAMS

### Overview

State governments in the United States have launched a rapidly increasing number of programs to promote scientific research and technology development for purposes of economic development. Analysis reveals six broad categories of initiatives, and recent developments include the growing integration of State strategies and the creation of regional technology consortia that link the efforts of several States. These programs are too varied and too recent to evaluate systematically, and little evaluation research has been undertaken at this date. However, anecdotal evidence indicates that success requires a well developed technological infrastructure and an extended period of subsidy, perhaps decades. This suggests that these programs may not represent an appropriate model for many developing countries.

### Program Types

State and local science and technology development programs are as varied as the locales in which they are set. However, most high-tech programs are designed to encourage innovation and local business development by mobilizing resources or removing barriers in the following general areas:

- o **Research and development.** -- These initiatives aim to quicken the pace of innovation by increasing the *supply* of new technology. They focus on the role of the university and on improving linkages between university and industry. Examples include research institutes and joint R&D ventures, as well as programs designed to move the results of the research out of the laboratory and into the commercial market.
- o **Technology transfer.** -- These programs assist *existing* industries and firms (often small and medium sized enterprises) gain access to products and processes that will allow them to modernize and remain competitive.

- o **Human capital, including education and training.** -- This category includes everything from computer literacy in grade schools to postgraduate engineering programs, as well as vocational programs and retraining for displaced workers. Many States also provide technical training that is "customized" or otherwise targeted on the manpower needs of high-tech industries.
- o **Entrepreneurship training and assistance.** -- This category is a variation on the more traditional business assistance activities of State and local governments. It includes programs designed to strengthen the *entrepreneurial culture* and networks that are part of the "technological infrastructure" for high-tech development.
- o **Financial capital.** -- Most States try to target their conventional financial incentives on innovative firms (or innovation by existing firms). Many also help entrepreneurs locate risk capital, although few States provide risk capital directly. Some universities and local business groups have launched venture or seed capital funds.
- o **Physical capital.** -- This category includes "innovative" infrastructure investments such as research parks and incubator facilities. Research parks are not without considerable risks, however, and incubators appear to work best when they pay least attention to the "technology content" of prospective tenants.
- o **Information gathering and dissemination.** -- Task forces and study commissions serve several beneficial functions. They gather valuable information on the technology needs of local industry and, more importantly, the government and university resources that can be brought to bear on those needs. They also serve a necessary networking function that strengthens the local entrepreneurial culture.

Recent developments include the emergence of more comprehensive and integrated State strategies, like Pennsylvania's Ben Franklin Partnership with its mix of short- and mid-term objectives, and the creation of regional consortia linking the high-technology efforts of several States.

## **Program Evaluations**

While these initiatives may hold considerable promise for promoting both technological innovation and regional economic development, *we don't yet know if they work*. Some of the reasons for this are methodological: the programs are mostly new; they have different goals and settings; it's difficult to develop meaningful performance measures; and causality will be almost impossible to establish in any event. Other reasons for this lack of information are institutional: even the mature initiatives have not yet been subjected to rigorous evaluation or comparative analysis; many programs seem to have been intentionally designed without evaluation mechanisms; there has been little comparative analysis and almost no cost-benefit analysis; and the scarce research currently underway will not remedy these shortcomings.

## **Success Factors**

No single factor explains why some communities and States have been more successful than others in nurturing high-technology development. However, anecdotal evidence (and common sense) suggest that the following factors will also increase the odds of success:

- o **Local initiative and partnership.** -- Programs work best when they are initiated, designed and implemented locally.
- o **Identifying local needs and resources.** -- Success requires a detailed knowledge of local conditions and attributes, both strengths and weaknesses.
- o **Adapting to external constraints.** -- As a corollary, the goals and likely results of high-tech programs should be spelled out clearly in advance, in order to avoid inflated expectations, disappointment, and backlash.
- o **Linkage with broader development efforts.** -- High-technology initiatives produce the most substantial results when they are part of a broader, integrated development strategy.

- o **Sustained effort.** -- A minimum of 10 or even 20 years may be required before a significant number of local jobs can be credited to firms or products created by local entrepreneurs or research establishments. As a result, success will depend in part on sustained effort and commitment, including stable long-term funding.

### **Potential Contribution to Economic Development**

"High technology" is an unnecessarily vague term, but (however defined) it denotes a small and poorly understood sector of the U.S. economy. High-technology industries are growing somewhat faster than overall employment, but they will account for only a small fraction of total employment growth over the next 10 years, and most of these jobs will continue to be concentrated in only a few States. For most communities, therefore, the greatest opportunities lie in encouraging business development and technological innovation *throughout* the local economy, rather than trying to attract high-technology businesses from other regions. Undue emphasis by government at any level on high-technology industries *per se*, rather than on the process of innovation and diffusion, risks ignoring much wider opportunities for promoting industrial competitiveness and sustainable economic development.

### **Conclusions**

While most high-technology initiatives have not been evaluated in terms of the creation of jobs and wealth, the most notable successes (Route 128 around Boston and Silicon Valley in California) share two important characteristics: they were *unplanned*; and they are almost *40 years old*. The best known *planned* initiative (Research Triangle Park in North Carolina) is already over 30 years old, and its success is still unproven in terms of new firms or jobs created *outside* the Park. The most significant contribution of many programs is to stimulate the formal and informal communication networks that form part of the "technological infrastructure" for long-term development. And no State undertakes high tech initiatives in isolation from more comprehensive economic development strategies.

TVT Associates concludes from these findings that such programs do not provide a model that will be widely applicable in developing countries. More importantly, the pay-

back period for "high tech" initiatives is probably very long, perhaps spanning decades. An equally long period of sustained effort and funding would be required before a significant return on the political and financial investment can be expected. Projects that require such a long-term subsidy are likely to have a low priority for both the Host Country Governments and the USAID Missions.

However, the State and regional development officials we interviewed also showed a great interest in trade promotion, and most of them were especially intrigued by possible opportunities in the Third World. They often emphasized technology-based trade, which they envision as including licensing arrangements, joint ventures and offshore manufacturing, as well as trade in products and processes with a high "technology content." A.I.D., for its part, also appears to be shifting its emphasis toward programs that employ trade and investment as mechanisms for creating employment and wealth in the Third World. In these programs, too, the emphasis is shifting from trade in commodities toward trade in technology-based products and processes. These trade-based initiatives can yield benefits in the short-to-medium term, while creating the technological infrastructure required for high-technology programs like those described above. This suggests that there is a considerable potential for collaborative programs between A.I.D. and the various State trade agencies.

Based in part on these initial findings, AID/S&T/RD decided to modify Contract No. DHR-4053-C-00-7015. The research was reoriented toward analysis of the opportunities for cooperative efforts between A.I.D. and State agencies in the area of trade and investment. In particular, AID/S&T/RD proposed the establishment of a Trade Promotion Seed Fund, administered jointly by A.I.D. and State representatives, for the purpose of providing cost sharing for joint projects. This proposal is examined in the following sections.

## **STATE TRADE DEVELOPMENT ACTIVITIES**

### **Overview**

State governments are new and active players in international trade and investment. Their overseas offices, and their attention, are still concentrated in the developed markets of Japan and Europe. However, the States are also interested in the opportunities offered by markets in developing countries. State officials indicate interest in possible cooperation with A.I.D., particularly in the areas of procurement information, trade leads, and assistance in arranging trade missions and export seminars.

### **Background**

In addition to its science and technology initiatives, almost every State has developed a trade and investment promotion program as part of its broader economic development strategy. And as with science and technology, the level and types of activities vary a great deal from State to State. Budgets range from \$25,000 to over \$5 million per year; the average State trade program has a budget of \$1 million and a staff of 12 people.

In the past these programs concentrated on attracting direct foreign investment to the States, usually in the form of branch plants of Japanese or European companies. Recently, however, their attention has also turned to export sales and U.S. investments overseas, often in the form of joint ventures, co-production and out-sourcing. The full range of their trade and investment activities now includes sponsoring workshops and seminars, disseminating trade leads, taking companies to trade shows and on trade missions, preparing market studies, providing one-on-one counseling, and assisting with export financing. In recent years these programs have increasingly targeted small and medium sized enterprises (SMEs) that are new to exporting, and they are also beginning to pay more attention to the export of services.

As they have increased their expertise and professionalism, State trade and investment programs have also increased their overseas presence. The 50 States and Puerto Rico maintain a remarkable total of 105 foreign offices. As might be expected,

however, most of the States' energies are still focussed on developed markets. Consequently, most of their foreign offices are located in Europe or Japan -- 32 in Tokyo alone. And while some 25 States have established trade offices or contractual representation arrangements in developing countries, most of these are in Hong Kong, Korea or Taiwan (see Appendix D). Only two States have offices in all of Africa (both in Nigeria), and only one State each is represented in India, Indonesia, Singapore, or Thailand.

Similarly, out of the 87 trade and investment trips made by Governors from 43 States in 1987, 36 included Japan; another 42 included Taiwan, Korea and/or Hong Kong; but only two trips were made to Honduras or Panama and only one trip each was made to Ecuador, India, Malaysia, or Thailand. On the other hand, at least 40 States have sister State or sister city relationships in developing countries, and in 1987 alone at least 20 States led trade missions (without the Governor) to one or more developing countries.

These statistics suggest that, while State programs must continue to concentrate their limited resources on markets where the returns will be greatest, they nevertheless are increasingly interested in trade and investment opportunities in developing countries. Indeed, the Committee on International Trade of the National Governors' Association (NGA) has made trade with developing countries one of four major policy issues for 1989. A.I.D. is in a good position to assist the States in this area, while advancing its own objectives in the areas of trade, investment and private enterprise. TvT Associates and its subcontractor, the National Association of State Development Agencies (NASDA), have investigated possible structures for this cooperation and the design of a mechanism for carrying it out on a program level.

#### **Results of a Survey of State Officials**

In April 1988, under subcontract to TvT Associates, NASDA sent a questionnaire to the directors of all 50 State trade agencies, seeking information on (1) their existing activities in developing countries and (2) their interest in cooperative linkages with A.I.D. Twenty-five States responded; Appendix F summarizes their responses to the questionnaire, which are analyzed below. NASDA and TvT Associates also made follow-up calls to gather additional information, solicit views on the utility of the proposed Seed

Fund, and identify specific projects for co-funding; Appendix G describes several project ideas in detail.

**State Activity in Developing Countries.** – Few State agencies have a mandate to promote trade or investment specifically with developing countries. Those that do tend to target specific regions -- Africa in the case of Michigan and Ohio, the Caribbean Basin in the case of Florida. Yet two-thirds of the respondents indicated that their State had conducted activities targeted on developing countries (see Appendix D). Activities included seminars, trade shows (e.g. Kaduna and Nairobi), trade missions, and visits by foreign delegations. Often, however, these "developing nations" were the newly industrialized countries of Latin America or the Pacific Rim, where TDP rather than A.I.D. is active.

Substate organizations are important partners in State trade and investment promotion with developing countries. Over half of the respondents indicated that universities or colleges are active in trade or technology transfer to developing countries, and in some cases the State university is a major provider of export training and assistance. Several States indicated that chambers of commerce, trade associations and other business groups are also active. World trade centers, port authorities and specialized non-profit corporations were also mentioned, as were State departments of agriculture.

**Cooperative Linkages with A.I.D.** – Only seven of 25 States indicated that they had worked with A.I.D. on specific activities, and in most cases these were procurement opportunities rather than trade or investment prospects. Several had negative comments: A.I.D.'s structure and operations are too decentralized; RFPs and procurement announcements are too hard to obtain; individual procurements include too many disparate items; lead times are too short.

Few States currently appear to perceive A.I.D. as a source of trade leads or technical assistance. However, the responding States showed an overwhelming interest in increased interaction with and assistance from A.I.D., including the following mechanisms:

- o a designated central contact point for information about A.I.D. trade and investment programs, including programs of A.I.D. Missions;

- o regular bulletins listing A.I.D.-supported procurement opportunities for trade and professional services;
- o assistance in developing or presenting seminars for U.S. firms on industry-specific business opportunities in developing countries;
- o assistance in arranging trade and investment missions to targeted developing countries; and
- o a seed fund to provide matching grants for cooperative projects in trade and investment (see below).

Respondents also volunteered several other activities that A.I.D. might usefully undertake, including the following:

- o providing country-specific trade leads and market information, including potential agents and distributors;
- o providing industry-specific trade leads and market information, especially for specific emerging industries;
- o developing a small business investment loan program for sales or joint ventures between U.S. and LDC firms; and
- o providing a single office to help States with A.I.D. procurement, including contacts with A.I.D. prime contractors.

#### **Potential Areas for A.I.D./State Cooperation**

In follow-up telephone conversations, State officials were asked to describe the sort of projects they might undertake, once the financial and information resources of the proposed Seed Fund were available to them. In some cases they described possible projects that illustrate the innovative approaches and new partnerships that the Seed Fund

is intended to stimulate; several of these concepts are described in detail in Appendix G. In most cases, however, respondents described projects that would be extensions or variations of the activities that State agencies already carry out, except that they would be in new, developing markets rather than established, developed markets. These projects are described in generic terms below.

- o **Establishing an LDC Trade Lead Clearinghouse.** -- Most States respond favorably to the idea of having someone subsidize the creation and operation of a central clearinghouse to collect and maintain data (from States *and* Missions *and* private sector groups) about their respective interests and capabilities. It would be even better if the clearinghouse could collect and qualify trade leads and opportunities in developing countries, possibly in conjunction with DOC's Foreign Commercial Service database, Caribbean Basin Initiative Information Center, etc. This information could then be made available to potential intermediaries, possibly in the form of an interactive electronic database, or failing that in the form of periodic bulletins or newsletters tailored to the respective audiences. For a fee, the clearinghouse could assist parties in making matches and establishing relationships with potential partners and clients. [A.I.D.'s Bureau for Private Enterprise has done some initial work on the design of such a clearinghouse, and might be interested in a cooperative effort with S&T/RD.]
  
- o **Compiling an LDC Trade Register.** -- The biggest barrier to increased trade and investment in LDCs is the lack of reliable information. Several States expressed interest in having A.I.D. (or a contractor) develop an inventory or directory of qualified and experienced LDC trade specialists, classified by their country or region of expertise and/or by market sector. Clearly, it would also be useful to compile a similar register of agents, distributors and other intermediary organizations for particular countries or markets, along with information on their interests and capabilities. [The Small Business Administration's Office of International Trade is gathering information on intermediaries and trading companies; we should encourage them to include developing as well as developed markets.]

- o Conducting Trade Shows and Trade Missions. -- Most States help exporters organize trade missions or subsidize their participation in important overseas trade shows; in some cases several States band together to share the costs. Assistance from the Seed Fund would make it possible to develop missions or attend shows in developing regions or countries, and to bring groups from LDCs to visit one or more States. The Great Lakes Governors' Conference, whose members include two States (Michigan and Ohio) with trade offices in Africa, has expressed interest in such a project. Interest is also anticipated from such groups as the Mid-South and Mid-America Trade Councils, Conference of Northeastern Governors, and Western Governors' Association. [The U.S. Department of Commerce is taking a four-State mission to three countries in the Middle East this fall, and undoubtedly does other regional or multistate missions. Coordination between DOC and A.I.D. could provide additional resources for similar missions to LDCs.]**
- o Developing LDC Export Seminars. -- University groups or other contractors in several States develop and produce export seminars focusing on international markets and marketing. Assistance from the Seed Fund would make it possible to develop specialized training programs -- for State and local trade specialists, as well as businessmen -- on the culture, economics and market dynamics of specific LDCs or regions. Information or loaned personnel from A.I.D. would clearly be helpful in this regard. [See Appendix G for additional projects to mobilize university resources.]**

## **Conclusions**

State governments are new and active players in the international economic scene, and their role will increase rapidly in the future. States are investing significant resources in their trade programs, which are well networked both vertically (up to the Federal level and down to the local level) and horizontally (among the States). And investigation reveals that the States would welcome A.I.D.'s help in exploring LDC markets.

State trade and investment programs also represent a potentially valuable resource for A.I.D. in the achievement of its technology, trade and investment objectives. State programs are, by their nature, closer to the business community, and their contacts

address one of the principal shortcomings of A.I.D.'s past and present trade promotion activities. While they are growing steadily, however, State programs also have limited resources, and they will continue to concentrate most of their attention on the markets they perceive to offer the greatest returns -- Europe, Japan and the Pacific Rim. To increase State interest and activity in developing countries, A.I.D. must demonstrate to the States that the potential returns of venturing into LDC markets outweigh the additional efforts, costs and political risks of the undertaking.

A.I.D. must also demonstrate that it can be a valuable partner in cooperative projects. State agencies do not currently perceive A.I.D. as a source of information or assistance, and ironically it is A.I.D. procurement opportunities rather than trade leads in which the States are most interested. Market information, including trade leads, are currently of secondary interest, possibly because State officials do not yet believe in the reality of LDC markets or perceive A.I.D. as a partner in trade promotion. Technical assistance, even with the added attraction of matching grants, is an even lower priority. The implications of these findings for program design are discussed in the following section.

## **RECOMMENDATIONS FOR DESIGN AND OPERATION OF A SEED FUND**

### **Overview**

TVT Associates' investigations fully support the proposal by AID/S&T/RD to establish an "A.I.D./State Trade Promotion Seed Fund," to be administered under cooperative agreement by NASDA. Our conversations with State officials, however, strongly suggest that the Seed Fund will be most successful if it designed and operated in such a way as to be highly responsive to State interests, have a high degree of independence and objectivity, and leverage its efforts by tapping a broad range of institutional contacts and resources. Consequently, TVT recommends that the Seed Fund be governed by an Advisory Committee representing not only A.I.D. and State organizations, but also other Federal agencies and private sector groups with an interest (and expertise) in technology, trade and investment ties with developing nations. The Advisory Committee should assist in developing project proposals, and it should also make all funding decisions, subject to approval by A.I.D.

TVT Associates also recommends that the Seed Fund immediately start looking for additional sources of funding, both capitalization for the Fund itself and buy-in funding for specific projects. It should also develop and publish guidelines on eligibility for funding, which areas have the highest priority, and explicit criteria for funding and evaluation. The Seed Fund should also pursue contacts with regional organizations and increased interaction with the Missions, including face-to-face meetings with appropriate State representatives.

In addition, TVT Associates has identified a number of priority actions that should take place during the next three months in order to maintain momentum and continuity in implementing the Seed Fund. These actions include the following:

- o ensure that a first wave of grants is made as soon as possible; and
- o recruit and convene a meeting of the Advisory Committee;
- o develop explicit criteria for making grants and evaluating performance;

- o convene a "summit conference" for Federal agencies engaged in cooperative activities with the States;
- o identify additional sources of funding and technical assistance;
- o identify interested Missions and Bureaus and arrange meetings with relevant State officials;
- o develop a second wave of proposals, from regional and other multistate groups, for funding within six months.

### **Background**

In recent years, A.I.D. has shown increasing interest in the job-creating power of small and medium-sized businesses and in the growing variety of collaborative trading arrangements (including joint ventures, technology licensing, and international subcontracting) between U.S. and LDC firms. At the same time, A.I.D. interest has also been shifting from massive public sector programs with continuing subsidies to private sector mechanisms that, once set in motion, are commercially sustainable. These trends come together in the Market and Technology Access Project (MTAP), which was designed to encourage business development in developing countries by improving LDC firms' access to international market opportunities and new technologies.

During Phase I of MTAP, A.I.D. contractors have served as brokers in the creation of a variety of private sector trade networks and other intermediary mechanisms in several developing countries. The principal lesson to emerge from Phase I is the vital importance of a strong network of domestic contacts and the relative weakness of A.I.D.'s (and its contractors') domestic networks. As a result, information costs are relatively high with regard to markets and potential trading partners in the United States. This has made it particularly difficult for LDC firms to establish relationships with small U.S. firms, and vice versa. Other lessons of Phase I include the need for long-term strategies that exploit the full range of trade and investment options, not just export sales; and the need to stimulate commercially sustainable, private sector mechanisms and initiatives.

The proposed Seed Fund , which would represent Phase II of MTAP, builds on these lessons by providing A.I.D. with a mechanism through which it can collaborate, for mutual benefit, with the innovative State trade initiatives discussed in the preceding section. State trade and investment programs, with their close contacts with U.S. producers and traders, provide A.I.D. with an opportunity to improve its access to domestic markets and private sector resources -- and to demonstrate the value of its programs to an important U.S. constituency. For its part, A.I.D. can offer the States its years of experience, the extensive local contacts of the Missions, and the agency's technical capabilities for working in the developing countries. Because of these complementarities, cooperation between A.I.D. and State programs seems certain to leverage their respective investments.

### **The Seed Fund Proposal**

AID/S&T/RD proposes to establish a "Trade Promotion Seed Fund" to provide flexible cost-sharing support for innovative State-sponsored LDC trade promotion initiatives. The Seed Fund will provide funding or co-funding for projects that promote improved trade, technology and investment flows between SMEs and business groups in the United States and their counterparts in developing countries. The intent of this support is to provide front-end assistance for the creation of private, commercially sustainable linkages and mechanisms. The Seed Fund, which will be administered by NASDA under a cooperative agreement, will be capitalized by AID/S&T/RD, with additional funding from other A.I.D. Offices and Missions on a project-by-project basis.

TVT Associates' research shows extensive support for the general thrust of this proposal, but it has also revealed several questions about the details. These questions, as well as our specific recommendations, are presented below.

### **Recommendations on Funding**

It has been suggested that the matching grants are really just "bait" to bring the States in for the more valuable information and networking services; but without the bait, the States won't come through the door. Current budget commitments from

AID/S&T/RD are adequate only to launch the program, and future commitments are uncertain. Nor is it certain that other Offices or Missions will "buy in" on any of the resulting projects.

State officials are reluctant to commit time or resources without some assurance that A.I.D. funds are forthcoming. More importantly, they want a more detailed explanation of how the cost-sharing arrangements would work. These issues should be settled as soon as possible. And while the States have no objection to putting up part of the cost -- although they would prefer to do so in kind rather than in cash -- their budgets and resources are extremely limited, as seen above.

As a result, *the Seed Fund should immediately start looking for additional sources of funding.* Two kinds of money are needed: additional capitalization for the Seed Fund itself, so that subsequent rounds of grants will be possible; and buy-ins for specific projects, the finding of which will be a major task for the Seed Fund technical staff and the A.I.D. project officer. Two different sources of funding should also be investigated: foundations and corporate sources interested in helping to capitalize the Seed Fund itself; and non-A.I.D. public sector sources of funding for specific projects, including other Federal agencies (see Appendix H) as well as multinational banks and United Nations programs.

For this reason, the Seed Fund will probably find itself judging project proposals (at least in part) on their "fundability." Similarly, possession of or access to financial resources may be an unavoidable consideration in selecting the Advisory Committee (see below). More importantly, it makes it absolutely vital that the Seed Fund continue to expand and strengthen its network of institutional contacts in Washington and elsewhere, both through the Advisory Committee and through cooperative linkages with other Federal and international agencies. The names of these and other groups are included in Appendices H and I; Appendix J provides a schedule of upcoming meetings concerning State and local initiatives in international trade and investment.

## **Recommendations on Structure and Operation**

**NASDA.** -- The choice of NASDA to administer the Seed Fund is dictated by its unique qualifications and the lack of a suitable alternative. NASDA is a membership and service association for State economic development agencies, which are the parent organizations for trade activities in most States. As such NASDA already serves as a nationwide information clearinghouse for trade initiatives nationwide; for example, it is currently printing an update of its comprehensive State Export Program Database. NASDA also maintains active contact with Federal, State and local organizations -- in D.C. and elsewhere -- which should also be added to the Seed Fund's network.

None of the institutional alternatives -- State groups like the National Governors' Association, local groups like the Conference of Mayors, universities, or private groups like the Overseas Development Council -- would be acceptable from the point of view of credibility, capability *and* objectivity. All of these organizations, however, could make a contribution to the operation and success of the Fund. On the other hand, conversations with State and Federal officials alike indicate that NASDA has credibility as a secretariat and as a source of factual information. It might be unfair to put NASDA in the uncomfortable position of choosing among competing State proposals; but it would be trained to administer the Fund, by its membership and by potential funding sources, *so long as NASDA staff does not make the actual funding decisions.* NASDA's principal shortcoming -- lack of resources -- is addressed by a cooperative agreement that provides A.I.D. support for the administration of the Seed Fund.

In addition to administrative support by NASDA, however, the Seed Fund will also require professional staff support in three areas:

- o maintaining contacts, and networking with other A.I.D., other U.S. Government and private sector organizations and persons having an interest in promoting trade/investment with developing countries;
- o supporting States and other organizations in identifying and preparing proposals for submittal to the Seed Fund; and
- o obtaining "buy-ins" and other cost-sharing commitments for individual projects.

The project manager in AID/S&T/RD will provide direction for the staff support effort, and -- in view of the magnitude and need for continuity in the task -- it is recommended that additional professional support be obtained under contract.

**Advisory Committee.** -- The credibility, capability and objectivity of the Seed Fund can also be enhanced by properly choosing and using the Advisory Committee. This body, which has been called the Project Review Committee and Project Development Committee in other project documents, serves a double function: in governance, by helping to set the direction of the Fund and make funding decisions; and in networking, by giving the Fund access to additional sources of funding, information and technical assistance. Both roles will be best served if participation is two-tiered: staff-level representatives from each organization, meeting perhaps monthly to develop proposals and coordinate activities; and policy-level representatives, meeting perhaps quarterly, to make funding decisions and address policy concerns.

To recruit members for the Advisory Committee, however, and also to get the States to work with the Seed Fund, *it must be clear from the beginning that the Advisory Committee will have a real voice in running the Seed Fund.* State officials and other respondents have repeatedly cautioned us that, to gain the confidence and cooperation of the States, the Seed Fund must be as independent and responsive as possible. The States have too much negative experience with Federal programs to be interested in a scheme that is transparently controlled by A.I.D.; they will welcome A.I.D.'s help in pursuing State goals, but they will not let A.I.D. tell them what those goals should be. Similarly, the States agree that NASDA is the logical "home" for the Seed Fund, but they would prefer its role to be no more than that of facilitator or secretariat. To the extent the Seed Fund is "managed" -- to the extent that decisions have to be made about who gets grants -- it should be by a governing board that represents A.I.D. *and* the States *and* a number of outside groups with trade credentials, with *none* of them dominating. Such an arrangement would give the Seed Fund greater credibility without excluding a final A.I.D. input on the disposal of A.I.D. funds.

TVT Associates recommends that membership in the Seed Fund Advisory Committee include *at least* one representative of each of the following categories (the names of representative organizations and individuals are provided in Appendix D):

- o Federal agencies, particularly the "competing centers" (see below and Appendix H);
- o State organizations and State leaders;
- o local organizations and leaders;
- o university trade centers and associations;
- o business groups and trade associations;
- o accounting and law firms with international credentials;
- o consulting firms with LDC trade or development experience; and
- o multinational banks and United Nations agencies.

#### **Recommendations on Eligibility**

A.I.D. has not yet developed explicit guidelines for deciding (1) what proposals to consider for funding, (2) which projects will actually be funded, or (3) how to evaluate performance once they are funded. Criteria for eligibility, selection and evaluation are needed to put the Seed Fund on an objective footing. All three sets of criteria should be developed as soon as possible, with the participation of the Advisory Committee, and advertised to the States.

The most urgent need is for guidelines on what projects will be eligible for funding, and which areas will have the highest priority. Preliminary project documents noted, correctly, that eligibility should be kept as open and flexible as possible, in order to encourage innovation -- not just export sales, but also imports, offshore procurement and manufacturing, licensing agreements, joint ventures, etc. At that time, A.I.D. indicated that it was most interested in innovative project designs and co-funding arrangements in the following substantive areas:

- o institutional linkages and information flows, including generalized market studies;
- o particular subsectors or technologies (e.g. energy, forest products, biomedical products, agribusiness); and
- o training and demonstration projects that build technological infrastructure in developing countries while developing markets for U.S. technologies and products.

TVT Associates' investigation of State trade and investment activities has revealed that, in general, the States have a similar set of priorities. Several of the States had particular project ideas (described in Appendix G) that are good candidates for funding in the first wave of grants. It is worth noting, however, that in each case several States have suggested similar ideas. This suggests that the sectoral approach may be worth pursuing, particularly since it is more likely to attract buy-in funding from other A.I.D. Offices and Missions. The closely related renewable energy proposals, in particular, should be pursued on a sectoral basis, as well as State-by-State.

Other State priorities, however, are less suited to development on a State-by-State basis. In the second wave of grants, therefore, AID/S&T/RD may want to consider -- possibly in conjunction with other Federal agencies -- a number of centrally developed projects that address these State priorities. Specifically, the States seem most interested in projects of the following types:

- o **Information Clearinghouse.** -- The States are more interested in information than in technical assistance, but they are very disappointed with current Federal sources of trade information (e.g. US&FCS). They all want to do their own database on products and capabilities of their companies. But they also want a central mechanism to collect and maintain data (from States *and* Missions *and* private sector groups), disseminate it to interested parties, and conduct searches or matchmaking. AID/PRE is developing a related concept, and both SBA and ITA have active trade information programs. The services and capabilities of this clearinghouse should include, at a minimum, the following:
  - \* a designated central contact point for information about A.I.D. trade and investment programs;

- \* regular bulletins listing A.I.D.-supported procurement opportunities for trade and professional services, including contact with A.I.D. prime contractors;
  - \* an inventory or directory of qualified and experienced LDC trade specialists, classified by their country or region of expertise and/or by market sector;
  - \* a similar register of agents, distributors and other intermediary organizations for particular countries or markets, along with information on their interests and capabilities; and
  - \* industry-specific trade leads for emerging sectors.
- o **Education and Training.** -- State agencies would also welcome A.I.D. assistance in developing or presenting seminars for U.S. firms on business opportunities in developing countries. They would also like to provide training for local trade specialists (on specific LDCs) and for their own trade specialists (on A.I.D. resources and programs). Such projects are likely to involve universities; see Appendix G for other initiatives to mobilize university resources.
- o **Logistics.** -- Once States have targeted an LDC market, they would appreciate A.I.D. assistance in identifying specific prospects and arranging trade and investment missions to the developing country. Related projects would bring groups from LDCs to visit one or more States. Several regional groups are interested in this type of project.

Since many of these project ideas can be pursued better, or at least as well, on a multistate basis, the Seed Fund should also pursue contacts with regional organizations. NASDA and NGA can provide invaluable assistance in this regard, but the Seed Fund should also seek out such groups as the Great Lakes Governors' Conference, Southern Growth Policies Board, and Mid-South and Mid-America Trade Councils.

Finally, none of these projects can accomplish much without the cooperation of A.I.D. Bureaus, Offices and (above all) Missions. The Seed Fund proposal was discussed at a regional meeting of A.I.D. Mission representatives in Jakarta, but it is too soon to judge their response. A representative of A.I.D.'s Private Enterprise Bureau recently

indicated that as many as half of the Missions are interested in cooperative activities with the States, but we don't know which Missions or how great their interest might be. Clearly, increased interaction with the Missions, including face-to-face meetings with selected State representatives, should be high on the list of activities for the Seed Fund in the months ahead.

#### **Priority Actions for the Next Three Months**

The cooperative agreement between AID/S&T/RD and NASDA is unlikely to be signed before late September. However, it will be disastrous to allow activity on the Seed Fund to stall out at this time -- the State contacts have been made, their interest has been aroused, and in several cases they have developed preliminary project proposals. Their expectations will be betrayed, and their eagerness squandered, if there is any lapse or hiatus at the D.C. end of these negotiations. Neither NASDA nor A.I.D. would benefit if they lost the momentum that has been achieved over the past four months.

TVT Associates has identified a number of priority tasks, all of which will be critical to the successful implementation of the Seed Fund, and all of which should be accomplished during the next three months:

- o assist "first cohort" States to prepare formal proposals, so that a first wave of funding can take place as soon as possible;
- o recruit and organize the first meeting of the Advisory Committee, and continue to establish corollary contacts with related efforts in D.C. and elsewhere;
- o develop funding criteria for individual grants, and establish performance measures to be used in project evaluation;
- fo identify and establish cooperative relations with other Federal agencies engaged in related activities, to include a "summit conference" under NGA/NASDA auspices if necessary;

- o identify private sector groups, foundations, multinational banks, etc., that are engaged in related activities and/or could be interested in providing additional funding or technical assistance for the Seed Fund and the projects it funds;**
- o identify interested Missions and Bureaus and arrange meetings (in D.C. or elsewhere) between A.I.D. representatives and those of relevant State trade agencies; and**
- o identify, encourage and assist a "second cohort" of project proposals, from regional and other multistate groups as well as individual States, so that a second round of grants can be made within six months.**

## Appendix A

### CONTENTS OF THE TECHNICAL LIBRARY

- Alic, John A. "Employment and Job Creation Impacts of High Technology: What Can Be Learned from the U.S. Example?" in *Futures*, n.d.
- Allen, David N. *Small Business Incubators and Enterprise Development*. Carlisle, PA: National Business Incubation Association, n.d.
- \_\_\_\_\_, and Mary Ann Dougherty. *The Business Incubator Industry in 1987*. Carlisle, PA: National Business Incubation Association, 1987.
- \_\_\_\_\_, and Janet Hendrickson-Smith. *Planning and Implementing Small Business Incubators and Enterprise Support Networks*. Carlisle, PA: National Business Incubation Association, n.d.
- \_\_\_\_\_, and Victor Levine. *Nurturing Advanced Technology Enterprises*. New York: Praeger, 1986.
- \_\_\_\_\_, Mary L. McLean, and Mia Purcell. *Creating Jobs by Creating New Businesses: The Role of Business Incubators*. Washington, D.C.: National Council for Urban Economic Development, November 1985.
- American Business Conference and McKinsey & Co. *Winning in the World Market*. New York: American Business Conference, November 1987.
- Arthur D. Little. *Technology Development on a State Level Focused on National Goals: A Concept Paper Applied to Karnataka, India*. Washington, D.C.: Arthur D. Little, April 1987.
- Barton, C. G., H. Wallender, and D. Plionis. *Promoting Market and Technology Access: Lessons Learned* (report on the MTAP Workshop, March 31, 1987). Washington, D.C.: Agency for International Development, April 1987.
- Bazan, Eugene J. *Conducting an Incubator Feasibility and Implementation Study: A Primer*. Carlisle, PA: National Business Incubation Association, n.d.
- Bearse, Peter J., and Deborah A. Konopko. "A Comparative Analysis of State Programs to Promote New Technology Based Enterprise," in *New England Journal of Business and Economics*, vol. 5 No. 2 (Spring 1979).
- Bendavid-Val, Avrom. *More With Less: Managing Energy and Resource Efficient Cities*. Washington, D.C.: USAID Bureau for Science and Technology, 1987.
- Blume, Stuart, Georges Ferno, and Michael Gibbons. *Industry and University: New Forms of Cooperation and Communication*. Paris: Organization for Economic Cooperation and Development, n.d.

- Brockman, Paul R. *Strategy and Plan for a Nationwide Technology Transfer Network*, vols. 1 and 2. Alexandria, VA: LFW Management Associates, June 1986. [Conducted for NASA under contract NASW-4262.]
- Center for Enterprise Development. *The Entrepreneurial Economy: The Monthly Review of Enterprise Development Strategies* (one-year subscription).
- Chapman, Richard L., and Kathryn Hirst. *The Uncounted Benefits: Federal Efforts in Domestic Technology Transfer*. Denver: Denver Research Institute, July 1986. [Conducted for NASA under contract NASW-3466.]
- Clarke, Marianne K. *Revitalizing State Economies: A Review of State Economic Development Policies and Programs*. Washington, D.C.: National Governors' Association Center for Policy Research and Analysis, 1986.
- \_\_\_\_\_. *The Role of Science and Technology in Economic Competitiveness*. Washington, D.C.: National Governors' Association, 1987.
- \_\_\_\_\_. *State-Supported SBIR Programs and Related State Technology Programs*. Washington, D.C.: National Governors' Association, October 1987.
- Colton, Robert. "Status Report on the NSF University-Industry Cooperative Research Centers," in *Research Management*, vol. 28 No. 6 (November-December 1985).
- \_\_\_\_\_. *Technology Transfer: A Focus on University-Industry Interactions*. Washington, D.C.: National Science Foundation, 1987.
- \_\_\_\_\_. "University-Industry Cooperative Research Centers are Proving Themselves," in *Research Management*, vol. 30 No. 2 (April 1987).
- Corporation for Enterprise Development. *State Enterprise Development Implementation Packet*. Washington, D.C.: Corporation for Enterprise Development, 1987. [Contents: *Product Development Corporations, Entrepreneurial Training, Investing in Entrepreneurship, Investing in Innovation.*]
- Dorfman, Nancy S. *Massachusetts' High Technology Boom In Perspective* (CPA 82-2). Cambridge, MA: MIT Center for Policy Alternatives, 1982.
- Engler, Richard E., Jr., and Philip G. Vargas. *Global Competition and Technology Transfer by the Federal Laboratories*. SES Development Corporation, 1987.
- Eveland, J. D. *Communication Networks in University/Industry Cooperative Research Centers*. Washington, D.C.: National Science Foundation, March 1985.
- Feller, Irwin. *Evaluating State Advanced Technology Programs*. University Park, PA: Pennsylvania State University, Institute for Policy Research and Evaluation, September 1987. [Paper presented at U.S./Europe Conference on Regional Strategies for Innovation.]
- \_\_\_\_\_. "Political and Administrative Aspects of State High Technology Programs," in *Policy Studies Review*, vol. 3 (1984).

- Fosler, R. Scott. *Leadership for Dynamic State Economies*. Washington, D.C.: Committee for Economic Development, 1986.
- \_\_\_\_\_. *Montgomery County in the New Economy*. Washington, D.C.: Committee for Economic Development, June 1987.
- \_\_\_\_\_. *The New Economic Role of American States*. Washington, D.C.: Committee for Economic Development, 1988.
- \_\_\_\_\_. *State Economic Development: What Have We Learned and Where Are We Going?* Washington, D.C.: Committee for Economic Development, June 1987.
- Friedman, Robert, and Schweke, William, eds. *Expanding the Opportunity to Produce: Revitalizing the American Economy Through New Enterprise Development*. Washington, D.C.: Corporation for Enterprise Development, 1981.
- Garcia, Rick M. *The Role of the Manager in Incubator Development and Operations*. Carlisle, PA: National Business Incubation Association, n.d.
- Gray, Denis O. "NSF's University-Industry Cooperative Research Centers Program and the Innovation Process: Evaluation-Based Lessons," in *Technological Innovation*, n.d.
- \_\_\_\_\_, Trudy Solomon, and William Hetzner, eds. *Technological Innovation: Strategies for a New Partnership*. Amsterdam: Elsevier/North Holland, 1986.
- Greene, Michael. "Creating Jobs by Creating Employers: State Incubator Strategies," in *Entrepreneurial Economy* (April 1985).
- Hetzner, William A., and Eveland, J.D. *Cooperative R&D Centers: Government, University and Industry Roles, Responsibilities and Results*. Washington, D.C.: National Science Foundation, April 1985.
- Hill, Christopher T. *Research and Technology Development: Preliminary Observations on Programs and Mechanisms*. Washington, D.C.: Congressional Research Service, September 1985.
- Hull, Galen Spencer. *A Small Business Agenda*. Lanham, MD: University Press of America, 1986.
- INC. Magazine* (one year subscription).
- International Venture Capital Institute. *1987 Directory of Business Incubators*. Stamford, CT: International Venture Capital Institute, 1987.
- Johnson, Lynn G. *The High-Technology Connection: Academic/Industrial Cooperation for Economic Growth*. Washington, D.C.: American Society for Higher Education, 1984.

- Jones, Beverly. *State Technology Programs in the United States*. St. Paul, MN: Governor's Office of Science and Technology, September 1986. [Revised edition due August 1988.]
- Kamenetzky, Mario, Robert Maybury, and Charles Weiss, Jr. "Terms of Reference for a Country Study on the Scientific and Technological Dimension of Development," in *Bulletin of Science, Technology and Society*, vol 4 No. 2 (1984).
- Kieschnick, Michael. *Venture Capital and Urban Development*. Washington, D.C.: The Council of State Planning Agencies, 1979.
- Kozmetsky, George. *New Institutional Developments for Innovation and Entrepreneurship* (Working Paper # 85-09-3). Austin, TX: University of Texas, IC<sup>2</sup> Institute, September 1985.
- Lall, Sanjaya, ed. *Exports of Technology by Newly-Industrializing Countries*. Oxford, England: Pergamon Press, 1984.
- Malecki, Edward. "Hope or Hyperbole? High Tech and Economic Development," in *Technology Review* (n.d.).
- Miller, Roger, and Cote, Marcel. "Growing the Next Silicon Valley," in *Harvard Business Review* (July-August 1985).
- Mt. Auburn Associates. "Designing a State Small Business Incubator Policy," in *The Entrepreneurial Economy*, vol. 5 No.1 (Nov. 1986).
- National Academy of Sciences, Government-University-Industry Research Roundtable. *New Alliances and Partnerships in American Science and Engineering*. Washington, D.C.: National Academy Press, 1986.
- \_\_\_\_\_. *State Government Strategies for Self-Assessment of Science and Technology Programs for Economic Development* ["report of a workshop April 10, 1987."] Washington, D.C.: National Academy Press, 1987.
- National Council for Urban Economic Development. *Competitive Advantage: Framing a Strategy to Support High Growth Firms*. Washington, D.C.: Council for Urban Economic Development, July 1984.
- National Governors' Association, Task Force on Jobs, Growth and Competitiveness. *Making America Work* (3 volumes). Washington, D.C.: National Governors Association, Center for Policy Research, July 1987.
- National Governors' Association, Task Force on Technological Innovation. *Technology and Growth: State Initiatives in Technological Innovation*. Washington, D.C.: National Governors Association, October 1983.
- Nelson, Richard R. *High-Technology Policies: A Five-Nation Comparison*. Washington, D.C.: American Enterprise Institute, 1984.

- Organization for Economic Cooperation and Development. *Science, Technology and Industry Review* (bi-annual). Paris: OECD Publications and Information Center, 1986-1987.
- Popovich, Mark, and Buss, Dr. Terry F. *Rural Enterprise Development: An Iowa Case Study*. Washington, D.C.: Council of State Planning Agencies, July 1987.
- Rood, Sally, ed. *Technology Transfer: The Competitive Edge* (proceedings 1987 Technology Transfer Society conference). Indianapolis, IN: Technology Transfer Society, 1987.
- Schmandt, Jurgen, and Robert Wilson. *Promoting High-Technology Industry*. Boulder, CO: Westview Press.
- SRI International. *Innovations in Industrial Competitiveness at the State Level: A Report to the President's Commission on Industrial Competitiveness*. Menlo Park, CA: SRI International, December 1984.
- Stewart, William L., and Friedman, Norman W. *Problems of Small, High-Technology Firms* (Special Report NSF 81-305). Washington, D.C.: National Science Foundation, December 1981.
- Technology Transfer Society. *Guidebook for Technology Transfer Managers*. Indianapolis, IN: Technology Transfer Society, 1987.
- \_\_\_\_\_. *T-SQUARED: Newsletter of the Technology Transfer Society* (one-year subscription). Indianapolis, IN: Technology Transfer Society.
- \_\_\_\_\_. *1987 Technology Transfer Directory*. Indianapolis, IN: Technology Transfer Society, 1987.
- Tornatzky, Louis G. *Evaluation Notebook for Center Directors and Evaluators*. Washington, D.C.: National Science Foundation, April 1984.
- \_\_\_\_\_. *The Process of Technological Innovation: Reviewing the Literature*. Washington, D.C.: National Science Foundation, May 1983.
- \_\_\_\_\_. *University-Industry Cooperative Research Centers: A Practice Manual*. Washington, D.C.: National Science Foundation, May 1982.
- U.S. Congress, Office of Technology Assessment. *An Assessment of Technology for Local Development*. Washington, D.C.: GPO, January 1981.
- U.S. Small Business Administration, Office of Advocacy. *State Activities in Capital Formation: Venture Capital, Working Capital, and Public Pension Fund Investments*. Washington, D.C.: SBA, June 1985.
- Vaughan, Roger, Robert Pollard, and Barbara Dyer. *The Wealth of States: Policies for a Dynamic Economy*. Washington, D.C.: Council of State Planning Agencies, 1984.
- Venture Magazine* (one-year subscription).

Vesper, Karl H. *Entrepreneurship and National Policy*. Chicago: Heller Institute for Small Business Policy, 1983.

Wallender, Harvey W., and Dmitri A. Plionis. *Intermediaries and Brokers in International Business Venture Development*. Washington, D.C.: Agency for International Development, April 1986. [Prepared by Arthur Young, Inc., for MTAP Phase 1.]

Watkins, Charles. *Programs for Innovative Technology Research in State Strategies for Economic Development*. Washington, D.C.: National Governors Association, December 1985.

\_\_\_\_\_. *State Programs to Encourage the Commercialization of Innovative Technology*. Washington, D.C.: National Governors' Association Center for Policy Research and Analysis, December 1985.

Whittington, Dale, ed. *High Hopes for High Tech*. Chapel Hill, NC: University of North Carolina Press, 1985.

Wyckoff, Andrew W., and Louis G. Tornatzky. "State-Level Efforts to Transfer Manufacturing Technology: A Survey of Programs and Practices," in *Management Science* (forthcoming).

## Appendix B

### STATE GOVERNMENT INITIATIVES FOR SCIENCE- AND TECHNOLOGY-DRIVEN ECONOMIC DEVELOPMENT

#### Overview

State governments in the United States have launched a rapidly increasing number of programs to promote scientific research and technology development for purposes of economic development. Analysis reveals six or more broad categories of initiatives, most of which are intended to create new partnerships among government, university and industry. These programs are too varied and too recent to evaluate systematically, but anecdotal evidence indicates several factors that increase the chances for success, including the presence of a well-developed technological infrastructure. However, the best known success stories (Route 128 and Silicon Valley) were unplanned, and they are almost 40 years old. Because of their long payback periods, State science and technology programs may not provide a model that will be widely applicable in developing countries. There may be greater potential for cooperative initiatives in technology, trade and investment, which would yield benefits in the short-to-medium term while building the technological infrastructure for future development.

#### Introduction

The research described in this Appendix was conducted under Contract No. DHR-4053-C-00-7015 from the U.S. Agency for International Development, Bureau for Science and Technology, Office of Rural and Institutional Development (AID/S&T/RD). Under the original terms of this contract, the objective of the research was to develop and refine a model of regional industrial technology development in the United States, with particular emphasis on State government programs for technology development and application. This investigation included a review of pertinent literature and a number of site visits and interviews with program officials and other experts. TVT Associates was then to modify that model according to the conditions prevailing in developing nations, and to identify specific A.I.D. Missions interested in implementing the modified model in their host countries. Based in part on the initial findings, however, AID/S&T/RD subsequently modified the terms of the contract, shifting the focus of research to include State government initiatives in international trade and investment and potential mechanisms for cooperation between A.I.D. and State trade programs.

#### Definitions of "High Technology"

Much of the discussion of this issue over the past 15 years has centered on the potential role of "high-technology industry" in State and local economies. This focus is currently beginning to disappear, for two reasons:

- o "High technology" is an unnecessarily vague term, but (however defined) it denotes a small and poorly understood sector of the economy, and a sector that has limited potential in many or most regions.

- o For this reason, to base development policy on distinctions between "high technology" and other sectors would be artificial and probably misleading.

Most definitions of high-technology industry are based on the relative level of R&D spending or the percentage of scientific and technical (S&T) workers; some definitions also include measures of growth or indirect R&D inputs. The U.S. Bureau of Labor Statistics has developed three definitions, no better than any others except that they also maintain statistics on them:

- o Group 1, which includes industries whose proportion of *S&T workforce* is 1.5 times the national average, represented 12.3 million jobs in 1982, out of a total U.S. workforce of 92 million. Since this definition includes over 50 percent of the manufacturing sector, including cement and automobiles, it's much too broad.
- o Group 2, which includes only industries whose ratio of *R&D expenditures* to sales is twice the national average, represented only 2.5 million jobs in 1982, and none in the rapidly growing service sector. At less than 3 percent of total U.S. employment, this definition is much too narrow.
- o Group 3 includes industries that have both *R&D expenditures* and *S&T workforces* that are close to or above the average for all industry. At 6.2 million jobs or almost 7 percent of the U.S. workforce in 1982, and with the highest growth rate of all three definitions from 1972 to 1982, this definition is just about right.

### Program Numbers

Hundreds and perhaps thousands of high-technology programs and initiatives have been launched in the last 15 years by State and local governments, universities, and private sector organizations. A census of State governments alone, in January 1983, found 153 programs with at least some provision for high-technology firms; of these, 38 programs in 22 States were "dedicated" initiatives, specifically created to promote the creation, attraction or retention of high-tech firms. A 1985 census by *High Technology* magazine identified 32 States with dedicated programs, and the total number of State programs had probably doubled over two years. By 1986, 43 States had at least one program specifically designed to encourage scientific research and/or technological innovation; the combined budgets of these State S&T programs was over \$700 million in 1986. The numbers of local and university programs are probably increasing just as rapidly, but there is no reliable way of enumerating them.

### Program Types

State and local high-tech programs turn out to be as varied as the locales in which they are set. Different studies impose different typologies, based primarily on functional distinctions or on the stage of the innovation process at which the intervention takes place. The following discussion follows the OTA typology, but table 1 compares this typology with those used in other studies. Most high-tech programs are designed to encourage technological innovation and local business development by mobilizing resources or removing barriers in the following general areas:

**TABLE 1. -- S&T PROGRAM TYPOLOGIES**

<u>OTA (1983)</u>	<u>NGA (1986)</u>	<u>Minnesota (1986)</u>
Research & development	University technology research center	Technology/research centers
	Applied research project grants	Research grants
Technology transfer	Technology transfer <ul style="list-style-type: none"> <li>o Technology development</li> <li>o Technology application</li> </ul>	Technology transfer
Human capital <ul style="list-style-type: none"> <li>o Higher education</li> <li>o Technical training</li> </ul>	Education & training	
Entrepreneurship training & assistance	Entrepreneurial assistance & training	Technical/managerial assistance
Financial capital	Financial assistance	Seed/venture capital
Physical capital	Research parks	Research parks
	Incubators	Incubators
Information gathering & dissemination		Technology offices

SOURCE: TVT Associates

- o **Research and development.** -- The most fundamental initiatives are those that aim to quicken the pace of innovation by increasing the *supply* of new technology. These programs usually focus on the role of the university and on improving linkages between university and industry; they include programs like research institutes and joint R&D ventures. R&D in and of itself can make only a limited contribution to local economies, however; the value of these programs is greatly enhanced when they are combined with others that are designed to move the results of the research out of the laboratory (and off the campus) into the commercial market.
- o **Technology transfer.** -- These programs are growing more numerous as well as more distinct from R&D programs. State governments increasingly recognized the value of helping *existing* industries and firms gain access to products and processes that will allow them to modernize and remain competitive. Many of these programs target small and mid-size enterprises, which have special problems in generating or accessing the information and expertise needed for innovation.
- o **Human capital, including education and training.** -- Other initiatives focus on developing the human capital needed to exploit the innovations resulting from university R&D. However, this category includes everything from computer literacy in grade schools to postgraduate engineering programs, as well as vocational programs and retraining for displaced workers. State government support for university research (above) is often intended to increase the supply of trained professionals, as well; but States have probably put at least as much money into improving the S&T curriculum in K-12 education, which will enhance the (perceived) quality of their broader workforce. Many States also provide technical training that is "customized" or otherwise targeted on the manpower needs of high-tech industries.
- o **Entrepreneurship training and assistance.** -- Instead of a subset of human capital, this category is more properly seen as a variation on the more traditional business assistance activities of State and local governments. Colleges and universities may teach entrepreneurship courses, but more significant results have come from programs designed to strengthen the *entrepreneurial culture* and networks that are part of the "technological infrastructure" for high-tech development. This category is thus connected to, but above and beyond, efforts aimed at R&D, technology transfer, and financial support (below).
- o **Financial capital.** -- All States provide financial incentives for industrial development, and most of them at least try to target these incentives in some way on innovative firms (or innovation by existing firms). Many of them also help entrepreneurs locate risk capital, although few States provide risk capital directly - they are more likely to do so through professionally-managed funds that are jointly capitalized by private investors. Some universities and local business groups have launched venture or seed capital funds. This program category needs a better distinction between tax credits and other *foregone revenues*, on the one hand, and actual *investments* in product development or firm creation, on the other. Similarly, an increasing number of States are engaged in *export promotion*, with their combined expenditures for this purpose now equaling that of the U.S. Department of Commerce; this emerging program type will eventually develop into a separate category of business assistance.

- o **Physical capital.** -- Here again a clearer distinction is needed between traditional infrastructure, such as a modern airport or adequate sewers and access roads, and more "innovative" investments in research parks and incubator facilities. The former may be more important than is commonly recognized, while there is conflicting evidence about incubators. Research by the Battelle Institute has suggested that high-tech parks are not without considerable risks, even when they are affiliated with universities. Both research parks and incubator facilities should properly be thought of as *real estate schemes*, rather than technology development initiatives; incubators in particular appear to work best when they pay least attention to the "technology content" of prospective tenants.
  
- o **Information gathering and dissemination.** -- The creation of a task force is often the first step in launching a high-tech strategy, but these bodies serve several beneficial functions. They are occasionally promotional in nature, but they also gather valuable information (often in the form of a directory) that identifies the technology needs of local industry and, more importantly, inventories the government and university resources that can be brought to bear on the problem of innovation. Task forces also serve a necessary *networking* function that strengthens the local *entrepreneurial culture* (above). There is a need here for better distinctions between information dissemination, in the sense of technology transfer or technical extension, and the more traditional marketing and advocacy activities associated with industrial development. Similarly, there should be a clearer distinction between the planning activities of most task forces and the functions that other studies have called "policy development" and "oversight."

### Recent Developments in State S&T Programs

Recent developments in State high-tech activities include (1) the emergence of more *comprehensive and integrated* State strategies and (2) the creation of *regional consortia* linking the efforts of several States. The former is best exemplified by Pennsylvania's Ben Franklin Partnership (BFP), which combines a competitive challenge-grant program for joint research with programs for business development, technical extension, and manpower training. The Franklin program is notable for its *mix of short- and mid-term objectives* and for its *emphasis on the bottom lines* of firm creation and employment growth. BFP is implemented through Advanced Technology Centers in four regions of Pennsylvania, making it more responsive to the particular needs and interests of local industry. By contrast, Ohio's Thomas Edison Partnership has concentrated on creating world-class applied research institutes; but these centers, with their long-term focus, are closely linked with separate university and business development activities that *will bear fruit* in the short to medium term. The evidence suggests that this sort of integrated approach may be a factor in the success of an S&T strategy (see below).

Another recent development is the creation of several regional high-technology consortia, linking the efforts of from eight to sixteen States. The nonprofit Midwest Technology Development Institute, created in 1984, aims to stimulate cooperative research at universities, move the results more rapidly from laboratory to marketplace, and organize a for-profit technology trading company. Like many high-tech strategies, the Institute is designed to increase the effectiveness of R&D by identifying common interests, pooling resources, and eliminating needless duplication. A similar research

consortium is currently being developed by the Southern Technology Council, and the Western Governors' Association has announced plans to create a regional "strategy center" that would identify the strengths and weaknesses of the 16 member States and suggest complementary strategies for exploiting regional opportunities.

### Program Evaluations

These initiatives may hold considerable promise for promoting both technological innovation and regional economic development, but *we don't yet know if they work*. Some of the reasons for this are methodological. Given their different goals and settings, for example, it's difficult to develop uniform criteria for success. In addition, most of the initiatives have been launched in the last 5 years, not all of them are fully operational, and many of them involve institutional changes that may take decades to bear fruit. Causality will be almost impossible to establish in any event: many regions already had a considerable amount of high-tech development; the impact of dedicated initiatives on further development has yet to be demonstrated; and other regions have experienced a great deal of high-technology industrial development even without a dedicated initiative. Finally, most of these programs are part of a broader business development effort, and all of them must operate within national and international business cycles.

Other reasons for this lack of information are institutional. Even the more mature initiatives have not yet been subjected to rigorous evaluation or comparative analysis. In fact, many high-tech programs seem to have been designed without any mechanism for monitoring their results or evaluating their effectiveness. Most of the research in the area consists of case studies and anecdotes; there has been little comparative analysis and almost no cost-benefit analysis. Very little research is currently underway in this area, and none of it will remedy these shortcomings.

### Factors that Contribute to Success

No single factor explains why some communities and States have been more successful than others in nurturing technological innovation and benefiting from high-technology development. The statistical evidence is inconclusive, and for every locational determinant identified by theory or survey there are regions that have several or all of the ingredients but have not yet achieved success. *A strong research university, skilled labor pool, available financing, the presence of corporate headquarters, transportation, good climate, cultural amenities* -- all may be desirable or necessary preconditions, but they are not always enough. It does appear that *cooperation by public and private organizations* provides a necessary catalyst to bring the ingredients together. However, given the continuing lack of rigorous program evaluations and comparative analyses (see below), common sense suggests that the following factors will also increase the odds of success:

- o **Local initiative and partnership.** -- High-technology development efforts work best when they are initiated and implemented locally. Some communities receive substantial help from State governments, and others use funding or development tools made available by the Federal Government. But in most cases, local leaders play a major role in the design and implementation of the initiatives, often in partnership with local entrepreneurs and business groups.

- o **Identifying local needs and resources.** -- No single, all-purpose program design will work in all settings; different regions have different needs and different resources with which to address them. Success therefore requires a detailed knowledge of local conditions and attributes, both strengths and weaknesses. It also requires a knowledge of what high-tech industries need, and a set of programs that differentiates between different technologies, sectors and stages of development. In some cases this may require local leaders to admit that they haven't got and can't get what it takes to generate or attract high tech, and to turn their attention elsewhere.
- o **Adapting to external constraints.** -- Similarly, there are many factors over which a community has little control, such as climate, current industrial base and proximity to existing high-technology centers. Successful States and communities adjust their objectives and strategies accordingly. Those without an existing high-technology base, for example, typically focus their initial marketing efforts on branch plants rather than on research facilities. Over time, these branch plants create a skilled labor force and technical infrastructure that will allow them to attract more sophisticated operations and encourage local spinoffs. San Antonio, Texas, is an example of this approach. As a corollary, the goals and likely results of high-tech programs should be spelled out clearly in advance, in order to avoid inflated expectations, disappointment, and backlash.
- o **Linkage with broader development efforts.** -- High-technology initiatives produce the most substantial results when they are part of a broader, integrated development strategy like Pennsylvania's Ben Franklin Partnership (see above). R&D programs usually focus on the needs of existing industries, for example, and efforts to attract high-tech branch plants are generally part of a broader effort to diversify the industrial base. Similarly, most local strategies involve not only incubators and technical centers but also more traditional initiatives that will make the community more attractive to *any* firm, such as infrastructure improvements or the construction of a cultural center. A survey conducted for OTA indicated that most high-tech location decisions are influenced by general economic development or training programs, rather than by a high-technology initiative.
- o **Sustained effort.** -- Few communities are likely to reap immediate benefits from high-tech initiatives. Some have been able to strengthen their economies quickly by attracting branch plants, but few have developed large concentrations of high-tech establishments in a short period of time. Based on the few initiatives that have been in place for a significant period, a minimum of 10 or even 20 years may be a realistic period to develop to the stage where a significant number of local jobs can be credited to firms or products created by local entrepreneurs or research establishments. As a result, success will depend in part on sustained effort and commitment, including stable long-term funding.

### **Potential Contribution to Economic Development**

By whatever definition, high-technology industries have been growing somewhat faster than overall U.S. employment, and they are expected to continue to do so over the next 10 years. But they are growing from a small base, and consequently they will account for only a small fraction of total employment growth. Most of these jobs will continue to be concentrated in a few States. In addition, these industries are highly

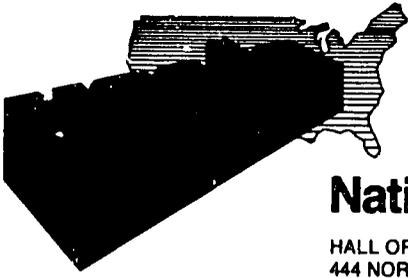
dependent on other sectors of the economy for both inputs and markets. In other words, high-tech industries may be important to a few regional economies, but their largest employment impacts will come through the diffusion and widespread application of their products by other industries, "smokestack" and services alike. For most U.S. communities, therefore, the greatest opportunities lie in encouraging business development and technological innovation *throughout* the local economy. Undue emphasis by government at any level on high-technology industries *per se*, rather than on the process of innovation and diffusion, risks ignoring much wider opportunities for promoting industrial competitiveness and sustainable economic development.

## Conclusions

The most notable high-technology success stories (Route 128 around Boston and Silicon Valley in California) share two important characteristics: they were *unplanned*; and they are almost *40 years old*. The best known *planned* initiative (Research Triangle Park in North Carolina) is already over 30 years old, and its success is still unproven in terms of new firms or jobs created *outside* the Park. Most of the younger initiatives have not been evaluated systematically, but anecdotal evidence indicates that success requires a well-developed *technological infrastructure* (including research university, technical workforce, available venture capital, support industries, and entrepreneurial climate). The most significant contributions of many programs may be to stimulate the formal and informal communication networks that form part of the technological infrastructure for future development.

TVT Associates concludes from these findings that such programs do not provide a model that will be widely applicable in developing countries. More importantly, the long pay-back period for high-technology initiatives, perhaps spanning decades, would require an equally long period of support and funding before a significant return on the political and financial investment could be expected. Projects requiring long-term subsidy currently have a low priority with both Host Country Governments and USAID Missions. What may be needed are initiatives that yield benefits in the short-to-medium term, while creating the technological infrastructure required for long-term, high-technology programs.

One possibility lies in the areas of trade and investment. The State and regional development officials we interviewed were interested in opportunities in developing countries for technology-based trade, which they envision as including licensing arrangements, joint ventures and offshore manufacturing, as well as sales of products and processes with a high "technology content." A.I.D., for its part, also appears to be shifting its emphasis toward programs that employ trade and investment as mechanisms for creating employment and wealth. This suggests that there is potential for collaborative programs between A.I.D. and the various State trade agencies. Based in part on these initial findings, AID/S&T/RD modified Contract No. DHR-4053-C-00-7015 to reorient the research toward analysis of the opportunities for cooperative efforts between A.I.D. and State agencies in the area of trade and investment.



# **National Association of State Development Agencies**

HALL OF STATES, SUITE 611  
444 NORTH CAPITOL ST., N.W.  
WASHINGTON, D.C. 20001

(202) 624-5411

**MILES FRIEDMAN**  
Executive Director

## **Appendix C**

### **DIRECTORY OF STATE INTERNATIONAL TRADE DIRECTORS**

**June 1988**

**ALABAMA**

Fred F. Denton, Jr.  
Director,  
International Development  
Alabama Development Office  
135 South Union Street  
Montgomery, Alabama 36130  
(205) 263-0048

**ALASKA**

Ben Harding  
Director, Office of International Trade  
Department of Commerce and Economic  
Development  
3601 C Street, Suite 798  
Anchorage, Alaska 99503  
(907) 561-5585

**ARIZONA**

Jim Ferguson  
Director, International Trade  
Department of Commerce  
1700 West Washington Street  
Phoenix, Arizona 85007  
(602) 255-5371

**ARKANSAS**

Maria Haley  
Director, International Marketing  
Department of Economic Development  
One Capitol Mall  
Little Rock, Arkansas 72201  
(501) 682-7678

**CALIFORNIA**

Gregory Mignano  
Executive Director  
California State World Trade  
Commission  
1121 L Street, Suite 310  
Sacramento, California 95814  
(916) 324-5511

**CALIFORNIA** (continued)

Fargo Wells  
Director  
Export Finance Office  
107 South Broadway, Room 8039  
Los Angeles, California 90012

**COLORADO**

Bea Celler  
Interim Director, International Trade Office  
Department of Commerce and Development  
1625 Broadway  
Suite 1710  
Denver, Colorado 80202  
(303) 892-3840

**CONNECTICUT**

Gary H. Miller  
Director, Investment Attraction  
International Business Development  
Department of Economic Development  
210 Washington Street  
Hartford, Connecticut 06106  
(203) 566-3842

**DELAWARE**

Larry Windley  
Assistant to Director,  
International Operations  
Delaware Development Office  
Division of Economic Development  
99 Kings Highway  
Box 1401  
Dover, Delaware 19903  
(302) 736-4271

Claire D. Wilson  
International Trade Specialist  
Delaware Development Office  
World Trade Section  
Carvel State Office Building  
820 French Street  
Wilmington, Delaware 19801  
(302) 571-6262

## FLORIDA

Tom Slattery  
Bureau Chief  
Florida Department of Commerce  
107 West Gaines Street  
Tallahassee, Florida 32301  
(904) 487-1399

Hilda Thompson  
Trade/Export Group  
Florida Department of Commerce  
107 West Gaines Street  
Tallahassee, Florida 32301  
(904) 487-1399

Gerald Wilson  
Foreign Investment  
Florida Department of Commerce  
107 West Gaines Street  
Tallahassee, Florida 32301  
(904) 487-1399

## GEORGIA

Kathleen Kleeman  
Director  
Division of Trade  
Department of Industry and Trade  
P. O. Box 1776  
Atlanta, Georgia 30301  
(404) 656-3538

## HAWAII

Kenneth Kwak  
Chief, International Services Branch  
Department of Planning and Economic  
Development  
P. O. Box 2359  
Honolulu, Hawaii 96804  
(808) 548-3048 or 4621

## IDAHO

Jay Engstrom  
Manager of Economic Development  
Division of Economic and Community  
Affairs  
State Capitol  
Room 108  
Boise, Idaho 83720  
(208) 334-2470

## ILLINOIS

Hendrik Woods  
Manager, International Business Division  
Illinois Department of Commerce and  
Community Affairs  
100 West Randolph, Suite C-400  
Chicago, Illinois 60601  
(312) 917-7164

Robert H. Newton  
Director  
Illinois Export Council  
214 State House  
Springfield, Illinois 62706  
(217) 782-7884

## INDIANA

Phillip M. Grebe  
Director, International Trade Division  
Department of Commerce  
One North Capitol  
Indianapolis, Indiana 46204-2248  
(317) 232-8846

## IOWA

Max L. Olsen  
Marketing Manager, International Trade  
Iowa Department of Economic Development  
200 East Grand Avenue  
Des Moines, Iowa 50309  
(515) 281-3138

**KANSAS**

Jim Kadel  
Director, International Marketing  
Department of Commerce  
400 Southwest 8th Street  
Topeka, Kansas 66603  
(913) 296-4027

Larry Childs  
Director, Trade Services  
Department of Commerce  
400 Southwest 8th Street  
Topeka, Kansas 66603  
(913) 296-4027

**KENTUCKY**

William Savage  
Executive Director  
Office of International Marketing  
Kentucky Commerce Cabinet  
Capitol Plaza Tower  
24th Floor  
Frankfort, Kentucky 40601  
(502) 564-2170

**LOUISIANA**

Stan Fulcher  
International Marketing Specialist  
Louisiana Office of International  
Trade, Finance and Development  
P. O. Box 94185  
Baton Rouge, Louisiana 70804-9185  
(504) 342-9232  
(504) 342-5389 FAX

**MAINE**

Michael Naylor-Davis  
President, International Trade  
Maine World Trade Association  
77 Sewall Street  
Augusta, Maine 04330-6332  
(207) 289-5700

**MARYLAND**

Harold R. Zassenhaus  
Executive Director  
Office of International Trade  
World Trade Center  
401 East Pratt Street  
Suite 752  
Baltimore, Maryland 21202  
(301) 333-4295

**MASSACHUSETTS**

Mary Ellen Sutherland  
Program Director  
Office of International Trade  
100 Cambridge Street  
Room 902  
Boston, Massachusetts 02202  
(617) 367-1830

**MICHIGAN**

Greg Main  
Director, Foreign Investment  
U.S./International Division  
Manufacturing Development Group  
Michigan Department of Commerce  
P. O. Box 30225  
Lansing, Michigan 48909  
(517) 373-6390

Randy Harmson  
Executive Director  
World Trade Services  
P. O. Box 30017  
Lansing Michigan 48909  
(517) 373-6390

**MINNESOTA**

Sandra Renner  
Director, Export Services  
Minnesota Trade Office  
1000 MN World Trade Center  
30 East 7th Street  
St. Paul, Minnesota 55101-4902  
(612) 297-4222

**MISSISSIPPI**

William A. McGinnis  
Director, Marketing Division  
Department of Economic Development  
P. O. Box 849  
Jackson, Mississippi 38205  
(601) 359-3444

**MISSOURI**

Bob Black  
Business Development Programs  
P. O. Box 118  
Jefferson City, Missouri 65102  
(314) 751-4999

Angie Kenworthy  
Senior Trade Specialist  
Economic Development Programs  
P. O. Box 118  
Jefferson City, Missouri 65102  
(314) 751-4999

**MONTANA**

John Maloney  
International Trade Officer  
Montana Department of Commerce  
State Capitol  
Helena, Montana 59620  
(406) 444-3923

**NEBRASKA**

Susan Rouch  
International Trade Promotion  
Department of Economic Development  
310 Centennial Mall South  
P. O. Box 94666  
Lincoln, Nebraska 68509  
(402) 471-3111

**NEVADA**

Julie Wilcox  
Director, International Program  
Nevada Commission on Economic  
Development  
Capital Complex  
Carson City, Nevada 89710  
(702) 885-4325

**NEW HAMPSHIRE**

William Hernan  
Programs Information Officer  
Department of Resources and  
Economic Development  
105 Loudon Road, Building 2  
Concord, New Hampshire 03301  
(603) 271-2591

**NEW JERSEY**

Ming Hsu  
Governor's Special Trade  
Representative and  
Director, Division of International  
Trade  
Department of Commerce and  
Economic Development  
744 Broad Street, Room 1709  
Newark, New Jersey 07102  
(201) 648-3518

**NEW MEXICO**

David S. Henkel, Jr.  
Director  
Economic Development Division  
Economic Development and Tourism  
Department  
1100 St. Francis Drive  
Montoya Building  
Santa Fe, New Mexico 87503  
(505) 827-0272

**NEW YORK**

R. Barry Spaulding  
Deputy Commissioner,  
International Division  
Department of Commerce  
230 Park Avenue, Room 2240  
New York, New York 10169  
(212) 309-0502

**NORTH CAROLINA**

Gordon McRoberts  
Director, International Marketing  
International Division  
Department of Commerce  
430 North Salisbury Street  
Raleigh, North Carolina 27611  
(919) 733-7193

Steve Stevenson  
Director, International Division  
Department of Commerce  
430 North Salisbury Street  
Raleigh, North Carolina 27611  
(919) 733-7193

**NORTH DAKOTA**

Jack Minton  
International Trade Consultant  
Economic Development Commission  
Liberty Memorial Building  
Bismarck, North Dakota 58505  
(701) 224-2810

**OHIO**

Marnie Shaul  
Deputy Director  
International Trade Division  
Department of Development  
30 East Broad Street, 25th Floor  
P. O. Box 1001  
Columbus, Ohio 43266-0101  
(614) 466-5017

**OKLAHOMA**

Bill Maus  
Director  
International Trade Division  
Oklahoma Department of Commerce  
6601 Broadway Extension  
Oklahoma City, Oklahoma 73116-8214  
(405) 521-3501

**OREGON**

Jim Raske  
Director, International Trade Division  
Oregon Economic Development Department  
1500 SW First Avenue  
Suite 620  
Portland, Oregon 97201  
(503) 229-5625  
(1-800-452-7813)

**PENNSYLVANIA**

Alberta Norton  
Director, International Projects  
Bureau of International Commerce  
489 Forum Building  
Harrisburg, Pennsylvania 17120  
(717) 787-7190

Anthony Amorosi  
Acting Director  
International Projects  
Bureau of International Commerce  
489 Forum Building  
Harrisburg, Pennsylvania 17120  
(717) 787-7190

Laila Cully  
Director  
Office of Economic Policy,  
Planning and Research  
486 Forum Building  
Harrisburg, Pennsylvania 17120  
(717) 787-4088

**RHODE ISLAND**

Christine Smith  
Business and Industry Representative  
International Trade  
Department of Economic Development  
7 Jackson Walkway  
Providence, Rhode Island 02903  
(401) 277-2601

**SOUTH CAROLINA**

Dr. James A. Kuhlman  
Associate Director  
International Business Development  
South Carolina State Development Board  
P. O. Box 927  
Columbia, South Carolina 29202  
(803) 734-1400

**SOUTH DAKOTA**

John Huminski  
Director  
South Dakota International Trade Center  
USD - School of Business  
414 East Clark Street  
Vermillion, South Dakota 57069-2390  
(605) 677-5536

**TENNESSEE**

Thomas Turner  
Director, Export Promotion Office  
Department of Economic and Community  
Development  
320 6th Avenue, North, 7th Floor  
Nashville, Tennessee 37219  
(615) 741-5870

**TEXAS**

Bill Luttrell  
Director, International Business  
Development Department  
Texas Department of Commerce  
P. O. Box 12728  
Austin, Texas 78711  
(512) 472-5059

**TEXAS** (continued)

Rebecca Reynolds  
Director, International Trade  
Texas Department of Commerce  
P. O. Box 12728  
Austin, Texas 78711  
(512) 472-5059

**UTAH**

Osamu Hoshimo  
Director  
International Business Development  
Economic and Industrial Development  
Division  
6150 State Office Building  
Salt Lake City, Utah 84114  
(801) 538-3036

**VERMONT**

Graeme Freeman  
Director  
International Business  
Department of Economic Development  
Pavilion Office Building  
Montpelier, Vermont 05602  
(802) 828-3221

**VIRGINIA**

Ron Renchard  
Director of International Marketing  
1000 Washington Building  
Richmond, Virginia 23219  
(804) 786-3791

**WASHINGTON**

Don Lorentz  
Director  
Domestic & International Trade Division  
Department of Trade and Development  
312 First Avenue, North  
Seattle, Washington 98109  
(206) 464-7143

**WASHINGTON** (continued)

Dan Cudaback  
Director  
Domestic & International Trade Investment  
Department of Trade and Development  
312 First Avenue, North  
Seattle, Washington 98109  
(206) 464-6282

**WEST VIRGINIA**

Steve Spence  
Director and Trade Representative  
Governor's Office of Community and  
Industrial Development  
State Capitol, Room M-146  
Charleston, West Virginia 25306  
(304) 348-0400

**WISCONSIN**

Barb Kelly  
Assistant to Acting Director,  
Bureau of International Business  
Development  
Department of Development  
123 West Washington Avenue  
Madison, Wisconsin 53707  
(608) 266-1757

**WYOMING**

Peter Cunningham  
State Planning Coordinator's Office  
International Trade Division  
Economic Development and  
Stabilization Board  
Herschler Building  
2nd Floor, East Wing  
Cheyenne, Wyoming 82202  
(307) 777-7285

Appendix D

SUMMARY OF RESPONSES TO NASDA QUESTIONNAIRE

1. Does your State's trade and investment program include a mandate to promote trade specifically in developing countries?

Yes -- 6

No -- 19

*The few States responding positively are generally targeting a specific country or region (e.g., Florida/Caribbean Basin, Nevada/Pacific Rim, etc.)*

2. Does your State's trade and investment program include a mandate to promote investment (via joint ventures, licensing, etc.) specifically in developing countries?

Yes -- 3

No -- 22

*Same as above.*

3. Whether or not you have a specific mandate, have you conducted any activities specifically targeted to promoting trade and/or investment with developing countries (e.g. seminars, missions, attending trade shows, etc.)?

Yes -- 16

No -- 9

*The most commonly mentioned activities included conducting seminars, participation in trade shows and missions, and hosting foreign delegations. However, the countries mentioned were likely to be NICs or TDP countries, rather than A.I.D. Host Countries.*

4. What is your estimate of the current levels of trade and investment flows between your State and developing Countries? (This can be descriptive; it does not have to be quantitative.)

*Respondents typically characterized trade levels as "small but growing," particularly with NICs. Several were able to provide dollar amounts or number of firms for specific countries.*

5. Has your State ever worked directly or indirectly with A.I.D. on any trade or procurement prospects?

Yes -- 7

No -- 18

*Even States responding "Yes" -- FL, IN, LA, MI, ND, OH -- had very limited experience, usually one or two projects, and had often experienced trouble. The exception was WA, which had successfully helped its companies with specific A.I.D. projects in Bolivia, Burma, Dominican Republic, Egypt, and elsewhere.*

6. Are other organizations within your State involved with trade, technology transfer, or investment promotion with developing countries?

	<u>Yes</u>	<u>No</u>	<u>Don't Know</u>
<input type="radio"/> Chambers of commerce/business groups	8	9	7
<input type="radio"/> Trade Associations	6	8	9
<input type="radio"/> Universities, technical institutes	15	3	6
<input type="radio"/> Others (world trade centers, port authorities, specialized non-profit corporations, and departments of agriculture)	8	1	7

7. A.I.D. is considering a variety of alternative methods to foster U.S trade and increased U.S. investment in developing countries. Which of the following mechanisms would be of interest to you?:

	<u>Yes</u>	<u>No</u>
<input type="radio"/> Regular bulletins for A.I.D.-supported procurement opportunities for trade and professional services.	19	1
<input type="radio"/> Seminars on industry-specific business opportunities in developing countries for U.S. firms.	17	2

	<u>Yes</u>	<u>No</u>
o Assistance in arranging trade and investment missions to targeted developing countries.	18	1
o A designated central contact point for information about A.I.D. trade and investment programs.	23	0
o A fund for pilot projects that would provide matching grants for a variety of trade and investment promotion efforts designed to strengthen U.S. trade and investment relations with developing countries.	20	1
o Are there other activities that A.I.D. could undertake which would be of interest or assistance to you?		

*Those suggested included the following:*

- *providing country-specific (as opposed to industry-specific) information;*
- *developing a small business loan program for joint ventures between U.S. firms and private companies in LDCs;*
- *assisting in targeting potential distributors in developing countries;*
- *sponsoring lending projects which focus on the States' specific emerging industries;*
- *providing contacts with A.I.D. Prime Contractors;*
- *providing a single person to help with issues relating to A.I.D. procurement which have been brought to the State by exporters;*
- *educating State officials on A.I.D. process and procedures to respond to and quote on A.I.D. projects in order for them to assist their smaller companies in doing so;*
- *developing an LDC trade lead clearinghouse; and*
- *identifying specific commodities that specific LDCs want to buy and/or sell.*

Appendix 2 -- STATE TRADE AND INVESTMENT ACTIVITIES IN DEVELOPING COUNTRIES<sup>1</sup>

<u>State</u> <sup>2</sup>	<u>Trade Shows or Missions</u>	<u>Sister State Relationship</u>	<u>Foreign Office or Contractual Representation</u> <sup>3</sup>	<u>State</u> <sup>2</sup>	<u>Trade Shows or Missions</u>	<u>Sister State Relationship</u>	<u>Foreign Office or Contractual Representation</u> <sup>3</sup>
AL		Guatemala	Hong Kong, Korea	MO			Korea, Taiwan
AK			Korea, Taiwan	MN	India		Hong Kong, Taiwan
AR	Costa Rica, Peru, The Philippines, Thailand	Bolivia	Taiwan	MS			Korea, Taiwan
AZ			Taiwan	NJ	India		
CO			Taiwan	NY	Indonesia, Kenya, India, Panama		Ireland
DE	Costa Rica, Thailand, Ecuador	Panama		NC		Bolivia	Hong Kong, Korea
FL	Ecuador, Barbados, El Salvador, Belize, Guatemala, Jamaica, Dominican Republic		Korea	OR			Korea, Taiwan
GA	The Philippines		Korea	OH	Senegal, Kenya, India	Nigeria	Nigeria
HI		The Philippines		OK	Indonesia		Singapore, India
IA	So. Africa, Thailand, The Philippines, Indonesia,		Hong Kong	PA	Bolivia, India, The Philippines, Thailand		
ID		Ecuador		RI			Hong Kong
IL	Ecuador, Panama		Brazil, Hong Kong	SC	Thailand		Mexico
IN	Costa Rica, India		Taiwan	TX	Indonesia, Thailand		
KS			Taiwan, Thailand, Korea, Indonesia	UT		The Philippines	Korea, Taiwan
LA	Ecuador, Peru	El Salvador, Panama	Korea	VA			Brazil, Hong Kong
MD			Hong Kong	WA	Thailand, Ecuador, Indonesia		
MI	Thailand, Kenya, Cameroon, Jamaica		Nigeria, Hong Kong	WI	Jamaica		
				PR	Dominican Republic, Barbados, Costa Rica		

<sup>1</sup> Includes developing countries where AID is active, unless otherwise indicated.

<sup>2</sup> States not listed indicated that they are not active in developing countries.

<sup>3</sup> Includes representation in countries where either TDP or AID is active.

SOURCE: National Association of State Development Agencies.

## **Appendix F**

### **PROFILES OF SELECTED STATES' ACTIVITIES IN DEVELOPING COUNTRIES**

*The following are brief profiles of State programs or activities involving trade and promotion with developing countries. The States that have been included are ones that indicated in their responses to the NASDA questionnaire (Appendix D) that they are actively pursuing activities above and beyond trade missions and sister State relations with developing countries.*

#### **FLORIDA**

Florida has selected the Caribbean as a primary target of its trade and investment activities. Florida's strongest trading partners are the Latin American and Caribbean countries, and the State promotes itself as a gateway to this region for European and Asian firms as well as U.S. companies. Its target sectors are medical, aerospace, communications, electronics, and agricultural and food processing equipment.

One specific objective involves establishing Florida as the center for Caribbean Basin Initiative (CBI) trade and investment activities. CBI is a program of the U.S. Department of Commerce aimed at strengthening trading relationships between U.S. companies and companies in the Caribbean Basin. Florida's efforts have included information dissemination, referrals and counseling, conducting seminars for businesses in Florida and in the Caribbean, and arranging trade missions to Caribbean countries. These efforts are managed out of the State's Coral Gables office, which is staffed by two professionals who spend all of their time on CBI-related activities.

The State's activities for 1987 and 1988 included trade missions to El Salvador, Guatemala, Belize, Brazil, Ecuador, Jamaica, and Barbados, in addition to participating in a catalogue exhibition in Guatemala. The State also sponsored several conferences on trade and investment in the Caribbean and Latin America. State representatives have attended trade shows in Indonesia and Malaysia over the years and may soon return to Africa, after a hiatus of five or six years, to attend the USA-West Africa Expo in 1989.

Several cities, including Tampa and Miami, are also actively promoting trade in the Caribbean and Latin America.

## **GEORGIA**

While Georgia does not have a mandate to work specifically with developing countries, State officials have targeted one specific industry and one specific country to focus some of their trade promotion efforts. The State has entered into a contract with a native of the Dominican Republic who will assist in the promotion of Georgia lumber, forest and other construction products. This individual, who began working under a one-year contract on July 1, 1988, will perform a number of specific functions for the State: identifying potential trading partners, monitoring the demand in the Dominican Republic for Georgia products and services, contacting companies with a high potential, making presentations on trade opportunities with Georgia companies, providing assistance to Georgia companies visiting the Dominican Republic, and representing Georgia at trade shows.

The Dominican Republic was selected as the initial target because the State felt that it has one of the top markets for wood products, an important Georgia export. However, it is expected that this individual will eventually represent Georgia throughout the Caribbean. State officials felt that this type of contractual arrangement is a more effective use of limited State dollars than attempting to actually establish a State office in the region.

The Atlanta Chamber of Commerce is active in trade promotion, and Mayor Andrew Young has led trade missions to Africa.

## **INDIANA**

Indiana has developed an ongoing business liaison with Costa Rica. The effort began in conjunction with Indianapolis hosting the Pan American Games. Since then, the Governor has gone to Costa Rica and visited with CINDE, their business organization; other State representatives have led a total of three trade missions to Costa Rica, meeting with both government officials and business people. The State has also hosted several visiting delegations from Costa Rica.

The State views this ongoing and developing relationship with Costa Rica as a long-term investment, not something that will produce its real benefits in the short run. The State hopes to help Costa Rica develop its economic base to the point where Costa Rican companies can buy Indiana products, such as food processing equipment; Indiana already purchases fruits and vegetables from Costa Rica on a regular basis. The State has proposed that A.I.D. help fund an Indiana-Costa Rica Business Alliance, with members from the manufacturing and university sectors, as well as agriculture.

## **KANSAS**

Kansas has "trade service contracts" with individuals or companies in a number of countries, including several developing countries -- Thailand, Indonesia, Paraguay, Peru, and Colombia, as well as Korea and Taiwan. Under each contract, the individual (or company) will source information on buyers, agents, distributors, etc. for Kansas products. They will act in response to specific requests from State officials, will supply lists of contacts for specific Kansas companies, and will help in arranging meetings for the companies, as appropriate. The program is still fairly new, having been initiated about a year ago, and some of the contractual arrangements are still being negotiated.

## **LOUISIANA**

Louisiana has specifically targeted the Latin American and Central American regions for its trade promotion efforts. While most of the State's trade with Latin American countries has been in commodities and chemicals, it is interested in diversifying its trade. Officials would like to promote Louisiana as a place to process fruits and vegetables imported from Latin America, and to promote the port of New Orleans as a point of distribution for goods coming from Latin America and destined for the South Central region of the United States.

Louisiana is specifically focusing on Costa Rica, El Salvador and Guatemala. The State currently has sister State relationships with Panama and El Salvador and has participated in catalog shows in Ecuador and Peru. The State has also hosted a number of foreign delegations from Latin American countries. In addition, State officials work closely with the World Trade Center in New Orleans to increase trade through the port.

**Potential Projects.** -- In addition to its Latin American efforts, the State is also interested in pursuing trade with Africa. One suggestion was possibly to work with Southern University as a basis for dealing with French-speaking African countries, particularly dealing with agriculture-related projects and entrepreneurial education. Working with LSU and licensing of University technology was also suggested.

## **OHIO**

Ohio is one of only two States which have opened offices in Africa. Ohio opened its office in Lagos, Nigeria, in 1987. Interest in opening an office came from two main sources: Governor Celeste, as former director of the Peace Corps, has substantial experience with developing countries; and the Ohio Legislature was interested in

developing business relationships between African firms and minority businesses in Ohio. The State representative in Lagos has begun doing background work -- getting to know local officials and markets -- and will soon begin helping Ohio companies participate in trade shows. The office is located in a building owned by Ohio-based NCR Corporation, which has been helpful to the State officials in getting established. The Governor has led a trade mission to Nigeria and will soon lead another to Senegal.

Ohio also has important linkages with India and China. The Department of Agriculture at Ohio State University is working with the Indian government to establish a counterpart to our Food and Drug Administration; and in February 1987 the State signed a memorandum of understanding with the influential Punjab-Haryana-Delhi Chamber of commerce, which now maintains an "Ohio desk." The Ohio University's Edison Animal Biotechnology Center also has a joint research agreement with the PRC's Hupei province, focussing on pig litter size and research on pig growth hormone.

## WASHINGTON

Washington has been more successful than many States in helping its companies take advantage of procurement opportunities with A.I.D., the World Bank and other multinational development organizations. Like many other States, Washington publishes a directory of export assistance and information sources; but unlike others, its directory includes information on international organizations, as well as Federal programs, and on their procurement activities, as well as their information programs. The Domestic and International Trade Division also makes an effort to identify and notify Washington firms that might be interested in bidding. The State is also encouraging the creation of trading companies, which seem to be better suited to many A.I.D. and World Bank procurements. The result has been \$3 million in sales of goods and equipment for A.I.D. projects in Bolivia, Burma, the Dominican Republic, Egypt, and other countries.

Washington recently received a grant from TDP for a feasibility study in India that, if successful, could bring almost \$200 million in orders for hardware and services from the State's computer industry. Washington also pursues joint ventures with developing countries, and has concluded agreements in Ghana, India and Pakistan that involve U.S. financial support and U.S. components and equipment for production for the U.S. market.

## Appendix G

### SAMPLE PROJECTS

<b>State:</b>	<b>COLORADO.</b>
<b>Contact:</b>	Vance Baugham (Director, International Trade Office, Dept. of Commerce and Development; (303) 892-3840).
<b>Project:</b>	<b>Product Development and Applications Engineering for Rural Technology.</b>
<b>Tech. Focus:</b>	Solar Energy; Rural Development.
<b>Region(s):</b>	Sub-Saharan Africa, Latin America.
<b>Description:</b>	<p>ITO is developing two programs of R&amp;D and applications engineering on technologies for rural areas of sub-Saharan Africa and Latin America. In one program, the Solar Research Institute (SRI) will be developing solar technologies for rural power applications; in the other, the Colorado School of Mines wants to identify and respond to technology needs for the extraction and enhancement of marginal ores. Both projects present opportunities for training components and for joint research activities with universities and private companies in developing countries. Another participant is the Denver Partnership, whose members include a number of small solar power companies that might serve as subcontractors in the research or product development aspects of SRI's program; they would become candidates for joint ventures or distribution relationships with counterpart companies in recipient countries. Bureaus and Missions could assist this program in addressing two principal hurdles: (1) the expense of market research and market development, especially in sub-Saharan Africa; and (2) financing for actual purchases by recipient nations.</p>
<b>Comments:</b>	<p>Solar and renewable energy technologies are strong candidates for a sectoral approach, with multi-State participation:</p> <ul style="list-style-type: none"><li>o HAWAII has received a grant from TDP to organize an International Renewable Energy Conference on September 18, and they are also seeking a small grant from S&amp;T/RD to help launch a "Renewable Energy Center of Hawaii," complete with trade lead and company databases. Contact: Rick Spreyer (D.C. Representative, Hawaii Dept. of Business and Economic Development, (202) 393-6752).</li></ul>

- o **CALIFORNIA** also has a \$5-million grant proposal pending with TDP for workshops and feasibility studies in energy-related exports, licensing and joint ventures. The California Energy Commission has already let three contracts to Meridian Corp of Alexandria (John Ashworth, (703) 998-3600) in the area of export promotion. The Golden State Business League may be another player. Contacts: Greg Mignano (Executive Director, California World Trade Commission, (916) 324-5511); Janice Cooper McEntee (D.C. Representative of CWTC, (202) 347-6891).
  
- o **OHIO** has at least two firms working in the area of renewable energy: Global Energy, a nonprofit in Akron that has set the goal of 1,000 "[energy] self-sufficient villages" in rural Africa by the year 2000; and Global Exchange, an 8(a) contractor in Xenia that works with the Ohio Technology Transfer Organization (OTTO) on international technology exchanges. Their overseas contacts, along with the State's sales office in Lagos, Nigeria, could be of assistance in the market research and market development aspects of this project.  
Contact: Marnie Shaul (Deputy Director, International Trade Division, Department of Development, (614) 466-5800).
  
- o **MASSACHUSETTS** has a Photovoltaics Center of Excellence that provides export assistance for Massachusetts PV companies, including financing and information on Federal programs. The Center also provides training and consulting assistance in PV installation and maintenance; and its demonstration center at Logan Airport allows foreign visitors to see PV technologies and applications. Meridian Corp. (John Ashworth) wants to work with this center, and International Commercial Services (Spenser King) has talked to MASSPORT (port authority) about its MTAP-1 work in Costa Rica.  
Contact: Mary Ellen Sutherland (Program Director, Office of International Trade, (617) 367-1830).

**State:** DELAWARE.  
**Contacts:** Claire Wilson (International Trade Specialist, Delaware Development Office, (302) 571-6262); Sherwood West (consultant on loan from DuPont Corp., (302) 571-6262).  
**Project:** Marketing Freight Service from Port of Wilmington.  
**Tech. Focus:** Various.  
**Region(s):** Costa Rica, Ecuador.

**Description:** The Standard Fruit and Steamship Company has direct freight service between Wilmington and the ports of Costa Rica and Ecuador. However, containers that come north full of bananas often go back empty. DDO, working with the Port Authority of Wilmington, seeks to market this available transportation to interested exporters. Target sectors include scrap paper, manufactured goods, food and food processing equipment, and chemicals. Exporter market study will use PIERS data to identify candidate firms in Mid-Atlantic region, and the State will sponsor trade mission(s) to Costa Rica and Ecuador in late 1988. Because of problems with distributors and representatives in both countries, DDO plans to use the services of an export trading company or Delaware's own Shared Foreign Sales Corp., currently under development. can assist in identifying addition markets for southbound products and possible new customers for northbound transport.

**Comments:** Proposal has potential for regional approach at both ends: companies in NEW JERSEY, PENNSYLVANIA and MARYLAND could make use of southbound transport; some products landed in Costa Rica and Ecuador could be transshipped to nearby nations. By the same token, however, the proposal could be a source of regional conflict: New Jersey, Pennsylvania and Maryland have their own ports, port authorities, and aggressive export promotion efforts. , because of the assistance it can provide at the other end, might be able to serve as a neutral facilitator.

**State:** MARYLAND.

**Contact:** Andrew Gordon (Marketing Specialist, Office of International Trade, (301) 333-4295).

**Project:** Building an Information Network and Database.

**Tech. Focus:** Various.

**Region(s):** N/A.

**Description:** OIT has expressed interest in developing an inventory of their technology firms, along with their products and capabilities, in order to respond to inquiries from LDCs. Inventories would probably be conducted in conjunction with the University of Maryland and would include target sectors such as biotechnology, agricultural equipment, electronics, and communications; they would include training services and identify firms interested in joint venture or licensing, as well as products for sale. The resulting information would be published in the form of an export directory, making sure that distribution includes , intermediaries and LDCs. OIT would conduct regular surveys to keep the database/directory current and complete; but if possible, they would like to encourage a private sector entity to update the database and provide referrals as a commercial service.

**Comments:** This activity is already very common, since it is in any State's interest to know which of its firms export what products where. IOWA, for example, surveys all of its exporters every 2 years; OKLAHOMA gathers information on all "foreign involvements," including foreign ownership and joint ventures as well as product sales. It may be more appropriate for AID/S&T to act as a clearinghouse -- gathering all of these export directories together in one place, and then disseminating them to the various Bureaus and Missions -- rather than subsidizing the States to collect it. On the other hand, it would also be appropriate for to gather complementary information on the needs and interest of the Bureaus and Missions for dissemination to the States; see text for discussion of this information function.

**State:** VIRGINIA.  
**Contacts:** Ron Rechar (Director of International Marketing, (804)786-3791); Virginia Armstrong, Associate Director, Virginia Center for World Trade (Old Dominion University), (804) 446-4849).  
**Project:** Utilizing University Resources.  
**Tech. Focus:** Training; LDC contact networks.  
**Region(s):** N/A.

**Description:** Old Dominion University provides training and information services for Virginia's export promotion programs (Port Authority, Dept. of Agriculture and Dept. of Economic Development also do export promotion). ODU would like to compile an inventory or establish a clearinghouse of university programs and/or specialists in LDC economies, cultures and languages. This information would then be made available to potential exporters and importers.

ODU would also like to conduct workshops with LDC students or researchers and State officials to lay groundwork for future trading relationships. They could also compile a list of past LDC graduates and conduct a follow-up survey for the purpose of developing trade leads.

**Comments:** The idea of a State directory or database, of one kind or another, was raised by a number of States. might find it more appropriate to let the States develop their own databases, however; see main text for discussion. The idea of a foreign student contact network, however, is one to which could render valuable assistance and the results of which would be equally valuable to Missions. It also lends itself to a multi-State approach:

- o IOWA is a leader in the Foreign Student Contact Program, which allows potential exporters to gain valuable insights into overseas markets and to develop business contacts through students who will later become leaders in government and business. The program has helped 52 firms sell in over 34 countries since 1975. Iowa State University, a co-sponsor, wants to expand the program to other States. **Contact:** Max Olson (Marketing Manager for International Trade, Department of Economic Development, (515) 281-3138).
- o MICHIGAN already uses its university resources in a similar way. The International Business Development Program at Michigan State University has developed an International Alumni Network that can be tapped for information or contacts in foreign markets. It may be possible to expand

**this activity through the Midwestern Universities Consortium for International Affairs.**

**Contact: S. Tamer Cavusgil (International Business Development Program, Michigan State University).**

- o ILLINOIS, INDIANA and MICHIGAN are partners (along with banks and consultants) in a project proposal developed by the International Business Development Program at Northwestern University. The proposal asks TDP for \$400,000 to help launch an "Export Enhancement Program" in Taiwan and South Korea, including seminars, counselling trade missions. The same group has developed a similar program targeting Thailand.  
Contact: Michael Radner, (Executive Director, International Business Development Program, Northwestern University).**

**Appendix H**

**ADDITIONAL SOURCES OF FEDERAL ASSISTANCE  
TO STATE TRADE AND INVESTMENT PROGRAMS**

**Agency for International Development --**

**Bureau for Private Enterprise**

**Thomas J. Nicastro, Office of Project Development  
(202) 647-7474**

**John Hardy, Office of Investment  
(202) 647-3830**

**Bureau for Science and Technology**

**Clifton Barton, Office of Rural and Institutional Development  
(703) 875-4727**

**Office of International Investment and Trade Promotion**

**Nancy Ellis  
(202) 647-0353**

**Department of Commerce --**

**Office of the Secretary**

**Don Forrest  
(202) 377-2073**

**International Trade Administration**

**Michael Czinkota  
Assistant Secretary for Trade Information and Analysis  
(202) 377-1316**

**Peter Frederick, U.S. and Foreign Commercial Service  
(202) 377-9300**

**Gordon Studebaker, U.S. and Foreign Commercial Service  
(202) 377-0703**

**Department of Education--**

Susanna Easton  
(202) 732-3308

**Export Import Bank--**

William R. Arnold  
Senior Vice President  
(202) 566-8806

Robert Kaiser  
Vice President for Marketing and Program Development  
(202) 566-8873

Arthur J. Obester  
Los Angeles Liaison Officer  
(213) 485-6154

**Overseas Private Investment Corporation--**

Bruce Hatton  
Director of Corporate Communications  
(202) 457-7090

**Small Business Administration--**

Gerald T. Underwood  
Deputy Director, Office of International Trade  
(202) 653-7794

**Trade and Development Program--**

Betsy J. Horsmon, Regional Director at Large  
(703) 875-4357

## **Appendix I**

### **POTENTIAL MEMBERS OF SEED FUND ADVISORY COMMITTEE**

**The following list includes the names of organizations identified by TVT Associates, NASDA and others as potential members of the Advisory Committee. This list is not exhaustive, however, and many other organizations may also be interested in participating.**

#### **Federal Agencies**

- o See list of Federal agencies in Appendix H

#### **State Government Organizations**

- o National Governors' Association
- o National Conference of State Legislators
- o National Association of State Development Agencies (NASDA)
- o Council of State Planning Agencies
- o National Association of State Departments of Agriculture

#### **Regional Organizations**

- o Great Lakes Governors' Conference
- o Mid-South and Mid-America Trade Councils
- o Southern Growth Policies Board
- o Western Governors' Association

#### **Local Government Organizations and Leaders**

- o U.S. Conference of Mayors
- o League of Cities

#### **University Trade Centers and Associations**

- o Thunderbird Management Center,  
American Graduate School of International Management,  
Glendale, AZ
- o Center for International Business & Trade, Georgetown University
- o Small Business Development Center, School of Business and Public Administration,  
Howard University

**Business Groups and Trade Associations**

- o U.S. Chamber of Commerce
- o American Business Conference
- o American Electronics Association

**Trade Associations and Related Groups**

- o National Foreign Trade Council
- o Overseas Development Council
- o Washington International Trade Association
- o Mitsui & Co.--USA

**CPA and Law Firms with International Credentials**

- o APCO Associates (Arnold & Porter)
- o Deloitte, Haskins & Sells, Hartford CT
- o Oppenheimer, Wolff & Donnelly
- o Arthur Young International

**Consulting Firms with LDC Trade or Development Experience**

- o Greycom International
- o SRI International
- o Meridian Corp., Alexandria VA

**Multilateral Development Banks and United Nations Agencies**

- o United Nations Industrial Development Organization
- o World Bank
- o Inter-American Development Bank

**Foundations**

- o Rockefeller Brothers Fund
- o Ford Foundation
- o Carnegie Corporation
- o John D. and Catherine T. MacArthur Foundation

**Appendix J**

**UPCOMING MEETINGS CONCERNING  
STATE INITIATIVES IN INTERNATIONAL TRADE AND INVESTMENT**

**National Governors' Association  
Annual Meeting  
Committee on International Trade and Foreign Relations  
Cincinnati, Ohio  
August 8, 1988**

**National Conference of State Legislators  
Annual Meeting  
International Trade Committee  
Reno, Nevada  
August 25 and 26, 1988**

**National League of Cities  
World Urban Development Forum  
San Antonio, Texas  
September 13 through 17, 1988**

**National Association of State Development Agencies  
International Trade and Investment Division Annual Workshop  
Jackson Hole, Wyoming  
October 5 through 7, 1988**

**National Association of State Development Agencies  
Mid-Year Directors' Meeting  
Meadowlands, New Jersey  
November 7 through 9, 1988**

**National Conference of State Legislators  
International Trade Committee  
Washington, D.C.  
November 30 through December 2, 1988**

**National Association of State Development Agencies  
Foreign Investment Training Program  
(held in conjunction with the American Graduate School of International  
Management)  
January, 1989**

**National Association of State Development Agencies  
International Trade Specialist Training Program  
(held in conjunction with the American Graduate School of International  
Management)  
Phoenix, Arizona  
February, 1989**