

Export Promotion Programs¹ | 6

The U.S. environmental industry faces a number of challenges in exporting. Some of these challenges are fairly specific to the industry whereas others are shared with other exporting industries.

U.S. firms in general export much less, as a percentage of total sales, than firms in many countries that are members of the Organisation of Economic Cooperation and Development (OECD) (table 6-1). This is not surprising. For several decades, the United States' large domestic market often made exporting unnecessary for a firm's success. In addition, the United States is far away from markets of comparable size, making exports often seem not worth the bother. A tradition of exporting is ingrained in European culture. National markets are smaller, making exports more often necessary; similarly sized export markets are right at hand. Japan, too, has a long tradition of exporting. It has traditionally thought of itself as an island nation, poor in natural resources, that must export to pay for the imports it needs. In recent decades, exports have been central to its strategy for economic growth and development.

As discussed in chapters 4 and 5, data on environmental goods and services (EGS) export patterns are limited. Some estimates suggest that key sectors of the U.S. environmental industry are much less export-intensive than those of Japan and Germany: environmental product exports, as a percentage of environmental *products and services* production, is much less in the United

¹ Parts of this chapter that pertain to the export promotion effect of foreign assistance programs are discussed more fully in OTA'S background paper: U.S. Congress, Office of Technology Assessment, *Development Assistance, Export Promotion, and Environmental Technology—Background Paper, OTA-BP-ITE-107* (Washington, DC: U.S. Government Printing Office, August 1993).

Table 6-I—Export Intensity of Selected OECD Countries, 1991

Country	Exports as a percentage of Gross Domestic Product
Belgium	69.3
Ireland	68.7
Netherlands	54.1
Norway	44.8
Austria	40.9
Denmark	36.9
Germany	38.5
Switzerland	35.1
Portugal	36.6 ^a
Sweden	28.1
United Kingdom	23.4
Canada	24.4
France	22.7
Greece	22.6
Finland	22.3
Italy	18.0
Australia	17.7
Spain	17.3
United States	10.5
Japan	10.4

^a Based on 1990 data.

SOURCE: Derived from data on exports of goods and services, and on GDP, in International Monetary Fund, *International Financial Statistics*, vol. XLVI, No. 4, September 1993.

States (table 6-2). One factor that could inhibit U.S. exports is that the industry has so many small firms. One analysis estimates that in 1991 the U.S. environmental industry consisted of 207 public companies averaging \$198.3 million revenue each (\$41.0 billion total revenue) and 58,700 privately held companies each averaging \$1.3 million in revenue (\$78.4 billion total).² Smaller companies have a harder time exporting, and are often reluctant to try.³ There is some inconclusive evidence that EC environmental firms are larger; data for Japan are lacking. Environmental industry structure is discussed further in chapter 4.

Without exporting more, some U.S. environmental sectors could become less competitive in time. Foreign firms are increasingly penetrating the relatively open U.S. environmental market (ch. 5). Without expanding exports, U.S. firms could lose out in sales and experience compared with foreign firms. Lost sales mean reduced funds for market development and R&D, reduced economies of scale, and reduced payoff for improved production efficiency. Lost experience means less feedback for improving product or service quality.

U.S. exports might increase if there were greater industry commitment and more effective assistance by government or industry associations. Firms that are serious about exporting must invest substantial time and resources to explore markets and cultivate business relationships abroad. While government programs can provide market information and facilitate contacts abroad, government commercial officers and company marketing brochures are no substitute for face-to-face contacts between would-be exporters and potential customers. In many cultures, business is conducted on the basis of personal relationships that seldom jell from a single encounter at a trade show. Partnering with local firms is often required, sometimes by law, to do business. Once an order is won, a continuing presence (via a local partner if not directly) is needed to provide parts and service and to cultivate additional business. Differences in language, culture, business practices, standards, and legal requirements can be big challenges to U.S. firms (particularly smaller ones) new to a market. Exports also require arrangements and expenses for shipping, financing,

² *Environmental Business Journal*, vol. 5, No. 4, April 1992, p. 7. However, 24,000 of these were water supply utilities (not normally export candidates) averaging \$400,000 in annual revenue.

³ William E. Nothdurft, *Going Global: How Europe Helps Small Firms Export* (Washington DC:Brookings Institute, 1992), esp. pp. 12-19. Personal communications with: Donald Connors, Environmental Business Council, Massachusetts, October 1992; Arthur Chu, Vice President, Technical and Strategic Development, Ebasco Environmental International, Inc.; Robert Driscoll, U.S.-ASEAN Council for Business and Technology, Nov. 5, 1992. Joseph Harrison, Director of Office of Capital Goods, International Trade Administration, Department of Commerce, as quoted in William Maggs, "Commerce Looks to Boost Green Technology Exports," *Environment Week*, Sept. 9, 1991.

Table 6-2—Environmental Production and Exports, 1992

	Production of environmental products and services (\$ billion)	Exports of environmental products (\$ billion)	Product exports as a percentage of products and services production
Japan	21	5	24
Germany	36	11	31
United States	134	7	5

SOURCE: Presentation by Grant Ferrier, Environmental Business International, at Environmental Business Council of the United States meeting, June 7-9, 1993, Washington, DC.

ing, and insurance, beyond those required for domestic sales. Given the large domestic market for environmental products and services, many U.S. environmental firms may feel that exporting is not worthwhile.

The U.S. Government provides some assistance, as do State and local governments. However, firms often find U.S. export assistance difficult to access and poorly coordinated. Moreover, U.S. policymakers disagree about whether export promotion is a desirable government function.

The situation in some other countries is different, with the result that:

- Major foreign competitors dedicate proportionately more resources to export promotion services than does the United States. They also perform more high level advocacy, in which ministers or even heads of state promote their national firms to foreign governments.
- U.S. firms appear to have more difficulty obtaining export financing compared to rivals in some other countries. Also, exporters in some other countries have more access to confessional financing that their governments offer developing countries. Small businesses often can not export without financing. Also, as is discussed in chapter 5, financing can be important in winning export contracts for many

large projects with an environmental component.

Recent Congressional and Executive Branch actions, however, emphasize a stronger Federal role in promoting exports. In 1992, Congress called for a national strategy to promote exports; in September 1993, the Clinton administration delivered its first report aimed at framing such a strategy.⁴

In addition to the overall export strategy, Congress also called for a national environmental export strategy. The Clinton administration's initial environmental strategy is expected to be issued in the fall of 1993. In addition, as is discussed in chapter 2, several bills to give added emphasis to environmental export promotion have been proposed in the 103d Congress.

Some specific areas of government policy are especially pertinent to promotion of environmental exports:

- As discussed in chapter 5, demand for environmental goods and services is driven largely by regulations and enforcement. Technical assistance offered as part of foreign aid can help recipient countries build environmental management capacity, which often stimulates demand for environmental goods and services (EGS). If the recipient adopts the donor's approach, the assisting country's firms may

⁴Trade Promotion Coordinating Committee, *Toward a National Export Strategy*, report to the United States Congress, Sept. 30, 1993.

gain some advantage in supplying technologies known to meet the requirements. Promotion of voluntary and professional standards of environmental management may also help stimulate environmental product demand.

- Foreign customers, particularly in developing and newly industrialized countries, are often unsure about the performance and suitability of environmental technologies offered. Technology performance evaluations and verifications by the Environmental Protection Agency (EPA) (or other credible third parties) can help U.S. environmental firms and foreign customers alike without compromising EPA's reputation for objectivity. Indeed, they could also help diffuse new technologies in the domestic market. Technology demonstrations done abroad can also help U.S. technology developers.
- Aid plays an important role in developing countries' environmental projects, which often involve government and require outside assistance. Apart from concessional financing, aid programs can promote exports in several ways. For example, grants for feasibility studies by national firms can help national firms win follow-on projects. Training grants can sweeten national firms' bids. Aid personnel can pass on to national firms information about recipient countries' upcoming projects and procurements, as well as information about possible multilateral funding sources. Some other countries' aid programs seem more attuned to these commercial considerations.

Some efforts to coordinate assistance for environmental exports are already underway.

For example, the Committee on Renewable Energy Commerce and Trade (CORECT), setup in 1984, works to facilitate interaction between government officials and private industry to promote renewable energy exports; its concept might be transferable to other subsectors of the environmental field (box 6-A).

In 1992, the Bush administration launched the United States-Asia Environmental Partnership (US-AEP) which seeks to help developing countries in the Asia-Pacific region solve environmental problems by using U.S. environmental goods and services. Federal agencies can use US-AEP (a public-private partnership) to coordinate environmental export activities to the region, and to provide one-stop-shopping. US-AEP has recently, through the National Association of State Development Agencies (NASDA), given \$700,000 in matching grants to assist small and medium-sized firms in exporting.⁵

Another public-private partnership launched in 1992, the United States Environmental Training Institute (USETI), brings developing country decisionmakers to the United States for training. U.S. vendors have the opportunity to showcase environmental technologies.

EFFORTS TO DEVELOP U.S. STRATEGY

As indicated in figure 6-1, Federal export promotion and financing responsibilities are divided among many agencies. The Department of Commerce, the Export-Import Bank of the United States (Eximbank), and the U.S. Trade and Development Agency (TDA, formerly the Trade and Development Program) all have export promotion as a major mission. The Overseas Private Investment Corp. (OPIC) has the mission of encouraging investment abroad, which often leads to exports. The Office of the U.S. Trade Representative (USTR), the Department of State, and the U.S. Treasury develop trade policy and conduct international negotiations. The Department of Agriculture promotes U.S. agricultural exports. Other agencies also participate in trade promotion. Several U.S. Agency for International Development (USAID) programs and activities encourage U.S. private sector involvement in development assistance. The Department of En-

⁵ "Environmental Grants a Success: Promise of More to Come," *The NASDA Letter*, Sept. 27, 1993, p. 4.

Box 6-A-Committee on Renewable Energy Commerce and Trade: A Possible Model for Promotion of Environmental Technology Exports

CORECT was setup in 1984¹ to coordinate Federal policy and programs to promote exports in the renewable energy field. Chaired by the Secretary of Energy, CORECT includes 14 Federal agencies and industry, often represented through the United States Export Council for Renewable Energy (ECRE), a consortium of 9 U.S. renewable energy trade associations.²

CORECT's structure encourages a close relationship among Federal agencies and industry. Industry representatives meet frequently with Federal agency officials to ask for Federal help with specific export promotion efforts. Meetings are held separately for four market regions, and involve working-level staff with detailed knowledge of market opportunities. Once a task is identified as meriting support, each agency can commit resources depending on its own mission and expertise. CORECT also receives funds directly from Congress for project seed money and administration; for fiscal years 1992-1994 this funding has been \$2 million per year.

It is difficult to evaluate the impact of CORECT on exports of U.S. renewable energy technologies, because public trade data are incomplete and the industry reveals little about its trading activities. A recent U.S. General Accounting Office report³ notes that CORECT did not meet a congressional deadline to formulate a plan for increasing renewable energy exports. Still, it has identified barriers to export, investigated markets, and sponsored trade promotion events, which could comprise basic components of a trade plan. CORECT and ECRE have established a uniform application form to make it simpler for firms in the renewable energy field to apply for financing from USAID, Eximbank, the Overseas Private Investment Corp. (OPIC), and TDA. GAO also concluded that CORECT has been successful in pulling together financial resources from Federal agencies and industry for trade development activities, as well as from multilateral institutions, and has been instrumental in developing new financing mechanisms. U.S. renewable energy technology firms still, however, encounter very competitive foreign financing and subsidization schemes.

DOE is trying to form a parallel group for energy efficiency, the Committee on Energy Efficiency Commerce and Trade (COEECT). As of October 1993, COEECT had not yet met because no representative consortium like ECRE existed for the energy efficiency industry. The fiscal year 1993 funding has been used for efforts to build such a consortium. It is possible that the CORECT approach could work for still other specific subsectors of the environment industry (for example, air pollution control), though no such proposals have been made.

¹ Renewable Energy Industry Development Act of 1983, Public Law 98-370, as amended by the Renewable Energy and Energy Efficiency Technology Competitiveness Act of 1989, Public Law 101-218.

² The factual description of CORECT in this box is based largely on U.S. General Accounting Office, *Export Promotion, Federal Efforts to Increase Exports of Renewable Energy Technologies*, GAO/GGD-93-29 (Gaithersburg, MD: U.S. General Accounting Office, December 1992), and on discussions with CORECT staff.

³ Ibid.

ergy (DOE) and the Small Business Administration (SBA) are involved in export promotion to further specific agency missions. Other agencies, such as the Environmental Protection Agency (EPA), may become involved because of their special expertise or responsibilities.

With so many programs and agencies, there has been growing recognition that Federal export promotion programs are poorly coordinated and often duplicative, and that a strategy to guide Federal activities has been lacking. In addition to specific initiatives mentioned above for coordi-

Figure 6-I—Selected Federal Programs That Can Promote EGS Exports

Activity	Export education	Market info.	Financing & insurance	Trade missions & travel	Feasibility studies	Overseas presence	Technology training & cooperation
Department/Program"							
-							
Agency for International Development							
American Business Initiative		x			x		
Bureau for Private Enterprise		x					x
Market and Technology Access Project							x
<i>U S -Asia Environment Partnership</i>	x	x		x	x	x	x
Energy Technology Innovation Project				x	x		x
Energy Training Project					x		x
Environmental Credit Program			x				
Environmental Enterprises Assistance Fund			x				
<i>Energy Efficiency Centers in E. Europe</i>						x	x
<i>Private Investment and Trade Opportunities Project in Development & the Environment</i>		x		x		x	x
<i>Environmental Improvement Project</i>		x			x	x	x
<i>Capital Development Initiative</i>		x			x		x
Department of Commerce							
U.S. & Foreign Commercial Service	x	x		x	x	x	
Eastern Europe Business Info. Centers		x		x		x	x
<i>L. Am./Carib. Business Development Center</i>		x		x		x	x
<i>E. Europe Enviro. Business Consortium</i>		x					
<i>Nat'l. Enviro. Technologies Trade Initiative</i>		x		x			x
Department of Energy							
Export Initiative Program		x					x
Coal and Coal Technology Export Program		x		x	x		x
<i>Support to Energy Efficiency Centers</i>						x	x
<i>Committee on Renewable Energy Commerce and Trade</i>		x		x	x	x	x
<i>Federal International Trade and Development Opportunities Program</i>					x		
Environmental Protection Agency							
Office of International Activities		x		x		x	x
<i>U.S. Environmental Training Institute</i>				x			x
<i>Regional Environment Center (Budapest)</i>		x				x	x
<i>Caribbean Environm't. & Developm't Instit.</i>		x				x	x
Clearinghouses		x					x
Technical Information Packages							x
Export-Import Bank							
Overseas Private Investment Corp.		x	x	x			
Global Environmental Emerging Markets Fund, L.P. (not yet capitalized)			x				
Small Business Administration							
	x		x	x			
Trade & Development Agency							
		x		x	x		x

•Programs in italics involve substantial interagency, State or private sector participation in managing the program.

SOURCE: Office of Technology Assessment, 1993.

nated government action (CORECT, US-AEP), Congress and the executive branch have taken some recent actions to improve program coordination and develop a more strategic emphasis for all government export promotion efforts, and for environmental export promotion as a whole sector, as discussed below.⁶

■ Trade Promotion Coordinating Committee

The interagency Trade Promotion Coordinating Committee (TPCC), chaired by the Secretary of Commerce, was set up in May 1990 by President Bush to consolidate and streamline Federal export promotion activities. In the Export Enhancement Act of 1992, Congress formally established TPCC as a permanent institution.⁷ The Act directs TPCC to set strategic priorities, eliminate duplicative activities, improve interagency coordination, and propose to the President an annual unified trade promotion budget. One strategic priority issue is the share of funding given to agricultural vs. industrial export promotion. In 1991, the Department of Agriculture received 74 percent of total government outlays for export promotion, although only 10 percent of all U.S. exports were agricultural.⁸ Whether an interagency process alone can effectively identify priorities for a meaningful budget is uncertain.

TPCC delivered an initial report in September 1993.⁹ That report does not set strategic priorities or propose a unified budget, although it commits to doing both in time for the fiscal year 1995

budget.¹⁰ The report lists four goals for Federal export promotion:

- Create a more customer-focused, coherent, and effective USG-wide export promotion strategy within existing resource constraints to assist the private sector in creating jobs and fueling economic growth.
- Leverage US government resources by strengthening city/state and public/private partnerships domestically and in our overseas networks.
- Remove or reduce government-imposed obstacles to exports wherever appropriate.
- Seek to reduce foreign export credit subsidies through multilateral negotiations and level the playing field, when appropriate, by countering foreign competitors' efforts in financing.¹¹

The report also lists 65 concrete recommendations covering resource allocation, export promotion services (including domestic field services, Washington-based services, overseas services, coordination with State export promotion activities, and advocacy), financing, and regulatory obstacles to exports. Many of these address the issues of duplication and coordination identified by Congress.

The Export Enhancement Act also directs TPCC to "provide a central source of information for the business community on Federal export promotion and export financing programs."¹² TPCC has set up an information clearinghouse, the Trade Information Center. The Center, which has a toll-free phone number, receives 200

⁶ Both the specific initiatives and the Trade Promotion Coordinating Committee (below) are also discussed in U.S. Congress, Office of Technology Assessment, *Development Assistance, Export Promotion, and Environmental Technology*, op. cit., footnote 1, app. B.

⁷ Export Enhancement Act of 1992, Public Law 102-429, sec. 201. A predecessor to the TPCC, the Interagency Task Force on Trade, was never established by statute. Headed by a Director of the Export-import Bank of the United States, the Task Force was dissolved when the Director left office. U.S. General Accounting Office, *Export Promotion: Federal Programs Lack Organizational and Funding Cohesiveness*, NSIAD-92-49 (Gaithersburg, MD: U.S. General Accounting Office, Jan. 10, 1992), p. 7.

⁸ U.S. Congress, General Accounting Office, *Export Promotion: Federal Programs Lack Organizational and Funding Cohesiveness*, op. cit., footnote 7, p. 5.

⁹ Trade Promotion Coordinating Committee, *Toward a National Export Strategy*, op. cit., footnote 4.

¹⁰ *Ibid.*, pp. 9-10.

¹¹ *Ibid.*, p. 6. These four goals are quoted directly from the source.

¹² Export Enhancement Act of 1992, op. cit., footnote 7.

inquiries a day from new-to-export and new-to-market firms, and directs them to appropriate Federal agency programs for assistance. Since companies must still apply separately to the individual agencies for assistance, the Center does not provide one-stop-shopping.

■ Environmental Trade Promotion Working Group

The 1992 Export Enhancement Act declared that it is the “policy of the United States to foster the export of United States environmental technologies, goods and services. In exercising their powers and functions, all appropriate departments and agencies of the United States Government shall encourage and support sales of such technologies, goods, and services.”¹³ Toward this end, the law directed the President to establish an Environmental Trade Working Group as a subcommittee of TPCC, to include representatives from all TPCC member agencies and EPA. The subcommittee is charged to be comprehensive and strategic; it is “to address all issues with respect to the export promotion and export financing of United States environmental technologies, goods and services,” and “to develop a strategy for expanding United States environmental technologies, goods and services.”¹⁴

An environmental section was included in the TPCC’s September 1993 report. That section identifies 11 problem areas, which could be grouped as follows:

the need for more strategy:

1. No agency has identified or targeted the most attractive export promotion opportunities.
2. There are “conflicting or uncoordinated policies toward developing and middle-

income markets, which may require long-term market development efforts; issues include “the appropriate role of development assistance in favoring U.S. commercial interests (e.g., tied aid), investment in training, financing of demonstration projects, and establishing regulatory and testing protocols favorable to U.S. industry.

the need for better coordination and data:

3. “Export promotion activities are poorly coordinated.
4. “At virtually all USG agencies there is a lack of knowledge of existing programs relating to environmental technologies.’
5. “There is no single coherent source of information available to the public about the range of government activities in environmental technologies or industry data collected by the government.’
6. “No data exists for tracking and understanding the industry.”¹⁵

the need to consider the effect on exports or export potential when fashioning policies on:

7. Environmental technology development, especially at DOE and EPA.
8. U.S. regulatory standards.
9. U.S. positions in negotiations for international standards and multilateral environmental treaties.

the need to better reach smaller firms:

10. Small firms new to exporting.
11. Small and medium-sized firms in need of financing assistance.

The TPCC report was followed in November 1993 by an environmental technologies export

¹³ Ibid., sec. 204.

¹⁴ Ibid.

¹⁵ The report noted that it is “unclear to what extent this lack of data is perceived as a problem by the industry.’ However, such data would help government in setting strategic priorities and evaluating the success of its efforts.

strategy issued by an interagency group established by President Clinton.¹⁶

■ State Efforts

Although not discussed in detail here, efforts by State governments and private sector organizations to promote environmental exports merit notice. More and more States are providing export promotion services. In 1992, the States appropriated a total of \$97 million for international activities, and had 546 domestic and 303 overseas full-time-equivalent staff, of which 392 domestic and 178 overseas full-time-equivalent were devoted to export promotion.¹⁷ In 1992, 39 States did in-house market research.¹⁸ Some States have environmental export promotion programs.

■ Private Sector Efforts

Private organizations, such as the United States-ASEAN¹⁹ Council for Business and Technology, the Environmental Business Council of the United States (EBC), and the U.S. Environmental Technology Export Council (ETEC), are working to facilitate U.S. exports of environmental technologies.

A complicating factor in developing a Federal policy is that the environment industry consists of many separate sectors and subsectors. Currently, no industry groups represents the entire industry, though two groups, EBC and ETEC, are seeking that role. There are also several other industry associations for particular subsectors of the industry.

U.S. EXPORT PROMOTION PROGRAMS IN INTERNATIONAL CONTEXT

Countries provide several kinds of assistance to help their firms export. The following sections will briefly describe U.S. and foreign efforts in four areas: assistance for export planning and marketing, technology verification and demonstration, use of foreign aid, and financing. This section gives some overall comparisons.

■ Level of Funding

Japan and many European countries fund export promotion (especially nonagricultural export promotion) at a higher level than the United States. As discussed below, this is true for export planning and marketing, and export financing. In addition, Japan, France, and Germany, when compared with the United States, structure their foreign aid programs in ways that tend more to promote exports.

■ Level of Expectations and Importance

In some ways, other countries seem to have higher expectations for, and place higher importance on, government's role in export promotion. (Often the higher expectations go hand-in-hand with higher funding.) Some examples, discussed below, include: more ambitious assistance with export planning; larger staffs posted abroad, capable of rendering more assistance; more high-level advocacy to influence foreign government procurement; a "needs" versus "entitlements" approach to export financing; and a more aggressive use of tied aid credits.

¹⁶ Ronald H. Brown, Hazel O'Leary, Carol Browner, *Environmental Technologies Exports: Strategic Framework for U.S. Leadership*, November 1993. In an April 1993 Earth Day address, President Clinton directed the Department of Commerce (DOC) to lead an Interagency Working Group on Environmental Technology. With EPA, DOE, and other agencies participating, this group was to develop strategies to further environmental exports, environmental technology development and domestic diffusion of environmental technology.

¹⁷ National Association of State Development Agencies, *NASDA State Export Program Database (SEPD): 1992* (Washington, DC: NASDA, not dated), tables 6, 9. International activities can include export promotion, attracting foreign investment, promoting tourism, and other activities. While staffing figures are available broken down by these purposes, budget figures are not. *Ibid.*, p. 9.

¹⁸ *Ibid.*, table 14.

¹⁹ ASEAN is the Association of Southeast Asian Nations.

■ Degree of Centralization²⁰

The U.S. approach to export promotion is decentralized, with several agencies having important roles, as discussed later in this chapter. Japan's approach is also decentralized;²¹ and Germany limits Federal Government involvement, with trade associations playing a major role. France and the United Kingdom have a centralized approach.

■ Strategy

The United States has lacked a strategic plan for promoting exports of nonagricultural goods.²² The September 1993 TPCC export strategy report is a first step toward a strategic plan. Japan and Germany lack a strategic plan, though in Japan some individual agencies (e.g., MITI) have strategic priorities. France and the United Kingdom each have a strategic plan.

■ Private Sector Involvement

In Japan, France, Germany, and the United Kingdom, private sector organizations (including chambers of commerce and industry associations) play a major role in helping firms (especially smaller firms) to learn about and to use government export promotion services. In some cases, this private sector involvement stems from traditions and institutions not necessarily transferable to the United States. In Germany, local chambers of commerce, financed by mandatory dues, are the primary point of contact to connect firms with government services, overseas chambers of commerce, and other relevant government and private

organizations. Overseas chambers of commerce serve functions similar to those of the Commerce Department's United States & Foreign Commercial Service (US& FCS). The German Industry Council for Exhibitions and Trade Fairs (Die Ausstellungs-und Messe-Ausschuss der Deutscher Wirtschaft, or AUMA), a private organization, coordinates domestic and overseas trade events. In France, local, regional, and overseas chambers of commerce play important roles, as does the Federation of Small and Medium-Sized Industries. Local chamber of commerce membership is mandatory in some cases. Chambers of commerce play an important role in the United Kingdom, and trading companies and industry associations play important roles in Japan.

In the United States, the private sector role in assisting access to Federal programs is more limited. However, some environmental industry associations play this role to some extent, including the U.S.-ASEAN Council for Business and Technology, the United States Export Council for Renewable Energy, ETEC, and EBC. American Chambers of Commerce and American Business Councils abroad can potentially play an increased role.

ASSISTANCE FOR EXPORT PLANNING AND MARKETING

Export planning and marketing services include educating firms about the export process; gathering and disseminating market information; helping firms to make contacts in foreign markets, such as by sponsoring trade fairs and trade

²⁰ The discussion of degree of centralization, strategy, and private sector involvement is drawn in part from U.S. Congress, General Accounting Office, *Export Promotion: A Comparison of Programs in Five Industrialized Nations*, GGD/92-97 (Gaithersburg, MD: U.S. General Accounting Office, June 22, 1992), pp. 16-22; U.S. Congress, Office of Technology Assessment *Development Assistance, Export Promotion, and Environmental Technology*, op. cit., footnote 1, pp. 55-69.

²¹ Major functions are performed by the Japan External Trade Organization (JETRO), the Small Business Corporation (SBC), and the Export-Import Bank of Japan (JEXIM). Aid functions with export promotion effect are performed by the Japan International Cooperation Agency (JICA) and the Overseas Economic Development Fund (OECF). These functions are all performed pursuant to policies formed by the Ministry of International Trade and Industry (MITI), Ministry of Finance (MOF), Economic Planning Agency, and Ministry of Foreign Affairs (MOFA). Several other agencies have significant roles.

²² As used here, a "strategic plan" is a plan that sets priorities for what exports to promote (normally by industry sector and geographic region), to guide all agencies' programs.

Table 6-3—U.S. General Accounting Office Estimates of 1990 National Government Export Promotion Outlays, Excluding Agriculture

	Spending (\$ million)	Spending (\$) per \$1,000 exports	Spending (\$) per \$1,000 GDP
France ^a	417	1.99	0.35
Germany	93	0.22	0.062
Italy	309	1.71	0.284
United Kingdom	298	1.62	0.305
United States	231	0.59	0.043

^a French officials were unable to separate the agricultural spending from the total but stated that most of the total shown is for nonagricultural programs.

NOTE: Exchange rates used (average for 1990) are: U.S. \$1 equals 5.7 FF (France), 1.7 DM (Germany), 1254.3 L (Italy), 0.592 (UK).

SOURCE: U.S. Congress, General Accounting Office, *Export Promotion: A Comparison of Programs in Five Industrialized Nations*, GGD/92-97 (Gait hersburg, MD: U.S. General Accounting Office, June 22, 1992), p. 24. Based on GAO analysis of information provided by government officials.

missions;²³ and high-level advocacy to influence foreign government procurement. Judging from three U.S. Government reports—one by the General Accounting Office (GAO), and the other two by the Department of Commerce (one published in 1992 and the other in 1988)²⁴—the United States appears to have spent proportionately less on such services than several competitor countries (at least in the period 1987-1990). This difference appears more pronounced when agricultural export promotion is excluded. Together, these reports paint the following picture: the U.S. Government, by many measures, spends less, often many times less, than every major competitor studied, except for Germany, which by some measures the United States outspends. In addition to spending less overall, the United States allocates funds lopsidedly to agricultural (rather than industrial) exports compared to the four other countries for which such data are available.

The GAO Report (table 6-3) covers five countries: France, Germany, Italy, the United Kingdom, and the United States. It is restricted to spending at the national government level, and,

except for France, excludes spending on agricultural export promotion. French officials did not break out the agricultural portion but stated that the majority of the spending shown was for nonagricultural export promotion. The table shows that, for nonagricultural export promotion, the United States spends far less per \$1,000 exports, and many times less per \$1,000 Gross Domestic Product (GDP), than France, Italy, and the United Kingdom. The United States is closer to Germany, spending more per \$1,000 GDP but less per \$1,000 exports. However, in Germany the role of entities other than the national government (including officially sanctioned chambers of commerce) is relatively large; when these are included (as in the 1988 DOC report, discussed below), Germany's expenses appear somewhat larger.

The 1992 DOC Report, restricted to national government budgets, shows the U.S. commitment as many times less than those of the European countries per \$1,000 Gross National Product (GNP) and per total national government budget, and far behind the European countries per \$1,000 exports and per capita (table 6-4). (Again, Ger-

²³ Trade missions are marketing trips by a number of firms together to foreign countries; trade fairs are exhibitions at home or abroad of products and services by many vendors to potential customers.

²⁴ Citations to the reports are given in tables 6-3 through 6-5. For the information discussed here, both DOC reports relied primarily on 1987 data. However, the 1987 data presented in these two DOC reports do not appear to agree. The GAO report is based on 1990 data.

Table 6-4--U.S. Department of Commerce Estimates of National Government Budgets for Export Promotion in 1987

Country	Budget (\$ million)	Budget (\$) per \$1,000 exports	Budget (\$) per \$1,000 GNP	Export promotion budget as percentage of total national government budget	Budget (\$) per capita
Canada	432.9	4.75	1.17	0.47	16.97
France	189.1	1.27	0.21	0.11	3.44
Germany	61.5	0.21	0.06	0.041	1.01
Italy	196.9	1.69	0.26	0.58	3.36
Japan ^a	285.0	1.04	0.10	0.061	2.30
South Korea	54.2	1.14	0.42	0.030	1.29
United Kingdom	190.9	1.41	0.28	0.122	2.81
United States ^b	257.2	0.88	0.06	0.002	1.05

a Uses 1989 data. Consists of JETRO's budget (\$91 million) plus MITI's and the Ministry of Foreign Affairs' budget for commercial services.

b Consists of US&FCS budget (\$57.8 million), Commerce and State Departments' budget to promote industrial exports, and Department of Agriculture's budget (\$157 million) to promote agricultural exports.

NOTE: A footnote to the original table states, "Numbers from 1987 Department of Commerce study unless otherwise indicated." OTA infers that 1987 refers to the year studied, though it could instead refer to the year in which the report was published.

SOURCE: U.S. Department of Commerce, *Foreign Government Commercial Services: A Comparative Study*, undated, table 2. This report appears to be the final version of a draft report of the same title, dated April 1992, issued by the U.S. & Foreign Commercial Service as Strategic and Technical Reviews Working Paper SR 91-15, although a DOC staff contact could not verify this.

many is an exception.) This study includes Canada, South Korea, and Japan, which the other two studies do not. Canada's budget far exceeds even the European budgets; South Korea shows the same pattern as the European countries. Japan's budget, while not providing as sharp a contrast with the United States, still is substantially greater per \$1,000 exports and per \$1,000 GDP, over twice as great per capita, and over 30 times greater as a fraction of the national government budget.

The 1988 DOC Report presents spending by the United States and seven European countries.²⁵ In some ways it is the most detailed and complete of the three reports. It includes, separately stated, spending by the national government, local governments, quasi-governmental agencies, and cooperating nongovernmental organizations (table

6-5). The inclusion of all of these spending entities makes Germany's spending appear somewhat larger compared to the United States than it does in the other two reports, which cover only national government spending (or budgets). Of the eight countries studied, the United States was lowest in total export promotion spending per \$ 1,000 GNP, per total national government spending, and per capita; it was sixth (ahead of Germany and Belgium) in total export promotion spending per \$1,000 of exports. As in the two other studies, foreign spending figures were often many times the corresponding U.S. figures.

For Belgium, France, Italy, the United Kingdom, and the United States, the 1988 DOC report also separates agricultural from industrial export promotion, both in absolute spending and in spending per \$1,000 of that type of export. The

²⁵ The Commerce Department noted that "Japanese totals are not provided, due to major gaps in available spending data."

Table 6-5—U.S. Department of Commerce Estimates of Total Export Promotion Spending in 1987^a

	Spending by National government (\$ million)	Spending by local government (\$ million)	Spending by quasi- gov't agencies (\$ million)	Spending by cooperating non-gov't organizations (\$ million)	Total spending (\$ million)	Total spending for agricultural export promotion (\$ million)	Total spending for industrial export promotion (\$ million)	Total spending for agricultural export promotion per \$1,000 agricultural exports (\$)	Total spending on industrial export promotion per \$1,000 industrial exports (\$)	Total spending per \$1,000 total exports (\$)	Total spending per \$1,000 of GNP ^c (\$)	Total spending (on export promotion) per \$1,000 total national government spending (\$)	Total spending per capita (\$)
Belgium	45.8	0.5	16.6	NA	62.9	4.5	58.4	0.46	0.74	0.71	0.40	1.09	6.35
Canada	484.3	60.7	0.0	1.8	548.8	43.7	503.1	NA	NA	6.00	1.48	6.02	21.44
France	330.1	NA	2.5	8.1	340.7	2.5	338.2	0.09	2.01	2.18	0.47	1.95	6.19
Germany	61.5	12.6	9.2	18.8	102.1	5.1	97.0	NA	NA	0.35	0.11	0.68	1.67
Italy	209.3	NA	10.0	NA	219.3	30.7	188.6	9.30	1.78	2.00	0.29	0.64	3.74
Sweden	10.0	1.5	60.0	0.9	72.4	2.2	70.2	NA	NA	1.65	0.46	1.33	8.72
United Kingdom	190.9	NA	2.7	0.5	194.1	2.7	191.4	0.29	1.51	1.43	0.28	1.24	2.85
United States	261.6	30.0	2.4	0.0	294.0	173.0	121.0	5.95	0.54	1.16	0.06	0.29	1.20

^a Spending levels are minimum estimates, based only on amounts that could clearly be accounted for. NA indicates that no data were available even for minimum estimates.

Accordingly, actual spending could conceivably be much higher than the totals shown.

^b Cooperating nongovernmental organizations include only those that act in concert with the government or on its behalf as an integral component of the government's organizational strategy.

^c Gross Domestic Product (GDP) is used instead of Gross National product (GNP) for Canada and Italy.

NOTES:

Exchange rates used : U.S. \$1 equals 35 BF (Belgium), 1.36 C\$ (Canada), 6.05 FF (France), 1.8 DM (Germany), 1300 L (Italy), 138 yen (Japan), 6.40 SEK (Sweden), 0.59 f (U. K.)
The source document could be interpreted to indicate that for a few entries in this table, 1987 data were not available and data from an earlier year were substituted.

SOURCE: U.S. Department of Commerce, *Export Promotion Activities of Major Competitor Nations*, September 1988, p. 6 (table A) and p. 58 (app. 1).

United States ranked second highest in agricultural export spending per \$1,000 of agricultural exports, but lowest in industrial export promotion spending per \$1,000 of industrial exports. The United States only spent one-eleventh as much on industrial exports as on agricultural exports, per \$1,000 of each type of export. In contrast, France spent 29 times as much on industrial exports, the United Kingdom 5 times, Belgium 1.6 times, and Italy one-fifth as much.

■ Export Education

Both DOC and SBA provide short, introductory export seminars. For example, many local SBA offices run half-day workshops organized by the Service Corps of Retired Executives (SCORE), a nationwide network of retired executives. Introductory seminars typically give rationales for exporting, explain the steps required, and describe Federal export promotion programs.

Most export education for U.S. firms is undertaken by States and local trade associations, chambers of commerce, world trade center institutes, and other groups. In 1992, all States held export seminars, probably in total close to a thousand; many were cosponsored by DOC or SBA. Some were general seminars; others were on market opportunities in a particular country, a specialized topic such as documentation or freight-forwarding, or current events.²⁶

Some European Community and Nordic countries are experimenting with more comprehensive programs that assist firms over an extended time to formulate an export strategy. One example is a pilot program run by the Danish Technology Institute, with six firms each from Denmark, Ireland, and the Netherlands, funded in part by the

country governments and the EC Social Fund.²⁷ Over 18 months, these firms participated in six national seminars and three international seminars on export planning,²⁸ plus regular progress-and-advice visits by facilitators. Each company produced a 2- to 5-year strategic plan to internationalize its operations; almost all successfully implemented the plan. This program has since expanded to other countries.

Denmark, Norway, and Sweden run export manager-for-hire programs to help small companies develop and implement export strategies.²⁹ On a cost-shared basis, the governments provide export managers. In Sweden, companies can hire around 20 to 40 percent of an export manager's time for 2 to 4 years. The managers are export professionals with substantial private sector experience. In 1987, the Swedish Trade Council retained 23 such professionals under contract. The export manager develops an export strategy while training company personnel in export techniques. In the first year, the companies pay 49 percent of the manager's cost; the companies pay 75, 95, and 100 percent for the second, third, and fourth years respectively. For firms that need less help, the Swedish Trade Council will also cover up to 60 percent of up to 60 hours of export consulting.

■ General Market Information

Some of the market information governments provide to exporters is collected and disseminated routinely, rather than in response to specific requests from particular firms. Such information includes: trade statistics; studies of foreign markets in particular sectors; descriptions of foreign technology; and data on foreign countries' econo-

²⁶ National Association of State Development Agencies, *NASDA State Export Program Database*, op. cit., footnote 17, p. 22 and table 20.

²⁷ Discussion of this program is based on Nothdurft, op. cit., footnote 3, pp. 19-21.

²⁸ Each of these seminars required significant preparation by the companies. The national seminars were on general management, export marketing management, financial controls management, technology and production management, leadership and organization culture, and strategic management and planning. The international seminars discussed export marketing, technology and production, and leadership and organization.

²⁹ This paragraph is based on Nothdurft, op. cit., footnote 3, pp. 31-32.

mies, business cycles, regulations, tariffs and other trade barriers, government purchasing, investment climate, aid projects, and trade fairs. It also includes specific trade leads collected by the government's normal monitoring, though such leads are often old. Because general information is much cheaper than specific market research, some companies hope these services by themselves will pinpoint customers. However, this hope is unrealistic; rather, general information just points to markets where firms might look for customers.³⁰

France, Germany, Japan, the United Kingdom, and the United States all appear to offer similar services for general market information.³¹ U.S. firms may contact DOC desk officers that track information for particular countries. In addition, DOC publishes information for relatively low prices. In the National Trade Data Bank (NTDB), a monthly compact disk service, DOC provides information about foreign markets and Federal services. From September 1989 to November 1992, the NTDB contained 101 Industry Subsector Analyses (ISAs) on the pollution control equipment markets in 38 countries, almost 5 percent of all ISAs in the NTDB.³² DOC provides two other sources with information similar to that in the NTDB: an Electronic Bulletin Board, which is more timely, and printed journals, which are less timely.³³ All three sources provide both general information and specific leads; however, even the most timely Electronic Bulletin Board probably provides leads only after they are known to firms with an active presence and strategy in the country.

■ Helping Firms Find Customers

While general market information can be helpful, exporters need quite specific market information and ways to contact potential customers. It is difficult to get data that accurately compares different countries' programs, in part because these programs are organized differently, often described in different terms, and not always precisely described. The data presented in this section, while not definitive, suggest that U.S. programs are often less ambitious than programs in competitor countries.

MARKET RESEARCH SUPPORT

Table 6-6 shows assistance that several countries give for custom research. This can include in-house research; research contracted out; and published reports that fit a firm's special needs. The United States and Germany furnish reports; the United States charges full cost and Germany subsidizes the cost. France, Scandinavia, and the United Kingdom support firms in hiring their own consultants or doing research in-house; the United Kingdom also similarly supports trade associations. In some cases, only smaller businesses are eligible.

The U.S. assistance seems to be much less, on an absolute scale, than that provided by France and the United Kingdom,³⁴ even though the United States has a much larger economy and export volume. The United States contracts with local firms for about 160 studies per year, passing the full contract price on to the requesting U.S. firm; the United Kingdom subsidizes about 600 consultant studies per year (plus some in-house research and some purchasing of published re-

³⁰ *Ibid.*, p. 43.

³¹ See for example, the country appendices in U.S. Department of Commerce, *Foreign Government Commercial Services: A Comparative Study*, draft, April 1992, issued by the U.S. & Foreign Commercial Service as Strategic and Technical Reviews Working Paper SR 91-15.

³² Andy Bihun, U.S. Department of Commerce, United States and Foreign Commercial Service, International Market Research Division, facsimile transmittal of computer printout, "Industry Subsector Analyses (ISA) on Pollution Control Equipment," Nov. 24, 1992.

³³ The Electronic Bulletin Board costs \$35 per year, plus a per-minute charge (after the first 2 hours each year) of \$.05 to \$.20, depending on time of day.

³⁴ The sources for table 6-4 do not present comparable data for Germany and Scandinavia countries.

Table 6-6—National Government Assistance for Individualized Market Research

Country	Service
France	<p>France funds up to half the cost of hiring a consultant to carry out detailed research on a market, up to about \$30,000 (average cost is about \$10,000).^a Firms apply to their regional government or chamber of commerce and industry. Only small and medium-sized enterprises (SMEs) are eligible. About 100-150 consultancies per year are approved in the Paris area alone.</p> <p>France's export insurance and guarantee agency also offers insurance against unprofitable export research. The insurance covers up to 75 percent of a firm's "fixed costs"^b to investigate overseas markets which exceed related export profits. Both domestic and overseas costs are covered.</p>
Germany	<p>Through local chambers of commerce, the German government's Office of Trade Information provides custom studies at below-cost prices.^c</p>
Scandinavian Countries	<p>The "Export Manager for Hire" schemes run by Denmark, Norway, and Sweden subsidize the hiring of export managers, who conduct research for the firm.</p>
United Kingdom	<p>Through a program managed by the Association of British Chambers of Commerce, the British Overseas Trade Board (BOTB) provides to trade associations and to firms with under 200 employees:</p> <ul style="list-style-type: none"> • Free consulting on how to conduct export marketing research. • Up to half the cost of hiring a consultant outside the EC, up to a grant of £20,000 (equal to \$33,898 in 1990). Trade associations get better terms. Roughly 600 consultancies are approved per year, with an average cost of about \$20,000.^d • For in-house research on non-EC markets, up to half of travel costs and interpreters' fees, plus a daily allowance for one researcher, up to the same £20,000 limit. • Up to one-third the cost of published market research reports.
United States	<p>The Department of Commerce provides "Customized Sales Surveys" reporting on overall marketability, key competitors, price of comparable products, customary distribution and promotion practices, trade barriers, possible business partners, and applicable trade events. DOC contracts out these studies and charges firms their full cost, which is \$800 to \$3,500 per country. DOC provided 151 of these studies in FY 1993, and 171 in FY 1992.</p>

a The source document (Nothdurft) does not specify whether these numbers are maximum and average costs for the whole study or just the government's share.

b The source (GAO) does not define this term.

c While this table compares national government support, we note that in 11 German states, the state Ministry of Industry, working through the national Association of Chambers of Industry and Commerce (IHK), pays 25 to 30 percent of the cost of custom studies prepared by IHK's affiliated bilateral Chambers of Commerce Abroad.

d It is not clear from the source document (Nothdurft) whether the \$20,000 represents the total cost, or just the government's share.

SOURCE: U.S. Congress, General Accounting Office, *Export Promotion: A Comparison of Programs in Five Industrialized Nations*, GGD/92-97 (Gaithersburg, MD: U.S. General Accounting Office, June 22, 1992), p. 29; William E. Nothdurft, *Going Global: How Europe Helps Small Firms Export* (Washington, DC: Brookings Institute, 1992), pp. 43-45; Trade Promotion Coordinating Committee, "Export Programs: A Business Directory of U.S. Government Resources," April 1993; telephone conversations with DOC staff (for U.S. program).

ports), and France subsidizes 100 to 150 consultant studies per year for firms in the Paris area alone. In addition, the costs of the U.S. studies (\$800-\$3,500) are much less than the average costs of the consultant studies subsidized by France (\$10,000) and the United Kingdom (\$20,000);

thus, the foreign studies are probably more substantial.

The British Overseas Trade Board (BOTB), the United Kingdom's export promotion agency, reports that its consultant study subsidy program has the highest customer satisfaction rate of all

BOTB advice and information services, and claims that virtually all companies using this program have started exporting to their target markets.³⁵

TRADE FAIRS

A trade fair is an event at which many vendors exhibit their products or services to potential customers. The U.S. Government and many foreign governments help their firms participate at international trade fairs run by the government and some run by third parties. The Commerce Department runs or sponsors about 80 international trade fairs per year.³⁶

While precise comparative data is difficult to obtain, it appears that U.S. firms receive less government support than firms in several other countries for participation in trade fairs. From table 6-7 it appears that foreign firms typically have some of their exhibit-related expenses (e.g., space rental) paid for, while U.S. firms do not. Some argue that this difference in subsidies substantially decreases U.S. firms' participation, compared to foreign counterparts. Some foreign governments started or increased their support to correct what they viewed as inadequate trade fair participation by national firms. In contrast, the U.S. Government's response to low participation rates by U.S. firms was to cut back its trade fair program.

In 1992, State governments sponsored an average of 5.8 trade fairs; 13 State governments provided some type of financial assistance for participating firms.³⁷

TRADE MISSIONS

A trade mission is a trip by a group of firms (most often in one industry sector) to one or more foreign countries to meet potential customers and to learn about the nation(s), the market(s), and how to do business there. When U.S. firms go on trade missions, they may also meet U.S. and foreign government officials responsible for trade and investment. Data are not readily available to compare U.S. support for trade missions with that provided by other governments.

Nonagricultural missions run by the Federal Government are usually run by DOC, though other agencies such as USAID, DOE, EPA, and OPIC are sometimes co-sponsors. In fiscal year 1993, DOC ran 44 missions, of which four had environmental themes.³⁸ DOC and other agencies also can sponsor missions run by non-Federal organizations such as trade associations, State and local governments, and chambers of commerce. In fiscal year 1993, DOC sponsored 41 such missions, of which none had environmental themes.³⁹ Box 6-B describes an environmental mission in which several Federal agencies cooperated. For most DOC-run missions, participants pay fees of \$2,000 to \$5,000⁴⁰ plus their own travel expenses. Fees are lower for DOC's more modest Matchmaker Delegations, which are for companies that have not yet exported to the target country. SBA at one time provided qualifying companies up to \$700 for a Matchmaker trip, which according to one DOC official was a key *incentive* for small business; but this was suspended in March of 1992.⁴¹

³⁵ Nothdurft, *op. cit.*, footnote 3, p. 44.

³⁶ Trade Promotion Coordinating Committee, "Export Programs: A Business Directory of U.S. Government Resources," April 1993, p. 26.

³⁷ National Association of State Development Agencies, *NASDA State Export Program Database, Op. Cit.*, footnote 17, pp. 30-31.

³⁸ DOC staff, facsimile communication, Oct. 19, 1993.

³⁹ *Ibid.*

⁴⁰ Trade Promotion Coordinating Committee, "Export Programs: A Business Directory of U.S. Government Resources," *op. cit.*, footnote 36.

⁴¹ U.S. Congress, General Accounting Office, *Export Promotion: Problems in the Small Business Administration's Programs*, GGD/92-77 (Gaithersburg, MD: U.S. General Accounting Office, Sept. 2, 1992), p. 11.

Table 6-7-National Government Support for Participation in Trade Fairs

Country	Support
France	Refunds 50-60 percent of the firm's "total cost" ^a of participation in government-sponsored and government-organized international trade fairs if the fair is not profitable for that firm.
Germany	Firms pay for "exhibition space rental and freight transportation"; government (through nongovernment fair organizers) pays "the remaining costs." In practice, this means that the government pays "roughly 30 percent of the cost of participation." ^b
Italy	For government-sponsored foreign trade fairs, pays all "indirect costs, such as publicity and representational events," and pays "direct costs such as construction of displays and space rentals on a cost-sharing basis with the participating firms." ^c Industry consortia and overseas chambers of commerce also run trade shows, and contribute support ultimately provided by the government. The so-called R.O.M.E. consortium, for example, pays up to 70 percent of "total expenses." ^d
United Kingdom	Pays up to 50 percent of estimated cost of providing space, stands, utilities, and display aids in selected trade fairs.
European Community	Pays up to 50 percent of the firm's "total cost," including space rental and construction expenses, ^e in EC-sponsored fairs.
United States	For DOC-run fairs, firms must reimburse DOC for all "direct" expenses excluding salaries and overhead. This includes "booth construction, transportation, interpreters' charges, and space rental." For major international trade fairs, the "minimum cost charged by the Department of Commerce. . . may range from \$3,000 to \$7,500."

a It is not clear whether "total cost" is meant to include the firm's own travel costs, or just the government's or other fair organizer's costs initially charged to the firms (e.g., space rental).

b It is not clear whether the figure of 30 percent reflects a consideration of all costs—for example, the firm's personal travel expenses, and the cost of publicity or government staff time.

c It is not clear what the cost-sharing percentages are. It is not clear whether firms' travel expenses are cost-shared. It is not clear what "total expenses" includes.

d It is not clear what else "total cost" includes.

SOURCES: U.S. Congress, General Accounting Office, *Export Promotion: A Comparison of Programs in Five Industrialized Nations*, GGD/92-97 (Gaithersburg, MD: U.S. General Accounting Office, June 22, 1992), pp. 28-28, and discussions with GAO staff; some information on the United Kingdom is from documents supplied by the British Embassy in Washington, DC.

OVERSEAS COMMERCIAL REPRESENTATION

A well-funded and staffed overseas commercial service can help companies identify and pursue trade opportunities. The Commerce Department's U.S. & Foreign Commercial Service (US&FCS) has staff posted abroad in U.S. embassies. Compared to its European competitors, Canada, and Japan, the United States has the lowest ratio of foreign posted commercial staff to exports, and by far the lowest ratio of foreign posted commercial staff to GDP (table 6-8).

After the United States, Japan has the next lowest staffing ratios. However, Japan's overseas commercial service strengths vis-à-vis the United States are not all reflected in the table's numbers. Japan's staff appears to be concentrated in the most significant markets. For example, DOC reported that when the Japan External Trade Organization (JETRO) employed 74 commercial officers and 144 total staff in the United States (the latter amounting to a quarter of JETRO's total overseas staff), the US&FCS employed only

Box 6-B-The Mae Moh, Thailand, Power Project

The Mae Moh power project was an attempt by U.S. industry and several U.S. Government agencies to act in concert to sell clean coal technologies to Thailand. The project provides a case study of interagency and government/industry cooperation.

In June 1992, the U.S.-ASEAN Council for Business and Technology, with the support of the U.S. Agency for International Development (USAID), the Department of Commerce (DOC), the Department of Energy (DOE), and the Environmental Protection Agency (EPA), organized an eight-firm trade mission to Indonesia and Thailand. The Trade Promotion Coordinating Committee, an interagency group, partly facilitated the organization of the mission, through its Coal Technology Export Group. TPCC also helped gain agency support for the trade mission, kept the agencies briefed on the mission development, and provided a forum where all participants could agree on what message to send the hosts. In-country organization was orchestrated through the U.S. and Foreign Commercial Service (US&FCS) and USAID's ASEAN Regional Office in Bangkok. The U.S.-ASEAN Council helped incorporate industry input and planned the mission from the U.S. side.

Participants identified an opportunity to supply the Electricity Generating Authority of Thailand (EGAT) with U.S. clean coal technologies. EGAT plans to increase its coal (including lignite) generating capacity from 2,100 MW to 11,775 MW by 2006. Desulfurization technologies (retrofit and new installations) were identified as a market opportunity at EGAT's active mine development project at Mae Moh.

After the June trade mission, the U.S.-ASEAN Council wrote a draft mission report that identified market opportunities and mapped out a plan for followup action. This draft was reviewed by representatives from industry and the four participating agencies, and was released in the first week of September.² Recommendations included funding for feasibility studies, a reverse trade mission, and a demonstration project at Mae Moh to inform Thai officials about U.S. technology and its potential to meet their needs. Although there was general agreement that such activities should be pursued, the four participating agencies were slow to provide funding. Because EGAT wanted fast action, U.S. companies considered whether they should go it alone without government assistance. Without the support of the U.S. Government, however, Thai officials were less likely to be certain that they were being offered the most appropriate technologies.

The U.S. Government and industry periodically sent officials to Thailand to maintain interest in the U.S. proposal. The U.S. Trade and Development Agency sent two consultants to conduct a definitional study for a pre-feasibility study. The head of the U.S.-ASEAN Council and an Assistant Secretary of Commerce made a detour from another trade mission to check in with EGAT officials, and AID's Office of Energy and Infrastructure also sent officials to Thailand. These trips may have helped reassure EGAT officials that the United States took this project seriously.

The project became more urgent after a temperature inversion and power plant emissions created a health emergency in the vicinity of Mae Moh in October 1992. In the meanwhile, U.S. industry received news that Japan had packaged and submitted a proposal to the Thai Government in October 1992.

¹ ASEAN is the Association of South East Asian nations consisting of Brunei Darussalam, Indonesia, Malaysia, the Philippines, Singapore, and Thailand. The U.S.-ASEAN Council for Business and Technology is a private organization promoting trade and investment between the United States and ASEAN countries.

² U.S.-ASEAN Council for Business and Technology, inc. "Mission Report; U.S. Coal Technology Mission to Thailand and Indonesia."

(Continued on next page)

Box 6-B–The Mae Moh, Thailand, Power Project-Continued

Thai officials asked EPA to conduct health and environmental assessments. In January 1993, EPA and DOE assessed health and environmental damage from the October emergency and identified U.S. sulfur dioxide control technologies appropriate for the Mae Moh facilities. A reverse trade mission brought Royal Thai Government and EGAT officials to the United States in March 1993. USAID's Bangkok office monitored and communicated progress at Mae Moh.

in the end, a Japanese company won contracts to provide fluegas desulfurization technology to new and existing boilers at Mae Moh.³Reportedly, last minute concessional financing from the Japanese government tipped the balance away from the U.S. contenders which had submitted a lower bid than the Japanese and which—according to some Thai officials—offered the better technology. Japanese contacts with EGAT officials were probably a factor as well. A U.S. firm did win a sole source contract to provide computerized process monitoring services for all units at Mae Moh. Another U.S. company is well-positioned to earn a contract to provide air quality monitoring equipment at Mae Moh and other Thai facilities. Both of these American companies believe that this presence in the Thai market will lead to long term business opportunities in Thailand and the region.

The Mae Moh experience provided some lessons. While TPCC coordinated the trade mission, it had problems coordinating follow-up action and funding. And although TPCC served as a useful information clearinghouse among participating agencies, it was not the primary motor for action. The TPCC's Coal Subgroup met only twice over the period of this project. Most of the day-to-day work was carried out by the U.S.-ASEAN Council, which served as a liaison, persuading industry and the agencies to make commitments and informing agencies of progress and of the activities of other agencies. As a non-governmental body, the Council may have been able to facilitate cooperation, and work through turf issues. It maybe that private multiplier entities will play a key role in packaging disparate Federal export promotion services for environmental companies. The U.S.-ASEAN Council, agency participants, and firms are hopeful that coordinated project-focused export promotion efforts can be improved and employed elsewhere.

Perhaps the major lesson is that money talks. Despite the various actions Federal agencies took in support of the U.S. company contenders and the apparent ability of the U.S. firms to provide appropriate technology at a good price, foreign government concessional financing determined the outcome for a major portion of the project.

³ Len Jorntin, U.S.-ASEAN Council for Business and Technology, personal Communication, Oct. 14, 1993.

11 commercial officers in Japan.⁴² JETRO's commercial officers are not rotated as often as U.S. staff, better allowing them to become experts on specific markets.⁴³ Because of their nondiplomatic status and their close relationship with

industry, JETRO officers maybe more attuned to industry needs.

In addition, table 6-8 includes only JETRO staff; it omits diplomatic staff. 'Japan's diplomatic corps regards export promotion as a major

⁴² U.S. Department of Commerce, *Foreign Government Commercial Services: A Comparative Study*, undated. This report appears to be the final version of the draft cited in footnote 31, though a DOC staff contact could not verify this.

⁴³ Ibid., p. 7.

Table 6-8-Foreign Commercial Service Staffing,^a 1990

Country	Overseas posts	Commercial officers	Local professional staff ^b	Total staff	Total staff per \$100 billion of GDP	Total staff per \$1 billion of exports
France	180	100	1,130	1,230	108	5.87
Germany	50 ^c	NA ^d	NA	960 ^e	67	2.28
Italy	83	170	580	750	72	4.14
Japan ^f	76	300	300	600	18	1.72
United Kingdom	185	523	961	1,484	159	8.05
United States	123	155	460	615	11	1.56

a This table excludes staff for agricultural export promotion. General Accounting Office staff, personal communication, Oct. 25, 1993.

b The United States employs foreign nationals as commercial specialists, who are called "foreign service nationals" (FSNS). For the United States, the number given represents FSNS; for other countries, the number given represents FSN equivalents.

c These posts are all chamber of commerce Offices.

d NA denotes not available.

e Includes 900 commercial staff in overseas chambers of commerce.

f Staffing and posts as of March 1992; GDP and export data for 1991, staffing and posts are those of the Japan External Trade Organization (JETRO).

NOTE: Exchange rates used: one U.S. dollar equals 5.7 francs (France); 1.7 DM (Germany); 1,254.3 lire (Italy); 134.7 yen (Japan); 0.59 £ (United Kingdom).

SOURCES: U.S. Congress, General Accounting Office, *Export Promotion: A Comparison of Programs in Five Industrialized Nations*, GGD/92-97 (Gaithersburg, MD: U.S. General Accounting Office, June 22, 1992), p. 25 (based on GAO analysis of information provided by government officials), and discussions with GAO staff. For Japan posts and staffing: JETRO, "JETRO: Japan External Trade Organization," not dated, p. 17 (reporting data as of March, 1992). For GDP data, and for export data for Japan: International Monetary Fund, *International Financial Statistics*, September 1992 and April 1993.

priority,⁴⁴ though staffing figures are not available. On the other hand, table 6-8, which gives JETRO's total overseas staff, could overstate JETRO's export promotion staffing. The reason is that recently JETRO has expanded its mission from export promotion to include import promotion as well. In response to international pressure on Japan to increase its imports, JETRO staff are expending substantial effort to help U.S. firms sell in Japan's market; JETRO may be doing the same for firms in other countries. JETRO claims that its primary mission is now import promotion. However, this claim is difficult to verify, and such a shift would be surprising in view of Japan's historical philosophy and policies and its continuing drive to compete for world market share. Thus, it seems likely that JETRO's mission is still

predominantly to promote exports. Moreover, a core JETRO function is gathering information on foreign firms and markets and reporting that to Japanese firms; and even staff nominally engaged in import promotion are in a good position to continue that function.

Another factor is the overseas export promotion staff's sectoral expertise and focus. In this regard, U.S. agriculture (not included in table 6-8) is well represented; as of September 1993, the U.S. Department of Agriculture's Foreign Agricultural Service had export promotion staff in 79 overseas offices covering 117 countries, which together represented 100 percent of the market for U.S. agricultural exports.⁴⁵ In contrast, US&FCS officers are generalists working to promote all types of nonagricultural exports. However, the

⁴⁴ Trade Promotion Coordinating Committee, *Toward a National Export Strategy*, op. cit., footnote 4, p. 75.

⁴⁵ *Ibid.*, p. 28.

Export Enhancement Act of 1992 could lead to placement of some environmental specialists. That Act authorizes the Secretary of Commerce to designate a Foreign Commercial Service Officer as an Environmental Export Assistance Officer in any country “whose companies are important competitors for United States exports of environmental technologies, goods, and services, ’ or “that offers promising markets for such exports.”⁴⁶ That Officer’s duties would include “assess[ing] government assistance provided to producers of environmental technologies, goods, and services in such countries, the effectiveness of such assistance on the competitiveness of United States products, and whether comparable United States assistance exists”; pointing U.S. producers to assistance programs; informing U.S. firms of foreign standards and regulations; helping companies identify market opportunities and potential customers; and helping them obtain necessary business services abroad.⁴⁷

In addition, since the time covered in table 6-8, US-AEP has opened nine business offices in Asian capitals to strengthen commercial representation for U.S. environmental products and services. The USAID-funded Private Investment and Trade Opportunities Organization has staff in the ASEAN region to promote exports and investment, with emphasis on environment, energy, health care, and food industries.

OUTREACH TO POTENTIAL CUSTOMERS

Providing databases to potential customers is one form of outreach. EPA, USAID, and DOE co-sponsor the Environmental and Energy Effi-

cient Technology Transfer Clearinghouse, an on-line computer service of linked databases that provides users with vendor, technical, and regulatory information for pollution control, renewable energy, and energy efficient technologies. Managed by the World Environmental Center (a nonprofit organization), the Clearinghouse as of December 1992 operated in four Mexico City locations, in Vienna at the United Nations Industrial Development Organization, and in Washington at EPA and the Inter-American Development Bank; other locations are planned.⁴⁸ EPA makes its Vendor Information System for Innovative Treatment Technologies (VISITT), a database on U.S. technologies to treat contaminated groundwater, soils, sludges, and sediments, available to foreign companies. The most recent database gives has technical descriptions and vendor information for over 230 technologies offered by 140 vendors, although some of these technologies are not yet proven at full commercial scale.⁴⁹

Another outreach activity is the reverse trade mission, in which foreign government and industry officials travel here for presentations by U.S. firms. The U.S. Trade and Development Agency (TDA), discussed in more detail later in this chapter, brings officials from low- and middle-income countries to the United States on such missions. In fiscal year 1992, TDA spent \$1.9 million on reverse trade missions to show U.S. technology to developing country private and public sector representatives planning major capital projects.⁵⁰

Other countries may have similar outreach activities; no comparison is attempted here.

⁴⁶ The Export Enhancement Act of 1992, op. cit., footnote 7, sec. 204(a), adding 5 U.S.C. 4728(d).

⁴⁷ Ibid.

⁴⁸ EPA, “Global Markets for Environmental Technologies: Defining a More Active Role for EPA Within a Broader U.S. Government Strategy,” Report of the EPA Task Force on Technology Cooperation and Export Assistance, December 1992, p. 5.

⁴⁹ EPA, “VISITT Vendor Information System for Innovative Treatment Technologies: User Manual (VISITT Version 2.0),” EPA 542-R-93-001, No. 2, April 1993.

⁵⁰ U.S. Trade and Development Agency, 1992 Annual Report, Washington, DC, 1993, p. 8.

■ High-Level Advocacy to Influence Government Procurement

Foreign governments have sometimes been forceful advocates for their national firms when bidding on other countries' government projects. Even heads of states have made personal appeals to procuring governments. While the U.S. government has done some high-level advocacy, it has done much less than many other governments and has not set strategic priorities for advocacy. The Clinton administration plans to greatly increase high level advocacy and to set strategic priorities.⁵¹

TECHNOLOGY VERIFICATION AND DEMONSTRATION

An important aspect of selling goods and services is to convince potential customers that they will work as claimed. In the environment field, testing by the customer is often not practical, and a technology's failure to perform as advertised could have not only environmental but regulatory consequences. In this context, independent evaluation of the technology by a credible third party can help to lessen a potential customer's doubts. Such an evaluation would report the technology's cost and performance under specified conditions.

In many ways, the U.S. Government is in a good position to foster such independent evaluations. It can provide land test sites; guarantee no legal liability if a test fails; and lend its credibility to independent evaluations by performing them itself or hiring persons to do them under government supervision. In particular, EPA's worldwide technical reputation could make a test done under EPA auspices quite persuasive abroad, as well as useful at home. As is discussed in chapter 5, some American firms contend many foreign governments often endorse technologies of their national

firms, giving them a leg up in competing for contracts.

Technology demonstrations performed abroad under U.S. Government auspices may also be a useful tool to familiarize foreign customers with U.S. technical capabilities and their application in foreign conditions. Technology developers get to showcase their capabilities and may gain technical and commercial insights that can help them adapt their products and services for foreign markets. Demonstration projects can also be an avenue for technology cooperation and transfer, and an opportunity for training and technical assistance (discussed below).

The government's role in technology verification and demonstration can be seen either as export promotion (the subject of this chapter) or as a late stage of technology development (the subject of ch. 10). Chapter 10 discusses evaluations under EPA's SITE program. An expanded government role in environmental technology evaluation and verification has been proposed in legislation before the 103d Congress, as discussed under Option 8 in chapter 2.

USE OF FOREIGN AID TO PROMOTE EXPORTS

Development assistance programs can promote exports, including environmental exports, as discussed in detail in OTA's background paper, *Development Assistance, Export Promotion, and Environmental Technology*.⁵² The background paper discussed certain structural features of development assistance programs that affect export promotion potential, and compared leading donors' practices. Such features include sectoral emphasis; formal and informal tying; linkages between bilateral and multilateral aid; use of loans with aid components; funding of feasibility studies; and technology cooperation. This section

⁵¹Trade Promotion Coordinating Committee, *Toward a National Export Strategy*, *Op. cit.*, footnote 4, pp.34-38.

⁵²U.S. Congress, Office of Technology Assessment, *Development Assistance, Export Promotion, and Environmental Technology*, *op. cit.*, footnote 1.

discusses in detail only feasibility studies and technology cooperation (the latter is also discussed in ch. 10); use of loans with aid components is mentioned in the next section, on financing. Chapter 2 discusses policy issues and options (see Issue Area D: Export Promotion, Development Assistance, and Environmental Firms).

As is discussed in chapter 5, aid can be important to commercial outcomes in specific environmental sectors. The purchaser of environmental infrastructure projects is often a government (e.g., in its role as a utility owner), whose purchasing behavior can be influenced by aid programs. Environment-related capital projects are often quite large, so that financing packages, especially those incorporating an aid component, are often important in making sales. Private-sector environmental sales are largely driven by environmental regulations and their enforcement; a donor's assistance to the government in developing regulations and monitoring compliance can increase private sector demand and may to some degree influence environmental requirements in ways that favor goods and services from the donor country's firms.

As developing countries begin to address their environmental problems, some analysts see the potential to link development assistance and promotion of environmental exports as a potentially important business opportunity. Others see it as a means to transfer needed environmental technology to developing countries, and still others as a potentially dangerous course that could result in transfer of inappropriate technologies that do not meet recipients' developmental or environmental needs. OTA's background paper discussed these tensions between export promotion goals and development and environmental goals in some detail. In brief, the potential for

transfer of inappropriate technologies could be reduced through safeguards to keep export promotion efforts consistent with developmental and environmental objectives (see ch. 2).

Japan's aid programs pose the most commercial challenge to U.S. firms. Japan is, with the United States, the largest donor of aid and probably of environmental aid, and it has made a commitment to expand its environmental aid substantially. Japanese aid, though becoming more geographically dispersed, still focuses on East Asia, with its potentially large market for environmental goods and services, and where Japan has a strong commercial presence.⁵³ Japan's aid includes two types of programs whose export promotion effects can last far beyond the time of the aid, with benefits far exceeding the size of the aid program: funding for feasibility studies, and training programs. Corresponding U.S. programs appear to be smaller, though they could grow.

■ Feasibility Studies

Large capital projects are usually preceded by preliminary study of the project's context, scope, planned methods of implementation, and likelihood of success. Donors often use aid to fund such feasibility studies—often tying the funding (i.e., requiring the recipient government to hire a donor country firm to do the study). This often makes it more likely that a firm from that donor country will be selected to do the follow-on engineering and construction, even if bidding for the construction phase is open. If the company performing the study bids on the engineering and construction phases, it is likely to have an informational advantage. Even if the firm itself cannot bid on the project, it may be more familiar with, and thus recommend, technical specifications that can be met by donor country technologies or vendors.⁵⁴

⁵³ *Ibid.*, pp. 36,43,23 (OX 2-B). While Japan's aid programs historically were motivated by a desire to promote exports, Japan's government denies that this motivation exists today. However, regardless of motive, Japan's aid is still (albeit somewhat less than before) structured in ways that appear to enhance the aid's export promotion potential. See *ibid.*, pp. 37-38,4146.

⁵⁴ Similarly, if the firm doing the feasibility study is selected to manage the construction, it is likely to use its position of setting specifications and advising the recipient country on procurement in a way that steers construction business toward firms from its own country.

Furthermore, the firm performing the study establishes or maintains an in-country presence that can help it make other sales.

The Japanese International Cooperation Agency (JICA) seems to have an annual budget of about \$200 million for tied feasibility studies.⁵⁵ The corresponding U.S. budget is much smaller. The primary agency involved is the U.S. Trade and Development Agency (TDA, formerly the Trade and Development Program). TDA's mission is "to assist the U.S. private sector in exporting goods and services for major capital projects in developing and middle-income countries."⁵⁶ TDA's appropriations were \$35 million for fiscal year 1992 and \$40 million for fiscal year 1993.⁵⁷ The fiscal year 1994 appropriation remained at \$40 million, although the administration had requested \$60 million. TDA estimates that for every dollar of TDA program expenditure, over \$25 are returned to the U.S. economy in export income; however, an unknown portion of those exports are themselves financed or otherwise supported by other U.S. Government agencies such as USAID and Eximbank, so the ratio of outlays received to U.S. Government program expenditures would be lower.⁵⁸ By sector, TDA's fiscal year 1992 program spending was 33 percent for energy and natural resources and 12 percent for water and environment; transportation and manufacturing were also emphasized.⁵⁹

In fiscal year 1992, TDA spent \$39 million on program activities (including some funds trans-

ferred from other agencies), of which \$25 million went to bilateral grants for feasibility studies (79 studies costing an average of \$319,000), and another \$2.5 million to similar grants for multilateral development banks to evaluate proposed projects.⁶¹ (Most of the rest was spent on training, discussed below.) To receive feasibility study funding, projects must meet four criteria aimed at maximizing export impact:

- *Development priority.* **Projects** must be development priorities of the host country, and likely to be implemented; the host country must request TDA assistance, and the U.S. embassy must approve.
- *Export potential.* Potential sales of U.S. goods or services must be large relative to the cost of the feasibility study.
- *Open to U.S. firms.* It must be likely that the project will be open to bidding by U.S. firms, and that financing will be available that is not restricted to firms of particular countries.
- *Competition.* It must be likely that U.S. firms will face strong competition from foreign companies with foreign government support.⁶²

One study funded in fiscal year 1992 was for a facility to treat industrial and municipal wastewater in the Asuncion and Lake Ypacarai region in Paraguay. TDA reports that the study costs \$680,000, and states that the U.S. export potential in mechanical and electrical equipment and engi-

⁵⁵ U.S. Congress, Office of Technology Assessment, *Development Assistance, Export Promotion, and Environmental Technology*, op. cit., footnote 1, p. 43.

⁵⁶ U.S. Trade and Development Agency, *1992 Annual Report*, op. cit., footnote 50, p. 5.

⁵⁷ *Ibid.*, p. 4.

⁵⁸ See U.S. Congress, Office of Technology Assessment, *Development Assistance, Export Promotion, and Environmental Technology*, op. cit., footnote 1, p. 88 & note 14.

⁵⁹ U.S. Trade and Development Agency, *1992 Annual Report*, op. cit., footnote 50, pp. E1, 18.

⁶⁰ *Ibid.*, p. 22. Program activities accounted for 92 percent of TDA's expenditures; the rest was for operating expenses.

⁶¹ *Ibid.*, pp. C1, 7. The Clinton Administration **Plans** to consolidate USAID feasibility study funds for capital projects in TDA. Trade Promotion Coordinating Committee, *Toward a National Export Strategy*, op. cit., footnote 4, p. 50.

⁶² U.S. Trade and Development Agency, *1992 Annual Report*, op. cit., footnote 40, p. 6.

neering and project management services is over \$149 million.⁶³

■ Technology Cooperation

“Technology cooperation” means cooperation between or among countries (either government-to-government or with private sector participation) in developing or transferring technology. It includes technology demonstrations, research and development centers, training programs, and technical assistance to nascent institutions such as a government environment agency. Technology cooperation can encourage environmental exports in several ways. For example, exporters may work with potential clients in another country to adopt technologies to local needs, thus making t

ogy cooperation also can provide access for one country’s firms to key government and industry decisionmakers in the other country. Where aid is involved, training grants may help to develop the needed technical and managerial skills in the recipient country to make use of the donor country’s technology.⁶⁴

Training will be discussed in detail below; technology development and demonstration, in chapter 10. Technical assistance to new institutions will not be discussed in detail, but is a significant factor. Both the United States and other aid donors provide assistance in developing regulations, testing protocols, and compliance measurements. This assistance can increase the recipient country’s environmental market. If the recipient country adopts standards and practices similar to those of the donor country, donor country equipment and service vendors could have an advantage (see ch. 5).

TRAINING BY THE UNITED STATES

TDA spent \$7.4 million, about a fifth of its fiscal year 1992 budget, on training.⁶⁵ Some of this went to sweetening the bids of U.S. firms on capital projects meeting TDA’s four criteria (listed above); some familiarized potential customers with U.S. technology, in cases where future projects meeting those criteria seemed likely. TDA also spent over half a million dollars on technical seminars for government and industry officials, on topics such as sewage treatment technology.⁶⁶

The United States Environmental Training Institute (USETI), a nonprofit organization established jointly by the U.S. Government and some U.S. businesses, also supports training for developing country decisionmakers.⁶⁷ Under USETI, firms provide training at their own expense, in return for which they can showcase their proven technologies. U.S. Government agencies such as EPA, TDA, and USAID also contribute instructors. U.S. embassies and commercial offices promote the courses. USETI only commenced training in December 1992; it estimates that by the end of 1993 over 450 people will be trained. Its 1993 courses covered subjects such as solid waste management, pollution prevention, efficiency in energy use, and air pollution control; courses were 2 weeks long. For 1994, USETI plans to train about 1,300 persons.

USETI’s 1993 budget was \$3.4 million, including both cash and the value of in-kind resources (primarily effort was \$2.1 million, of which all but \$0.2 million was in-kind. Over 20 firms, trade associations, and other organizations participated, including a technical school in Thailand. The public

⁶³ *Ibid.*, p. 7.

⁶⁴ To properly serve a developing country’s needs, a capital development project based on imported technology requires trained local operators; this is true of many environment-related projects. Some projects have not provided for enough training. U.S. Congress, Office of Technology Assessment, *Development Assistance, Export Promotion, and Environmental Technology*, *op. cit.*, footnote 1, p. 12.

⁶⁵ U.S. Trade and Development Agency, *1992 Annual Report*, *op. cit.*, footnote 50, pp. C1, 8-9 (training and technical assistance categories).

⁶⁶ *Ibid.*, pp. C1, 8-9 (technical symposia category).

⁶⁷ This discussion is based on information provided by USETI.

sector contribution (from nine Federal agencies, plus small contributions from the World Bank and the International Finance Corp.) was \$1.3 million, primarily in scholarships for travel and living expenses and in training.

US-AEP funds environmental fellowships for professionals from Asia and the Pacific islands to work in business, government, and nongovernmental organizations (NGOs). These fellowships, administered by the Asia Foundation, last 1 to 4 months and cover both technology and policy. During the period 1993 to 1995, 125 fellowships are planned, 35 of them at EPA. Some fellowships, such as those at EPA, might involve no direct U.S. commercial contacts or implications but might nevertheless help another country to write and enforce environmental regulations, thus creating demand for U.S. environmental technologies and services.

TRAINING BY JAPAN

Japan's MITI funds the International Center for Environmental Technology Transfer (ICETT), established in 1990. ICETT's first project involved training nine Mexican engineers on gas emission controls. ICETT plans to train 10,000 engineers from developing nations by 2001.⁶⁸ ICETT will work with environmental protection specialists from developing countries, including Eastern Europe.

The Japan International Cooperation Agency (JICA) also runs a training program for foreign officials and has 10 training centers throughout Japan. While none are called environmental training centers, many of the fields officially covered likely have substantial environmental content. Of 7,556 people accepted for training by

JICA in 1990, 1,456 were in the area of public works and utilities, 837 in mining and industry, 713 in public health and medicine, and 211 in energy.⁶⁹ In 1991, JICA offered training courses in Japan on environmental matters to about 690 participants from developing countries. The training covered water quality monitoring, air pollution monitoring, technologies to reduce CFCs, waste disposal, and conservation of the agricultural environment, among others. JICA has funded construction of three environmental technology centers in Asia with training components: the Thai Environmental Research and Training Center; the Japan-China Friendship Environmental Preservation Center; and the Indonesia Environmental Management Center.⁷⁰

The extent to which Japan's government offers training to sweeten the bids of Japanese firms (as the United States' TDA does) is not known.

FINANCING

Most exporters need at least short-term financing to cover the time between when they ship goods and when the customer pays. Some require longer term financing for customers that demand an extended payment plan. Long term financing is critical for funding large capital projects such as wastewater treatment plants and powerplant environmental controls. Smaller businesses may need "working capital" loans to pay for production or marketing before export sales are made.

In the United States, private sector export financing (without government help) is inadequate to meet exporters' needs (especially those of small exporters); many competitor countries do better. There are several reasons for this.⁷¹ Export financing tends to be more labor-intensive and to

⁶⁸ "Aid Offered to Clean Environment Abroad; Help for Soviets in the Works at MITI," *The Nikkei Weekly*, July 27, 1991.

⁶⁹ JICA, "JICA, For the Future of the Earth," not dated, p. 6.

⁷⁰ As cited in Japan International Cooperation Agency, *JICA Newsletter*, July 1993, and Government Of Japan, *Environment and Development: Japan's Experience and Achievement*, Japan's National Report to UNCED 1992, December 1991, pp. 25-26.

⁷¹ This discussion of private sector export financing is based on James S. Altschul, "The Export Finance Crisis" (Washington DC: Economic Strategy Institute, July 1992), pp. 1-10; TPCC Working Group on Trade Finance; National Export Initiative Bankers Meetings on Trade Finance, not dated (reporting on workshops held with bankers in 1991); and Nothdurft, op. cit., footnote 3, p. 56.

have lower profit margins than other banking activities, making it less attractive for banks. In the United States, the profitability of export financing is often further reduced because of unfavorable tax consequences, and real or perceived unfavorable reserve requirements; further, some U.S. banks' accounting rules make export financing appear less profitable than it is.

The low profitability of export financing has mattered more in recent years because U.S. banks have switched away from relational banking, in which banks considered relationships with clients to be paramount and therefore provided less profitable services within the context of those relationships, to transactional banking, in which each type of transaction is scrutinized and dropped if not sufficiently profitable. (In Europe, relational banking still predominates.)

Because many U.S. banks incurred major losses in the 1980s from unrepaid loans made to developing countries, most U.S. banks have become wary of lending to these nations, and of international lending in general. U.S. banks often feel unqualified to judge foreign risks—they generally lack the international experience of European banks. U.S. banks are particularly cautious about medium- and long-term loans for exports to countries outside the industrialized West and Japan, which the banks consider the most risky.

The situation is particularly difficult for small exporters. Smaller banks tend not to handle export financing, and larger banks may find small exports (below about \$300,000) not worth their while.⁷² U.S. banks are rarely willing to make working capital loans for production or marketing. Even when an exporter has an order and is ready to ship, U.S. banks normally will not, without a government loan guarantee, finance

simply against foreign receivables; they normally demand that the exporter get a confirmed letter of credit, which is a promise by the customer's local bank to pay once documents conveying title to the goods are delivered, guaranteed **by a U.S. bank that processes international transactions.** (European banks more readily finance against foreign receivables.) The minimum charge for a confirmed letter of credit is often at least \$400,⁷³ which can take a fair bite out of the profit of a small order. An order of \$20,000, for example, might have a profit margin of \$2,000 before financing costs. Letters of credit also require meticulous documentation when title to the goods is delivered; inexperienced exporters often need instruction on how to prepare documents, and frequently prepare them incorrectly, which delays payment for the goods.

To some extent foreign banks operating in the United States are filling the demand unmet by U.S. banks. However, their services concentrate on larger firms and larger transactions. Moreover, foreign banks seem interested primarily in providing financing for sales already in hand, rather than working with firms to put together competitive bids.⁷⁴ A foreign bank might be particularly reluctant to work with U.S. firms to put together a bid that would compete against one of the bank's clients in its home country.

Not only do U.S. exporters get less export financing help from the private sector than their counterparts in many major competitor countries; at least for nonagricultural exports, U.S. exporters also get less help from the national government. U.S. Government assistance for nonagricultural exports is provided primarily by the Export-Import Bank of the United States (Eximbank), which in fiscal year 1992 assisted \$14.0 billion in

⁷² US-AEP is working with the Bank Association for Foreign Trade to link local banks with commercial banks experienced in international transactions. Lewis Reade, Director-General, US-AEP, presentation at the Clean Air Marketplace Conference, Washington DC, Sept. 9, 1993.

⁷³ James S. Altshuler, *op. cit.*, footnote 71, p. 7.

⁷⁴ In situations involving Eximbank's assistance, U.S. banks have shown a greater willingness than foreign banks to work in this way with U.S. firms.

exports.⁷⁵ In 1991, perhaps 13 percent of Eximbank's assistance (by volume of exports assisted) has gone directly to small business⁷⁶; if the same proportion held for 1992, about \$1.8 billion in small business exports were assisted in that year. As shown below, Eximbank's assistance is limited in several respects: total amounts, criteria for assistance, and **ease of administrative access**. However, Eximbank has taken measures to improve access, especially for small business, and is likely to finance environmental exports more.

Eximbank's financing programs cover a much smaller share of exports than analogous programs in major competitor countries. One report covering 1989 showed U.S. coverage at about 2 percent of total exports, compared with 32 percent for Japan, 21 percent for France, 20 percent for the United Kingdom, and 4 percent for Germany.⁷⁷

Eximbank's limited export coverage results in large part from budgetary constraints:

While Eximbank must consider the budget implications of transactions, regardless of 'need' (i.e., whether Eximbank has the budget resources to commit to a particular transaction), its European and Japanese competitors generally have the budget flexibility to pursue creditworthy transactions which fall within their stated parameters.⁷⁸

Also, Eximbank requires more justification for assistance in particular cases than most major foreign competitor agencies require:

In general, U.S. economic policy is guided by a "needs based" principle, and such is the case for Eximbank. Specifically, this policy translates to Eximbank supporting exports facing officially supported competition, or transactions for which the private sector is unwilling or unable to provide financing. Therefore, Eximbank generally must find evidence that one of these conditions exists to provide support for a transaction. In contrast, most of our major competitors view exports as being crucial to their countries' eco-

⁷⁵Eximbank, *Annual Report 1992*, p. 2. This takes into account Eximbank's loans, loan guarantees, and insurance.

⁷⁶GAO reported 13 percent. Congress, General Accounting Office, *The U.S. Export-Import Bank: The Bank provides Direct and Indirect Assistance to Small Businesses* (Gaithersburg, MD: U.S. General Accounting Office, Aug. 21, 1992), pp. 2-5, 13. Direct assistance includes only financing provided directly to small businesses; it does not include financing provided to subcontractors working through larger businesses that receive Eximbank financing. GAO did not count some unverified data, and noted problems with some data that it did count. Eximbank, which counted both direct and indirect assistance, reported that it assisted small business exports of \$2.1 billion in 1991 out of total exports of \$12.1 billion, or 17 percent, *Ibid*, pp. 2-5; Eximbank, *op. cit.*, footnote 75, pp. 3, 14-15.

⁷⁷First Washington Associates, Ltd. (Arlington VA), *Comprehensive Directory of the World's Export Credit Agencies* (October 1991). These figures include exports assisted by loans, loan guarantees, and insurance. The figures omit certain agencies, including the United States' Small Business Administration for which data were unavailable. (SBA assists under \$100 million of exports per year-less than 1 percent of what Eximbank covers.) The U.S. figure includes 0.5 percent for Eximbank and 1.5 percent for the Foreign Credit Insurance Agency (FCIA), which issued insurance for Eximbank; FCIA's operations have since been absorbed into Eximbank itself.

A report covering 1987 gave similar figures, and a figure of 12 percent for the Netherlands. Altschul, *op. cit.*, footnote 71, p. 11, citing *Trade Finance & Banker International*, January 1990, p. 32-4, and speech by Albert H. Hamilton to the American Bankers Association, May 1989 meeting on small business.

Both of these studies omit financing for agricultural exports by the U.S. Department of Agriculture's Commodity Credit Corp., while the figures for the foreign countries probably include agricultural export promotion. Thus, the U.S. financing and foreign countries' financing are, strictly speaking, not being compared on the same basis. However, the Commodity Credit Corp. covers only about 1 percent of U.S. exports, so including it would just raise the U.S. figures by 1 percent (see figures for 1991 in First Washington Associates, Ltd. (Arlington VA), *Comprehensive Directory of the World's Export Credit Agencies* (forthcoming in 1993)); this would not change the result that the other countries listed have much higher export coverage (except perhaps for Germany). Also, some of the foreign countries probably offer limited agricultural export financing, so that the figures reported in the study are correct or nearly correct comparisons of nonagricultural export financing. In 1990, as a percentage of total exports, agricultural exports were only 17 percent in France, 5 percent in Germany, 0.4 percent in Japan, 24 percent in the Netherlands, and 7 percent in the United Kingdom. U.S. Department of Agriculture, Economic Research Service, *World Agriculture, Statistical Bulletin # 815* (September 1990); U.S. Department of Agriculture, Foreign Agricultural Service, *Foreign Agriculture 1992* (Washington, DC: USDA, December 1992), pp. 53, 93.

⁷⁸Eximbank, *Report to the U.S. Congress on Export Credit Competition and the Export-Import Bank of the United States for the Period January 1, 1991 through December 31, 1991* (July 1992), p. 8.

conomic well-being and security. To this end, they provide export credit on more of an “entitlement” basis by broadly defining their target audience and parameters, and allowing automatic access to their programs when the parameters are met.⁷⁹

These differences mean that U.S. companies applying for Eximbank assistance, compared with foreign firms applying to counterpart agencies, must expend more effort in applying and have less certainty of receiving help. U.S. firms, especially small business, could therefore be discouraged from applying.

Other factors have impeded access to Eximbank assistance, though Eximbank is trying to change that.⁸⁰ Eximbank now has 6 domestic offices, compared to only one full-service office before 1992; France’s export-import bank has 22. Eximbank has no overseas offices; Japan’s export-import bank has 16. Companies have consistently complained that Eximbank is slow in processing applications.⁸¹

While Eximbank traditionally has relied on commercial banks to reach small business, many U.S. banks have discontinued international lending. Eximbank hopes to fill the gap with its City/State Program, by which State and city development and finance agencies can help firms

to apply for Eximbank assistance while perhaps adding their own financing to the package. Begun in 1987, this program by early 1992 included 18 States, Puerto Rico, a city, and a port authority. Eximbank’s other steps to improve service to small business include creating a high-level small business unit, streamlining approval for most small (under \$2.5 million) working capital loan guarantees, increasing marketing efforts, and improving coverages.⁸²

The Small Business Administration (SBA) also provides export financing. However, the exports assisted are under \$100 million per year⁸³; this is tiny, compared to Eximbank, which assists (see above) an estimated \$1.8 billion dollars per year of small business exports. The General Accounting Office has also found evidence that export promotion, including export financing, is not a priority at SBA.⁸⁴ The Clinton administration has proposed harmonizing and ultimately merging SBA’s and Eximbank’s working capital programs.⁸⁵

The Export Enhancement Act of 1992 requires Eximbank to encourage “the use of its programs to support the export of goods and services that have beneficial effects on the environment or mitigate potential adverse environmental effects. Eximbank is to report annually on this effort.”⁸⁶

⁷⁹ Ibid.

⁸⁰ The information in this and the next paragraph is taken in part from U.S. Congress, General Accounting Office, *Export Finance: The Role of the U.S. Export-Import Bank*, GAP/GGD-93-39 (Gaithersburg, MD: U.S. General Accounting Office, Dec. 23, 1992), pp. 22-29; U.S. Congress, General Accounting Office, *Export Promotion: A Comparison of Programs in Five Industrialized Nations*, op. cit., footnote 20, p. 31; and Eximbank, *Report to the U.S. Congress on Export Credit Competition*, op. cit., footnote 78, pp. 27, 32-35.

⁸¹ See, for example, Kenneth D. Brody, letter to Donald W. Riegle, Jr., Chairman, Senate Committee on Banking, Housing and Urban Affairs, and to Henry B. Gonzalez, Chairman, House Committee on Banking, Finance and Urban Affairs, July 30, 1993, reprinted in Eximbank, *Report to the U.S. Congress on Export Credit Competition and the Export-Import Bank of the United States for the Period January 1, 1992 through December 31, 1992 (July 1993)*. Access to Eximbank programs is also impeded, especially for small business, because, as discussed above, there is no “one-stopshopping” for export services; firms must seek assistance individually from Eximbank and other agencies involved in export promotion.

⁸² U.S. Congress General Accounting Office, *Export Finance*, op. cit., footnote 80, p. 24. When it issued this report, GAO found that it was too early to evaluate the success of these efforts.

⁸³ U.S. Congress, General Accounting Office, *Export Promotion: Problems in the Small Business Administration’s programs*, op. cit., footnote 41, pp. 8-9.

⁸⁴ Ibid., pp. 10-12.

⁸⁵ Trade Promotion Coordinating Committee, *Toward a National Export Strategy*, Op. Cit., footnote 4, p. 47.

⁸⁶ The Export Enhancement Act of 1992, op. cit., footnote 7, sec. 106.

Pursuant to the statute, the Bank's board has appointed an officer to advise it on ways to use Eximbank programs to support environmental exports.⁸⁷

In 1992, 20 States provided export loans and/or loan guarantees. California had the largest program, assisting \$180 million in exports over 1 year; Minnesota assisted \$2.6 million in exports. In addition, some States provided export insurance.⁸⁸ California also provides seed money to partially cover costs of putting together export deals (e.g., the cost of an investment banker's services) in the energy field, many of which concern energy efficiency or renewable energy. In its fifth year, California's International Energy Fund has provided \$250,000 per year in contingent loans, to be repaid (with interest) only if the project generates revenues. The loans are match-

ing funds, and projects are selected by a stiff competition.⁸⁹

■ Financing with an aid component

Countries sometimes use aid funds to sweeten an export financing package, creating so-called "tied aid credits." The United States has used tied aid credits less aggressively than many competitor countries. Other countries' use of tied aid credits appears to be declining, but is still substantial. Power generation is one sector in the energy/environment realm that attracted substantial tied aid credits; it is possible that tied aid credits will focus more on the environmental sectors in response to changes in international rules. Tied aid credits are discussed in detail in OTA's background paper.⁹⁰

⁸⁷ Eximbank, *Annual Report 1992*, op. cit., footnote 75, p. 8.

⁸⁸ National Association of State Development Agencies, *NASDA State Export Program Database (SEPD): 1992*, op. cit., footnote 17, pp. 27-29.

⁸⁹ Tim Olson, California Energy Commission, personal communication, Oct. 22, 1993.

⁹⁰ U.S. Congress, *Office of Technology Assessment, Development Assistance, Export Promotion, and Environmental Technology*, op. cit., footnote 1, pp. 46-54.

PART III.
Users of
Environmental
Technology: U.S.
Manufacturers