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Foreign Government Assistance to Domestic Industry: A Survey of Practices



September 1992



**Foreign Government
Assistance to Domestic
Industry: A Survey
of Practices**

Foreign Government Assistance to Domestic Industry: A Survey of Practices

Summary

The major trading partners of the United States assist their domestic industries through a variety of practices.¹ Of the six countries studied, France, Japan, South Korea, and Taiwan provide the most assistance to their domestic industries, while Germany and the United Kingdom provide the least.

Governments offer assistance in three general ways:

- *By creating barriers to the domestic market.* All the countries in this study—but particularly Japan, South Korea, and Taiwan—assist some domestic industries by blocking foreign access to domestic markets. For example, each protects a few domestic sectors, such as agriculture, with prohibitive tariffs or quotas. Protection is also provided through product and service standards, testing regulations, and direct investment restrictions. For example, an EC regulation that bars the sale of meat from hormone-treated livestock has effectively curtailed most US beef sales in Europe. In Japan, investment rules restrict foreign investment in industries such as aircraft, space development, and atomic energy.
- *By devising incentives for domestic production.* Of the six countries covered in this paper, five—France, Germany, Japan, South Korea, and Taiwan—provide incentives to domestic firms in targeted industries. Subsidies and low-interest loans are used to support production in so-called mature industries—such as shipbuilding—and to encourage production in high-technology industries—such as electronics. In addition, Japan, South Korea, and Taiwan regulate intellectual property rights (IPR) in ways that often help domestic firms inexpensively license foreign technology, while weak laws regulating areas of IPR in South Korea and Taiwan have permitted the outright piracy of foreign video movies, textbooks, and computer designs. South Korea and Taiwan also use their tax systems to encourage foreign investors to locate high-technology facilities in their countries.
- *By aiding in market development.* The Governments of France, Japan, and South Korea are the most active in helping to develop markets for their products at home and abroad. At home, government purchases ensure select industries—particularly telecommunications, energy, water, and transport equipment—a minimum level of sales. In foreign markets, these governments aggressively apply high-level political pressure and/or give foreign aid to induce purchases of goods. For example, the French are the most active lobbyists, pressuring governments to purchase everything from airplanes to reactors. Paris, Bonn, Tokyo, and, to a lesser extent,

¹ The countries covered in this study are France, Germany, Japan, South Korea, Taiwan, and the United Kingdom.

London have exempted some industries from antitrust regulations to help them secure better international market positions. For example, French, German, and British aerospace companies were permitted to form the Airbus consortium to help them develop and sell commercial jetliners. Finally, all governments in this study emphasize research and development to improve industrial competitiveness.

The pattern of government assistance over the past several years suggests that the emphasis is shifting away from practices to block foreign competition toward practices to spawn new industries and markets. This shift is the result of a number of causes. As domestic enterprises grow into multinational corporations, they frequently push for freer trade. At the same time, regional trading organizations, such as the European Community, are pressing member countries to remove trade barriers that affect other members. OECD-developed conventions on subsidies and tax treatment and efforts in the GATT to negotiate lower barriers to trade in goods and services provide an additional impetus for reform. Finally, fiscally strained governments increasingly view production incentives as costly and ineffective—especially those given to help mature industries.

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Foreign Government Assistance to Industry

		 Heavy use  Moderate use  Some use					
<i>General Practice</i>	<i>Specific Practice</i>	<i>Country</i>					
		France	Germany	Japan	South Korea	Taiwan	United Kingdom
Domestic Market Access Barriers	Tariffs						
	Quantitative restrictions on trade						
	Standards and testing regulations						
	Limits on foreign direct investment						
Incentives for Domestic Production	Inadequate intellectual property rights protection						
	Low-cost lending						
	Direct subsidies						
	Tax benefits						
Market Development	Procurement practices						
	Export assistance						
	Antitrust exemptions						
	R&D support						

Foreign Government Assistance to Domestic Industry: A Survey of Practices

Domestic Market Access Barriers

Governments have traditionally placed limits on foreign access to their markets to assist domestic industry. Although international pressure is lowering many of these barriers, countries such as Japan, South Korea, and Taiwan still rely extensively on such barriers as tariffs, quantitative import restrictions, standards and testing regulations, and limits on foreign direct investment. Although the protection afforded domestic manufacturers by tariffs or quantitative restrictions is apparent, the effect of standards and testing regulations and limits on foreign direct investment is more difficult to discern.

Tariffs

Overall tariff levels in the six countries examined are fairly low—averaging 5 percent in the developed countries and 10 percent in South Korea and Taiwan. A few industries in each country, however, are protected by prohibitively high tariffs. According to OECD data, all six countries apply tariffs as high as 50 percent to agricultural and wood products. The developed countries also place high tariffs on textiles.

Although international trade conventions allow some duties—such as antidumping or countervailing duties—to be levied to offset a foreign competitor's unfair trade practices, some countries abuse this levy. For example, trade experts and officials in leading export nations charge that the European Community (EC)—which includes France, Germany, and the United Kingdom—has a low regulatory threshold for proving dumping and injury. During the period 1980-90, the EC Commission imposed special duties or price controls in 73 percent of the 421 antidumping cases it reviewed, the highest ratio among major trading nations. The majority of cases involved chemicals, iron and steel, or consumer electronics.

Quantitative Restrictions on Trade

All six countries use quantitative restrictions on some imported goods to protect selected industries from foreign competition:

- Japan bans rice imports and places quotas on other grains, fresh fruits, and vegetables.
- South Korea and Taiwan limit imports of some grains, fruits, and meats.
- France, Germany, and the United Kingdom have negotiated import quotas on textiles with foreign producer countries through the Multi-fiber Agreement.
- France mandates a minimum number of hours each day of French-produced television programming to promote French culture.

In response to international criticism of import quotas and bans, many nations are now pressuring exporting countries to voluntarily limit their exports. The Japanese, for example, have agreed to voluntary restraints on auto exports to the United Kingdom and Germany rather than risk more stringent limits on their sales. In another case, the EC negotiated a voluntary restraint agreement to limit Turkish clothing imports because formal quotas are not allowed under the EC-Turkey Association Agreement.

Standards and Testing Regulations

Some governments, especially those of Japan, South Korea, and Taiwan, shield their domestic markets from foreign competition by tailoring product and service regulations to increase the cost of imports. Domestic firms in most countries help their regulatory authorities establish product and testing standards, and this often results in rules that favor domestic producers. Examples of such regulations include:

- Domestic ownership requirements and standards favor domestic manufacturers of telecommunications services in France, Germany,

Domestic Market Access Barriers

Tariff

Tax imposed on an imported good. A tariff may be assessed either at a flat fee per item or measure or as a percentage of an item's value.

Quantitative Restrictions on Trade

Restrictions that limit the quantity of a good that is imported into a country. Several such measures are:

- Import quota. *An imposed limit on the import quantity of a good. It may be applied to imports of the good in general, or each country may receive a separate limit.*
- Ban. *Prohibits entry of an imported good.*
- Voluntary restraint agreement. *An export limit agreed to by an exporter to forestall official protective action on the part of an importing country.*
- Multilateral trade restraint agreement. *An agreement that provides guidelines for negotiating bilateral import quotas.*

Standards and Testing Regulations

Regulations that are imposed on goods or services to protect the public. These regulations are often implemented in a manner to discourage imports or to make the cost of imported goods or services prohibitively expensive. Some types of regulations are:

- *Product regulations that include plant and animal inspection requirements, labeling and licensing requirements, domestic content requirements, product standards and specifications, and product testing and certifications.*
- *Service regulations that govern areas such as banking, insurance, securities, and legal practices.*

Limits on Foreign Direct Investment (FDI)

Requirements that are imposed to block or raise the cost of investing in a country in a given industry or to steer foreign investment into target industries.

Japan, and South Korea. These requirements force foreign producers to work through domestic operators and to incur sizable costs in adapting their equipment for the local market.

- The approval process for pharmaceuticals in Japan requires extensive in-country testing. This delays the entry of foreign drugs and drives up their cost.
- Health and sanitary inspections in South Korea and Taiwan are used to delay the entry of imported food. This discourages imports because it threatens perishable items with spoilage.

Limits on Foreign Direct Investment

France, Japan, South Korea, and Taiwan use foreign direct investment (FDI) restrictions to protect domestic industry or to help their firms obtain foreign technologies:

- Limits on equity participation in South Korea protect a wide range of domestic accounting, legal, financial, transportation, and retailing services.
- A required waiting period before foreign investors can complete a takeover in France has been used by regulators to encourage domestic suitors to enter the bidding and keep the firm under French control.
- Legal restrictions in France and Japan bar foreign ownership of defense or "national interest" industries. These industries are only vaguely defined and include, for example, agriculture in Japan.
- A streamlined approval system in Taiwan and South Korea is aimed at steering foreign investment into the high-technology area. Tax holidays, import duty waivers, accelerated depreciation, and low-interest loans are also used by these governments to entice investors into industries targeted for development.

Faced with international pressure, South Korea and France are considering dismantling some of their FDI restrictions. Seoul has promised to remove many restrictions on foreign investment in services after bilateral negotiations with the United States. Currently, under pressure from EC-92 single-market guidelines, France is preparing to remove many of its FDI restrictions against other EC countries and may remove some restrictions against non-EC countries at the same time.

Incentives for Domestic Production

Production incentives—the second major category of government mechanisms to support domestic industry—include lax laws concerning intellectual property rights (IPR), low-cost production loans and trade credits, subsidies, and special tax benefits.

Inadequate Intellectual Property Rights Protection

Japan, South Korea, and Taiwan implement their IPR laws either to pressure foreign firms to license technology to domestic firms at cut-rate prices or to deny protection to foreign firms altogether. For example, when a foreign firm applies for a patent in Japan, the government allows domestic firms to file similar claims. These competing claims may extend the time it takes a foreign firm to receive a patent, narrow the scope of the patent issued, or even cause the patent to be denied. As a result, foreign firms often grant concessionary licenses to Japanese competitors in exchange for dropping nuisance claims. In South Korea and Taiwan, inadequate IPR protection permits domestic firms to counterfeit products ranging from pharmaceuticals and video movies to personal computers and textbooks. Recent events indicate US Government pressure is persuading both governments to improve their protection and enforcement of IPR.

France, Germany, and the United Kingdom provide broad IPR protection through patents, copyrights, and trademarks that encourage product

Incentives for Domestic Production

Intellectual Property Rights (IPR) Protection

innovation and protect foreign firms. Nevertheless, Governments treat IPR in several ways to help their firms:

- *Developing nations often offer weak protection of foreign-owned IPR in their markets. This helps domestic firms press for lower licensing fees and, in some cases, facilitates pirating of intellectual property.*
- *Developed nations often provide ownership rights to intellectual property through patents, trademarks, and trade names, through copyrights to literary and artistic property, and to computer software. Legal protection of IPR generally allows the owner of a creation to gain adequate compensation for its use and helps prevent the unfair use of proprietary information and technologies.*

Low-Cost Lending

A state subsidy or loan guarantee that lowers the borrower's interest rate to encourage industrial development or exports.

Direct Subsidies

Payments provided by a government authority for the purpose of encouraging production or export of a good or service.

Tax Benefits

Reduction of a firm's tax obligation to lower the cost of product or export. Such benefits can include accelerated depreciation of capital, tax credits, tax deductions, adjustments to profit/cost accounting, tax rebates on exported goods, and suspension of tax on goods in free trade zones.

innovation and protect foreign firms. Nevertheless, even in countries where IPR laws are strong, such laws may be interpreted so that foreign firms are disadvantaged.

Low-Cost Lending

Low-cost government lending is generally used to help specific industries that are having difficulties or are targeted for development. France and Germany occasionally use low-cost lending to prop up ailing domestic firms, while South Korea and Taiwan provide loans at concessionary rates to help industries develop and to spur exports. Government-supported economic development banks in Japan, South Korea, and Taiwan are primary sources of concessionary lending to targeted industries. These banks provide below-market financing for research and development, capital equipment purchases, marketing, and export sales. Studies indicate:

- Small and medium-size enterprises (SME) in South Korea and Taiwan, which show promise of becoming exporters, are eligible for a variety of different types of loans.
- Shipbuilders in Japan and South Korea, as well as other mature industries, receive development bank loans for industrial revitalization.

Tokyo also uses the Ministry of International Trade and Industry (MITI) to foster the development of new industries, such as aerospace. The MITI loans require repayment only after the venture has become a commercial success.

Targeted industries in France, Germany, and the United Kingdom also receive low-cost government loans. All three governments provide financial support to Airbus, for example, and Paris and Bonn use low-cost lending to prop up coal and other ailing mature industries. Shipbuilders also receive credits from export banks in all three countries.

Direct Subsidies

France, Germany, Japan, South Korea, and the United Kingdom use subsidies to assist ailing industries, support development of new industries, and protect agricultural employment:

- Shipbuilders in Japan and South Korea benefit from subsidized research and development.

- Coal industries in Germany, France, South Korea, and the United Kingdom receive subsidies to continue production.
- Airbus has received more than \$13 billion in subsidies from France, Germany, and the United Kingdom.

OECD studies estimate that, in most countries, the largest share of subsidy funding goes to support agricultural production. In France, Germany, and the United Kingdom—countries that follow the EC common agricultural policy—this includes both subsidies to boost production of oilseeds and some dairy products and export subsidies to help dispose of surplus production.

Tax Benefits

In each of the six countries, elements of their tax systems are designed to encourage investment, production, or exports:

- Domestic firms in South Korea and Taiwan receive tax credits for research and development and factory automation. They also obtain tax breaks for investing in manufacturing high-technology products.
- Exporters in Germany, France, and the United Kingdom receive refunds on the value-added taxes paid on exported goods.
- Manufacturers in Taiwan's export processing zones are not assessed taxes on exports.

Some tax measures, notably several in Japan and Germany, help firms gain a competitive edge more indirectly. For example, Japan's low inheritance tax on land, along with other policies, has helped slow the sale of property and rapidly inflate the price of land. In the past, this has provided businesses that own property a growing source of collateral to borrow against. In Germany, the tax structure especially encourages businesses to train labor—helping German industries maintain a skilled labor force with high levels of technical expertise.

Market Development

The six countries all help their industries develop markets, with France, Japan, and South Korea pursuing such practices most vigorously. "Buy national" procurement policies in all six countries provide some industries—especially producers of telecommunications and transport equipment—an assured minimum level of sales in their home markets. High-level government officials encourage foreign governments to buy domestic products and often offer foreign aid as an inducement. Domestic firms may be exempted from antitrust action if regulators believe such exemptions would help them secure better market positions. Basic research and development support aimed at improving industrial competitiveness may also be provided.

Procurement Practices

Each of the six governments—especially those of Japan and South Korea—ensure targeted industries a minimum level of sales by designing purchasing policies to give preference to domestically produced goods. Some examples:

- Manufacturers of supercomputers, satellites, and telecommunications equipment in Japan are helped by government procurement specifications that favor domestic high-technology goods over imports.
- Domestic firms in South Korea have gained advanced foreign technology because government sales contracts contain local content requirements that effectively force foreign firms to form joint ventures with local firms.
- Producers of energy, water, transport, and telecommunications equipment in France and Germany benefit from state utility bid policies that use short tendering periods and qualifying criteria that favor domestic firms.

Some change in procurement practices, however, may be under way. For example, the privatization of utilities in the United Kingdom promises to reduce domestic favoritism there, while new

Market Development

Procurement Practices

Government purchasing rules, such as project specifications, bidding requirements, and preference criteria, that are written to favor domestic firms.

Export Assistance

Export assistance frequently is offered through the provision of such commercial services to domestic firms—such as providing foreign market information and running overseas trade fairs—and the application of high-level political pressure and grants of bilateral aid to encourage a foreign buyer to import a good.

Antitrust Exemptions

An antitrust exemption may be granted to a firm, if a government believes this will secure a better market position by improving economic efficiency or helping industrial development.

Research and Development Support

Government funding designed to help advance technology in domestic industry. Research and development funds may be spent in three general ways on:

- *Basic research and development or national project research and development that increases scientific or technical knowledge.*
 - *Prototype research and development that applies scientific or technical knowledge to the creation of new products or to new capital goods.*
 - *Product and process research and development that uses scientific or technical knowledge to improve existing products and production processes.*
-

EC-wide procurement rules could force France and Germany to liberalize their procurement processes to help other EC members.

Export Assistance

All six countries offer export assistance to domestic firms through government-run or government-related trade organizations. This assistance largely consists of providing market information services and organizing trade fairs, although Bonn supports chambers of commerce abroad and Tokyo supports an overseas network of private trade offices.

Some governments target specific industries for special help with exports:

- France, Germany, and the United Kingdom offer political and economic inducements, such as landing rights, to encourage foreign governments to purchase Airbus planes.
- France and Germany provide subsidies to developing nations to construct coal-powered generating plants in conjunction with long-term contracts to buy European coal.
- Japan funds infrastructure feasibility studies in developing countries; such studies inevitably recommend Japanese contractors for follow-on construction projects.
- South Korea, by having established diplomatic ties and cooperative agreements to Eastern Europe and Southeast Asia, hopes to encourage foreign sales of its telecommunications and heavy electrical equipment.

Antitrust Exemptions

France, Germany, Japan, and sometimes the United Kingdom permit domestic firms to maintain high market concentrations in industries or to cooperate with other firms in the same industries, if this contributes to improved efficiency or market development:

- Japan interprets its antitrust laws to permit cross-industrial groupings of firms—*keiretsus*—that use their tremendous marketing clout to block foreign firms from entering the domestic market.

- France promotes national champions, such as the large computer firm Groupe Bull, to compete with large US and Japanese companies such as IBM and Fujitsu.
- Germany permits cartels of small firms that pool their resources to economize on marketing or in purchasing.

Antitrust law is not well developed in South Korea and Taiwan. Seoul for several decades has fostered the formation of conglomerates—*chaebols*. Taipei recently passed a comprehensive antitrust law, but its full implementation is several years away.

The cost of antitrust exemptions is becoming a concern in several countries. The Governments of France, Germany, and the United Kingdom believe many mature industries with antitrust exemptions have not achieved the levels of efficiency originally promised. Seoul has increased its efforts to promote the development of SMEs because it believes they are more innovative than the *chaebols*. Tokyo faces US and European pressures to enforce its antitrust laws.

Research and Development Support

The six countries examined all fund research and development to overcome high startup costs in new industries and spur general efficiency and technological advances in all industries. The four developed-country governments are currently focusing their resources on basic research rather than fund proprietary product research.

Research and development funding differs in emphasis and approach in Japan, France, and Germany:

- Japan focuses research on advanced materials, information technology, and biotechnology.
- France emphasizes aeronautics, informatics, nuclear energy, and space research.
- Germany targets microelectronics, production engineering, and biotechnology.

Japan and Germany—and to some extent France and the United Kingdom—are experimenting with new funding approaches. For example, Tokyo and Bonn provide small amounts of seed money to initiate research at semi-independent institutions and encourage firms to supply additional funding. France, Germany, and the United Kingdom also participate in several EC-run general research programs that provide grants for firms and institutions working on electronics, aeronautics, nuclear energy, and informatics.

Pressures for Change

As economies mature and as international and consumer pressures figure more prominently into the political calculus, governments are shifting away from blocking foreign competition in favor of providing more assistance to spawn new industries and develop new markets.

Competitor countries face pressures to remove domestic market access barriers. Many enterprises in the six countries examined want freer trade for some goods as they grow into multinational corporations. These firms increasingly rely on imported inputs and look to foreign markets for their sales growth. For example, the Keidanren—Japan's preeminent business organization—is pushing Tokyo to open the domestic market to foreign manufactured goods to forestall increased protectionism against Japanese goods overseas. The Korean business community is encouraging Seoul to liberalize the domestic market, fearing access to the US market might be severely curtailed if it does not. Internationally, as emerging regional trading blocs remove internal regulatory trade barriers, they may use their increased economic clout to pry open foreign markets. For example, the European Community has taken a hard trade-negotiating line with Japan.

France, Germany, South Korea, and the United Kingdom are reassessing the effectiveness of production incentives. Government fiscal stresses are pushing these countries to look for more effective ways to spend state funds to help industry and

The European Community as a Force for Change

Regional trading blocs have the potential to effect changes in the way member countries assist their domestic industries and to influence the types of assistance countries outside the bloc give their industries. The European Community (EC) demonstrates this potential with its EC-92 single-market reforms—an effort to remove preferential government assistance to domestic firms and to remove impediments to the movement of goods, services, capital, and labor among the 12 member states. The EC has already established communitywide tariffs, antidumping duties, and country-of-origin rules to control foreign access to important sectors, such as electronics. Industry deregulation and abolition of internal border controls on goods mandated by EC-92 are giving EC institutions still greater—and in some cases exclusive—authority over other powerful trade policy instruments, such as import quotas and product standards. The new tools available to EC institutions, particularly the EC Commission, will enhance its ability to protect sensitive sectors from outside competition and/or to bargain for trade concessions.

The EC will continue to pursue its market integration and trade policy authority consolidation through unilateral EC actions and mechanisms, particularly the single-market initiative. At the multilateral level, the EC is working to strengthen the GATT, particularly its dispute settlement mechanisms. Bilateral trade actions will focus primarily on efforts to expand the EC's preferential relationships with the European Free Trade Area and East European and Mediterranean countries.

support employment. France and South Korea, which believe that small firms provide the best hope for product innovation, offer varied assistance programs to encourage such firms. In addition, some impetus to rein in government production incentives has come from OECD conventions on subsidies and tax treatment and from efforts to negotiate new rules on trade and services in the GATT Uruguay Round.

Market development practices also face pressures for change. As France and Germany implement EC-92 single-market guidelines, their “buy national” procurement policies will come under pressure from other EC members. “Buy national” policies of Japan, South Korea, and Taiwan, already criticized by the United States, may also come under

attack from the European Community as it liberalizes its own policies. Finally, governments faced with tightening budgets—but still believing national industrial competitiveness is tied to advancing technologies—are likely to continue shifting funds to basic research and development and away from product research and development that domestic firms are able to fund themselves.

Glossary of Abbreviations for Appendixes A and B

BRITE	Basic Research in Industrial Technologies for Europe
CAP	Common Agricultural Policy of the European Community
CETRA	China External Trade Development Council
CFCE	Center of Foreign Commerce
CFMEE	Committee for Foreign Economic Shows
EC	European Community
ESPRIT	European Strategic Program for Research in Information Technologies
EUREKA	European Cooperative Research Agency
FDI	foreign direct investment
FTC	Fair Trade Commission
HEE	heavy electrical equipment
IPR	intellectual property rights
JETRO	Japan External Trade Organization
KOTRA	Korean Trade Promotion Corporation
KTDC	Korean Technology Development Corporation
MITI	Japanese Ministry of International Trade and Industry
MTI	Ministry of Trade and Industry
RACE	Research in Advanced Communications for Europe
R&D	research and development
S&T	science and technology
SME	small and medium-size enterprises
TRIM	trade-related investment measure
VAT	value-added tax
VLs	variable levies

Appendix A

Foreign Government Assistance to Industry by Country

This appendix provides a more detailed treatment of government assistance to domestic industry. To avoid unnecessary repetition and confusion, the European Community (EC) has been added as a separate category to describe EC policies on assistance to domestic industry that are adhered to by three of its members—France, Germany, and the United Kingdom.

The European Community

Domestic Market Access Barriers

Tariffs. Tariffs are generally low overall, but variable levies (VLs) provide protection to agricultural goods—grains, sugar, dairy products, beef, poultry, eggs, and pork, and to processed products from these commodities. The VL is assessed to raise the price of imported products above EC price levels. Other products that face high tariffs are kraft paper and board, tobacco products, avocados, solid-wood products, gas-powered trucks, tufted carpets, aluminum products, semiconductors, computer parts, wine, and pollack. **Forestry:** softwood plywood is given a duty-free quota, beyond which additional imports face a 10-percent tariff. **Other:** the EC imposes antidumping duties on goods in sensitive sectors, such as chemicals, textiles, footwear, mechanical engineering, iron and steel, and consumer electronics.

Quantitative Restrictions on Trade. An EC broadcast directive allows members to reserve a majority of entertainment broadcast transmission time for European-origin programs where practical and appropriate.

Standards and Testing Regulations—Products. Although the EC hopes to establish uniform product standards, currently, separate member-country standards and testing and certification procedures make marketing to the whole community

difficult. **Agriculture:** a partial ban on meat from livestock treated with hormones has eliminated 85 percent of US exports. Regulations, which require imported coniferous products to be kiln dried to a 20-percent moisture content, effectively ban these types of wood products by making them prohibitively expensive. Imports of distilled spirits are limited to products made according to EC regulations. **Rules of origin:** foreign producers of integrated circuits and printed circuit boards are effectively pressured by the rules to build production plants in the European Community to avoid prohibitively high tariffs. **Automobiles:** local design, technical, and safety standards, and domestic registration differ among EC countries.

Standards and Testing Regulations—Services. **Telecommunications:** despite considerable progress in liberalizing the markets for terminal equipment and telecommunications services, the 1987 EC reform proposal has not yet been fully implemented. Each member still favors purchase of network equipment from domestic suppliers by employing a different set of standards for testing and certification, attachment policies, and provisions for value-added services. **Professions:** the EC is working to establish reciprocal licensing for professions, such as lawyers and accountants.

Foreign Direct Investment (FDI). Selective application of antidumping duties, rules of origin, and local content requirements help steer FDI into industries, such as automobiles and electronics. For example, sometimes EC interpretations of country-of-origin rules force foreign computer manufacturers to produce semiconductors within the EC—for use in computers sold in the Community—to avoid excessively high duties.

Incentives for Domestic Production

Intellectual Property Rights (IPR). Currently, no EC-wide IPR standard exists; however, the EC is moving to harmonize IPR.

Low-Cost Lending. The EC allows member states to offer subsidized export credits to shipbuilders and financial support to Airbus. The EC approves members' subsidies for the coal industry aimed at improving competitiveness and solving social and regional problems related to market changes in the coal industry.

Direct Subsidies. The Common Agriculture Policy (CAP) provides price supports and export subsidies to protect EC agriculture—beef, dairy, sugar, and wheat—and subsidies for oilseed production, protein crops, and dairy products used in feed. Shipbuilders receive direct subsidies to cover losses and assist competitiveness. Subsidies are provided to the ailing coal industry. EC rules permit member Airbus consortium countries to subsidize participating domestic firms.

Tax Benefits. The EC allows members to provide tax relief for shipbuilders. Cars bought out of country sometimes are subject to special sales and registration taxes or paperwork. EC export trade is helped by the use of the value-added tax that is refundable under GATT rules. Pressure to standardize tax rates and regimes may increase as EC-92 approaches and the impact of tax differences on influencing competition between member countries becomes more obvious.

Market Development

Procurement Practices. EC-member government-owned utilities and agencies generally follow strong unwritten "buy national" policies that, at minimum, hurt non-EC country access to heavy electrical equipment and telecommunications markets and even hurt access by other member countries. New EC rules could open the procurement process—at least to other EC members.

Export Assistance. Member countries in the Airbus consortium offer political and economic inducements to foreign governments to encourage

the purchase of their planes. EC countries tie assistance for constructing foreign power generating plants that use coal to the purchase of EC coal (coal production is subsidized in the EC).

Antitrust Exemption. Generally, EC policy restricts agreements between firms involved in price fixing or market sharing. The Airbus consortium and the coal and steel cartels are sanctioned. Large mergers are reviewed by the EC. Greater powers for the EC to deny mergers are currently under consideration.

Research and Development Support (R&D).

The EC has a variety of R&D programs. Also, support to Airbus may increasingly take the form of an EC R&D program. Some Pan-European R&D programs are European Strategic Program for Research in Information Technology (ESPRIT), Research in Advance Communications for Europe (RACE), Basic Research in Industrial Technologies for Europe (BRITE), and the European Cooperative Research Agency (EUREKA).

France

Domestic Market Access Barriers

Tariffs. France adheres to a common EC tariff.

Quantitative Restrictions on Trade. Paris requires 60 percent of all broadcasts to be European and 50 percent to be French produced. In addition, French stations must reinvest a specified portion of their revenue to produce new French programs, reducing the potential funds that can be spent on foreign programming.

Standards and Testing Regulations—Products.

Paris follows EC agricultural regulations and rules of origin guidelines. France makes domestic registration of cars bought in other EC countries difficult by requiring special paperwork.

Standards and Testing Regulations—Services.

Paris has individual regulations for telecommunications and for professional licensing that are currently being liberalized to permit easier entry by EC members. Questions remain whether French rules will permit easier non-EC entry.

Foreign Direct Investment (FDI). Approval is required for non-EC investors to acquire firms with assets over \$2 million. FDI can be blocked for national security or public safety concerns. An FDI application can be rejected on grounds of “national interest” without explanation. FDI approvals are often delayed until a French investor can step in or the non-EC investor commits to additional “suggested” FDI areas that aid domestic employment, input sourcing, or export levels. Trade-related investment measures (TRIMs) such as performance criteria, prescreening of high-value foreign acquisitions, and approval of land purchases are required. Paris screens all proposed corporate acquisition by foreign interests. Corporate rules are designed to keep away unwanted bidders.

Incentives for Domestic Production

Intellectual Property Rights. Paris provides comprehensive IPR protection.

Low-Cost Lending. France provides financial support to Airbus. State-controlled Renault receives special government financial support and privileges. Low-cost export financing is provided by the French Company for Foreign Trade Insurance and the French Bank for Foreign Trade. Paris is also encouraging formation of specialized venture capital banks to help innovative small and medium-size enterprise (SME) firms get started.

Direct Subsidies. France has given at least \$3.6 billion in subsidy assistance since 1967 to its Airbus participant—Aerospatiale—which holds a 37.9-percent share in the consortium. Paris helps Renault and Peugeot. The steel and coal industries also receive significant support.

Tax Benefits. Paris applies special sales and registration taxes to cars bought out of country. Shipbuilders receive special tax relief.

Market Development

Procurement Practices. *Electrical utilities:* the French-owned Electricite de France buys domestic equipment to promote national manufacture. The company uses short tendering procedures and single tendering for a series of projects to favor domestic companies. *Others:* French-owned government agencies and state-owned corporations traditionally follow “buy national” policies through short tendering procedures, development of project specifications favoring domestic products, and single tendering.

Export Assistance. The Directorate for Foreign Economic Relations exercises general policy control on two semi-independent government corporations—the French Center of Foreign Commerce (CFCE) and the Committee for Foreign Economic Shows (CFMEE). Help is available to all firms with priority given to SMEs. France also uses high-level government officials and offers of foreign assistance to pressure foreign governments to buy French products. Paris provides funding to French overseas chambers of commerce.

Antitrust Exemption. Refusals to sell, imposition of price floors, price discrimination, and predatory pricing are illegal in France. Paris, before denying a merger or breaking up a firm, applies the rule of reason principle; that is, if the merger or firm—by remaining intact—can serve a greater social good, the merger or firm may be allowed to continue. France permits consortium and industry groupings. Aerospatiale participates in Airbus under this law.

R&D Support. Paris's R&D objectives are to mobilize industry around strategic technologies, integrate new technologies in product processes, improve the R&D environment, and participate in European and international R&D programs. Cooperation between public and research bodies and industry is encouraged by a variety of mechanisms, such as mixed laboratories, commercialization mechanisms, exchanges of research personnel, and support for SMEs to participate in

technology transfer mechanisms. Substantial R&D funding is going to domestic projects in space, nuclear, aeronautic, electronic, informatic, and communication fields and to regional and international programs, such as Airbus and the space program.

Germany

Domestic Market Access Barriers

Tariffs. Germany adheres to a common EC tariff.

Quantitative Restrictions on Trade. Bonn follows EC policies.

Standards and Testing Regulations—Products.

Bonn follows EC agricultural regulations and rules of origin guidelines. *Medical and pharmaceutical:* recent regulations for sterile medical devices and diagnostic products may pose additional costs for importers—for example, one part of the law that requires pharmaceutical file samples to be stored at the importer's site instead of with the exporting company imposes an additional cost on the importing company.

Standards and Testing Regulations—Services.

Bonn has individual regulations for telecommunications and for professional licensing that are currently being liberalized.

Foreign Direct Investment. Bonn generally follows EC guidelines.

Incentives for Domestic Production

Intellectual Property Rights. Germany provides comprehensive IPR protection; however, a court decision has set a stringent standard for software protection. As a result, 50 percent of business software, including word processing and spreadsheets that are largely of US origin, is not copyrighted.

Low-Cost Lending. Germany provides financial support to Airbus. Low-cost export financing is provided by Hermes Export Credit Insurance and the German Investment and Reconstruction Bank (KfW).

Direct Subsidies. Germany has given at least \$7.8 billion in financial support since 1967 to its Airbus participant—Deutsche Airbus—which holds a 37.9-percent share in the consortium. Daimler-Benz received exchange rate guarantees from the government when it bought out the private shares in Deutsche Airbus, and it obtained debt forgiveness for loans incurred by Deutsche Airbus before the takeover. German states provide aid to their local auto producers. The steel and coal industries also receive significant support.

Tax Benefits. Bonn's tax structure encourages on-the-job training of workers. Shipbuilders receive special tax relief.

Market Development

Procurement Practices. *Electrical utilities:* foreign firms are excluded as qualified bidders on projects by Germany's 1,000 electrical utilities.

Export Assistance. Bonn runs a limited government export-promotion program through the Federal Office for Trade Information—a semiautonomous unit of the Economics Ministry. The government, however, subsidizes the private formation of strong overseas German chambers of commerce that promote German goods to local buyers with information and referrals.

Antitrust Exemption. German antitrust regulation applies the rule of reason principle. Cartels are normally prohibited except in agriculture, transport, banking, insurance, and public utilities. Bonn on occasion organizes a rationalization cartel—a group of firms in an industry that need restructuring, retrenchment, or revitalization—and sometimes permits small firm cartels that help small businesses economize on such activities as marketing and purchasing.

R&D Support. Bonn's four R&D objectives are to expand scientific knowledge, improve living conditions, improve conditions and opportunities for

innovation, and strengthen international cooperation. Funding has been concentrated on ships, motor vehicles, other transport, engineering, other services, and utilities, but increased emphasis has been placed on core technologies, such as microelectronics, informatics, advanced materials, and biotechnology. The government provides seed money, but firms bear a significant share of the cost and must share the technologies that are developed.

United Kingdom

Domestic Market Access Barriers

Tariffs. The United Kingdom adheres to a common EC tariff.

Quantitative Restrictions on Trade. London is considering broadcast programming quotas.

Standards and Testing Regulations—Products.

London follows EC agricultural regulations and rules of origin guidelines.

Standards and Testing Regulations—Services.

London has individual regulations for telecommunications and for professional licensing that are currently being liberalized.

Foreign Direct Investment. *TRIMs:* London retains authority to screen all foreign takeovers of important manufacturing concerns. A predetermined amount of British-made components and parts is sometimes required of foreign investors who wish to obtain export licenses and export insurance.

Incentives for Domestic Production

Intellectual Property Rights. London provides comprehensive IPR protection.

Low-Cost Lending. The United Kingdom provides financial support to Airbus. Low-cost export financing is provided by the Export Credits Guarantee Department, which is responsible to the Secretary of State for Trade and Industry.

Direct Subsidies. The United Kingdom has given at least \$2.1 billion in financial support since 1979 to its Airbus participant—British Aerospace—which holds a 20-percent share in the consortium. The British Government subsidized the purchase by British Aerospace of Rover Car Company. The steel and coal industries also receive some support.

Tax Benefits. London's tax structure offers general tax cuts and depreciations to industries both domestic and foreign.

Market Development

Procurement Practices. *Electrical generation:* until recently, was given to domestic producers. With the breakup of the former government utility that generates electricity for all of England and Wales, the British Government has said it will accept bids for heavy electrical equipment from any qualified supplier whether domestic or foreign.

Export Assistance. The British Overseas Trade Board directs policy and operations in the export promotion program of the Department of Trade. It is comprised of a majority of leading businessmen, and emphasis is on helping large, established exporters.

Antitrust Exemption. London applies a rule of reason approach to antitrust regulation. Regulators look at the size of a firm in terms of market share and in terms of gross market. A firm must have a 25-percent market share before it is considered for breakup. The burden of proof is on the firm to demonstrate that a greater social good can be achieved by leaving it intact.

R&D Support. Funding is designed to fill in private-sector gaps; international competitiveness is only a byproduct. Support is given for basic research. Selective grants are used to augment private R&D, but tax incentives are minor for

scientific equipment. Emphasis now is on major new technologies—information technology, biotechnology, and advanced materials. In the past, funding focused on aerospace, machinery, electronics, and components. Britain has a series of research and technology organizations and regional technology centers.

Japan

Domestic Market Access Barriers

Tariffs. Tariffs average 2 percent but run higher on some products—avocados, kiwifruit, almonds, oranges, fruit juices, sugar confectionary, vegetable oil, beef, pork, poultry and eggs, fish, processed food, beer, wine, processed wood products, certain petrochemical and related products, leather and leather footwear, and some aluminum products.

Quantitative Restrictions on Trade. Agriculture: Tokyo imposes quotas on frozen dairy desserts, other processed foods, wheat, wheat flour, barley, rice, dairy products, peanuts, and other products. Rice imports are prohibited under the Food Control law. Corn can be imported under quota for direct food use. **Fish products:** quotas apply to pollock, pollock roe, herring, cod, mackerel, squid, and others.

Standards and Testing Regulations—Products.

Foreign companies generally do not receive easy access to established product standards. **Agriculture:** fresh fruits—such as apples, pears, and tomatoes—and potatoes are subjected to quarantine or prohibited for sanitary reasons. Cherry imports are limited to certain months each year. Slow approval for new food additives limits processed foods. Building codes and wood product standards discourage wood imports. **Pharmaceuticals:** imports are discouraged by the local drug approval process and yearly price reduction requirements. **Diagnostic and medical products:** imports are hurt by product testing and health care reimbursement limits. **Distribution:** Japan's vertically integrated distribution network makes import entry expensive for new-to-market companies. A state trading agency is sole importer of

wheat, wheat flour, and barley, and it resells at a much higher domestic price. Additional corn imports are allowed outside the quota if licensed mills buy flaked corn, which prevents its use in starch production.

Standards and Testing Regulations—Services.

Telecommunication: Tokyo's telecommunication business law creates a number of roadblocks to foreign service providers. **Construction:** collusive bidding, tie-ins to domestic subcontractors, and difficulty in obtaining licenses block out foreign competitors. **Legal services:** foreign law firms are prohibited from hiring Japanese attorneys, forming partnerships with Japanese lawyers, or participating in arbitration hearings. Certification to practice law is difficult, and the promotional use of firm names is barred. **Insurance:** foreign firms find getting approval to sell products, not generally sold in Japan, difficult. Licenses are generally granted only in specific categories, and insurers are not allowed to compete freely.

Foreign Direct Investment. Tokyo places restrictions on investments in aircraft, space development, atomic energy, narcotics and vaccines manufacturing, agriculture, fishing and forestry, oil and gas, mining, and leather and leather products manufacturing. Investing in tobacco manufacturing is prohibited. Banking and securities industries are subject to reciprocity requirements. Tight-knit industrial groupings—*keiretsus*—that are permitted by the government often discourage outside foreign investors. **TRIMs:** the government screens all proposed acquisitions by foreign interests and prescreens foreign investments. Tokyo may use technology and licensing requirements to force foreign investors to increase their R&D facilities in Japan. Restrictive corporate rules help fend off foreign buyers. Foreign purchase of farmland is not permitted.

Incentives for Domestic Production

Intellectual Property Rights. The patent process is slowed by an understaffed office and other delaying factors. Tokyo permits rival patent filings

that delay patent issues to foreign interests, thereby increasing the cost of obtaining a patent. This practice permits domestic firms to pressure foreign firms for concessionary licensing. Trademark registration is slow—up to four years—and no infringement penalty is levied during the processing period. Service marks cannot be registered. Copyright protection extends only 20 to 30 years. The protection afforded sound recordings produced in Japan is not provided to recordings produced outside Japan.

Low-Cost Lending. Shipbuilders receive preferential financing from the Japan Development Bank. Shipowners are encouraged to buy Japanese-built ships through preferential financing from the Maritime Credit Corporation. The Japanese Ministry of International Trade and Industry (MITI) provides loans to new commercial ventures it wishes to see established in Japan—repayment is required only after the commercial venture is a success—for example, MITI has made this type of loan to the fledgling aerospace industry. The steel industry receives government export credit on more favorable terms than would be provided by private financial institutions.

Direct Subsidies. The shipbuilding industry receives substantial grants for R&D from the Japan Development Bank. Steel aid is used to fund improvements in efficiency and smooth the shift of workers to other jobs outside the industry.

Tax Benefits. Inheritance tax on land is low—especially on agricultural land—helping to create an incentive to hold on to property. In the past, this has helped slow the sale of property and inflate the price of land, offering businesses owning land a growing source of collateral to increase borrowing. A recently granted import tax credit is limited to companies that are manufacturers in Japan; that is, over half the firm's total income must be derived from manufacturing in Japan.

Market Development

Procurement Practices. *Construction and telecommunications:* single tendering favors local suppliers, and prequalification and delivery deadlines discriminate against foreign suppliers.

Supercomputers: government-required discounts of up to 80 percent effectively limit supercomputer imports. *Satellites:* imports are limited by government policies encouraging domestic purchase. Private-sector development is regulated and protected to avoid "excessive capacity."

Export Assistance. Tokyo provides export promotional services to all Japanese exporters through the Japan External Trade Organization (JETRO)—a semiautonomous official membership organization. JETRO sometimes pays travel expenses and per diem for potential buyers of Japanese goods and for visits by key foreign leaders. Tokyo uses foreign aid funds to encourage foreign governments to buy Japanese products.

Antitrust Exemption. The Fair Trade Commission (FTC) administers antitrust laws. Although Japanese law is similar to US law, Tokyo permits the formation of cartels to help industries tackle particular challenges; for example, to help new industries get started, to aid in the restructuring and revitalization of ailing industries, to form export groups that can more effectively market goods abroad, to form import consortiums that can wield greater buying power, to help SMEs share market information, and to help firms band together to jointly attack environmental problems. Tokyo permits the formation of business groups—*keiretsus*—by allowing the cross-shareholding of firms from different industries. These groups often cut out foreign suppliers and make foreign direct investment in Japan difficult. Tokyo supports the formation of cartels in shipbuilding, textiles, apparel, food products, paper and paper products, leather and leather products, stone, clay, glass, and aluminum smelting. *Distribution:* the Large Retail Store law makes the creation of new distribution channels difficult.

R&D Support. Government R&D funding is relatively low and is used as seed money to encourage private-sector participation. R&D goes mostly to

venture capital firms, research institutions, and universities. MITI receives 13 percent of total government funds to directly support government programs that foster technological advance in targeted industries. Core technology research emphasis is on advanced materials, information technology, and biotechnology. Shipbuilders receive substantial R&D grants, as do petroleum refineries, some transport industries, mining, and utilities.

South Korea

Domestic Market-Access Barriers

Tariffs. Nontrade weighted tariffs average 11.4 percent and will drop below 8 percent by 1993. Duties remain high on a large number of agricultural and fisheries products, including fresh fruits and juices (50 percent), assorted nuts (30 to 40 percent), frozen potatoes (30 percent), avocados, raisins, and wines (from 30 to 50 percent). South Korea grants custom duty exemptions on capital equipment imports and will exempt computer software imported for R&D purposes and industrial use.

Quantitative Restrictions on Trade. More than 40 individual laws permit relevant ministries to make "recommendations" that can result in an import quota or ban. Feedgrains, soybeans, and peanuts are affected. Korea uses an import licensing system to implement quantitative restrictions. Despite recent liberalization, restrictions remain on some fruits, vegetables, fruit juices, and beef. Only one government-owned coal corporation is authorized to import anthracite—ensuring a market for domestically produced anthracite. Semi-governmental agencies are authorized to set local content requirements as preconditions for participation in their projects.

Standards and Testing Regulations—Products.

Agriculture: restrictive health/sanitary regulations can delay entry of food imports. Food items in nonrefrigerated environments often spoil. Seoul's refusal to accept international standards on fumigation for the codling moth hurts apple, papaya,

kiwifruit, and strawberry imports. Food import regulations are vague. They do not provide basic information on testing or on needed documents. No restrictions are applied to almonds, but imports often take three weeks to clear customs. Every box of cherries is inspected. Sometimes imports are reclassified—putting them under stricter regulations or higher tariff categories. **Medical equipment:** unclear standards make import of medical equipment and veterinary instruments difficult.

Standards and Testing Regulations—Services.

Telecommunications and electrical products: regulations impede foreigners from providing value-added telecommunications services, such as government purchase preferences for domestically produced goods, discriminatory equipment standards—often unclear to foreign suppliers of electrical products—and testing and certification procedures.

Foreign Direct Investment. Laws and procedures encourage transfer of advanced technology. About 61 percent of the services sector is open to FDI, and 97 percent of the industrial sector is open. Phonograph and videotape manufacturing, fisheries, and environmental preservation laws limit FDI in these areas. FDI equity participation is limited in the services sector. There are restrictions on professional services, interpretation-translation, maritime, retailing, transportation, and telecommunications. Seoul has discretionary power to impose equity requirements or block investment—for example, FDI ceilings on investment can be imposed to slow inflation. Foreign firms without access to the local financial sector must drop investment plans or take on a local partner. An ongoing public law also can be invoked to force the sale of up to 30 percent of any firm's stock to the public after three years of existence. **TRIMs:** performance criteria are applied, and a 60-day notice to the Bank of Korea is required before the intended investment is made. No purchase of real estate is allowed. Seoul's

investment law makes majority ownership acquisition in local businesses difficult. It requires screening of all proposed corporate acquisitions by foreign interests and directs prescreening of "restricted industries."

Incentives for Domestic Production

Intellectual Property Rights. Laws on video and textbook piracy and counterfeiting do not meet international standards. Laws preventing copying of pharmaceutical and semiconductor designs are weak.

Low-Cost Lending. The commercial shipbuilding and repair industry receives preferential loans from the Korean Development Bank. Seoul provides investment assistance to the coal industry. The Small and Medium Enterprise Act (1986) and the Korean Technology Development Corporation (KTDC) encourage venture capital firms. Investment aid is available to firms to increase productivity through mechanization, for R&D, factory automation, and new product development. Loans for FDI in high technology are available.

Direct Subsidies. The commercial shipbuilding and repair industry receives equity infusions. The coal industry receives investment assistance, and direct operating grants go to small coal producers. Investment aid is given to increase mechanization in coal mining to improve productivity.

Tax Benefits. Korea provides tax credits for firms investing in R&D, factory automation, and new product development. Seoul provides tax breaks for FDI in manufacturing in advanced technology areas, including a five-year exemption on corporate income taxes and a special five-year depreciation allowance on capital goods. The shipbuilding and repair industry receives tax exemptions.

Market Development

Procurement Practices. Seoul informally encourages local procurement. Foreign sellers of military equipment often are required by the government, in exchange for a contract, to purchase Korean goods worth 30 to 50 percent of the contract value. Semigovernmental agencies are authorized

to set local content requirements. Several semi-governmental agencies—the Korean Telecommunications Authority, the Data Communication Corporation of Korea, the Korean Mobile Telecommunications Corporation, and the Korean Electric Power Company—reportedly set local content requirements. Seoul uses its procurement power to prompt foreign technology transfer.

Export Assistance. The Korean Trade Promotion Corporation (KOTRA)—a quasi-public entity funded by government and private sources—provides export promotional services. Its activities are closely coordinated with the Ministry of Trade and Industry (MTI), some of whose officials sit on its board. Seoul sometimes uses high government officials to encourage foreign governments to buy Korean goods.

Antitrust Exemption. Seoul supported the formation of large, vertically integrated conglomerates—*chaebols*—by lending them money to develop industries in government-identified areas.

R&D Support. Seoul's policy is to promote basic science research, international joint research, high-technology development, technical information systems, and to procure R&D equipment. KTDC plays a key role in improving technology and marketing cooperation in SME industries. The Ministry of Trade plans to complete a center for standardized data bases and distribution of industrial technology. The World Bank is lending South Korea money to support expansion plans for science and technology (S&T) training to overcome a shortage of technicians, engineers, and R&D personnel. Public research institutes are cooperating with the *chaebols* to develop indigenous technology; institutes are increasingly engaged in basic research. Seoul is encouraging S&T cooperation with Europe, China, and the CIS to relieve its dependence on the United States and Japan.

Taiwan

Domestic Market-Access Barriers

Tariffs. Nominal tariffs average 9.7 percent and are scheduled to drop to 7 percent by 1992. High tariffs of 40 to 50 percent remain on agricultural goods such as apples, pears, avocados, citrus, kiwifruit, fruit juice, nuts, dried fruit, frozen french fries, confectioneries, and microwave popcorn. Some manufacturing items such as aluminum products (2.5 to 20 percent) and plywood (up to 20 percent) also have tariffs above the average.

Quantitative Restrictions on Trade. Taipei requires an import license or applies a ban on nearly 34 percent of all tariff scheduled goods. Goods with especially tight licensing requirements are chicken, rice, peanuts, beef, and poultry byproducts. Taiwan authorities—when faced with political pressure—are quick to suspend imports of goods already licensed. Some licenses require multiple approvals, imposing extra administrative costs and delays.

Standards and Testing Regulations—Products.

Agriculture: Taipei requires prior approval for 120 agricultural items; this process is often used by authorities to bar politically sensitive imports, such as peanuts and rice. Stringent microbiological and chemical residue testing are applied to imports, but not local products. Beef, chicken, and poultry byproducts are tightly controlled or banned. Lengthy labeling requirements for imported cigarettes, beer, wine, and hard liquor are costly for the importer to implement. **Medical equipment and cosmetics:** import authorization from more than one agency and documentary requirements can cause long delays. **Pharmaceuticals:** regulating ministries have a right to cease issuing import licenses for some pharmaceutical raw materials to protect domestic firms. **Distribution:** importers of beer, wine, and tobacco are discouraged by a high-monopoly tax. Imports of distilled spirits are not permitted except through the Taiwan Tobacco and Wine Monopoly Bureau.

Standards and Testing Regulations—Services.

Foreign branches of mutual insurance companies are not allowed. New foreign entrants in life and

nonlife insurance areas are limited by a yearly quota. Joint ventures are outlawed. Foreign insurance firms cannot hold real estate in their portfolios.

Foreign Direct Investment. FDI must be approved by the Foreign Investment Commission. FDI is encouraged in high-technology and large-scale, capital-intensive industrial sectors through the approval process and through incentives—tax holidays, import duty waiver, accelerated depreciation, and low-interest loans. Limits are imposed on investment in agriculture, power generation, petroleum refining, railroads, trucking, telecommunications, and national-defense-related industries. Foreign ownership is limited in securities firms to 40 percent. **TRIMs:** Seoul prescreens investment, screens all proposed acquisitions by foreign interests, imposes performance criteria, and does not allow farmland purchases.

Incentives for Domestic Production

Intellectual Property Rights. Patent law does not protect micro-organisms, foodstuffs, and new animal varieties. Patent protection is greatly degraded by sweeping compulsory licensing provisions and provisions that permit cancellation of patents. Trade secrets are not protected; for example, agricultural firms are required to release proprietary toxicology data without compensation. Domestic importers are allowed to import pharmaceutical products not made under license from the patent holder, and the burden of proof is on the complainant. Strict trademark-registration standards prevent full protection of IPR or successful prosecution of violators. Taipei currently provides weak enforcement of existing laws, especially in books, computer software, and videotapes.

Low-Cost Lending. The government-owned Export-Import Bank offers loans to foreign purchasers of goods made in Taiwan. The Export-Import Bank and other government development banks have provided targeted industries and exporters with low-cost loans even when credit has been tight.

Direct Subsidies. Rice and sugar are subsidized through production incentives. The government makes the surplus available for sale on the world market. Fruit, poultry, and livestock producers receive assistance with packaging, storage, and shipping for marketing by cooperatives and marketing associations.

Tax Benefits. Industries where foreign investment is desired may receive a tax holiday. Taiwan runs export-processing zones where taxes are not assessed if the finished product is exported. Sometimes imported goods are assigned a higher value for tax purposes than the equivalent domestically produced goods. Some luxury imported goods face higher tax rates than the same lower end locally produced goods.

Market Development

Procurement Practices. A substantial state-owned industrial sector gives implicit purchase preference to domestically produced goods.

Export Assistance. Taipei promotes trade through several private nonprofit trade promotion organizations. The China External Trade Development Council (CETRA) is the primary institution and is supported by local business associations, exporters, and the government.

Antitrust Exemption. Taipei passed a fair trade law in January 1991 that will take effect for private firms in 1992 and for public firms in five years. The law restricts monopolies, mergers, and collusive trade practices, but restrictions can be waived by regulating authorities. Currently, domestic price fixing is widespread—roughly 60 percent of industrial products are collusively set, according to academic studies.

R&D Support. The National Science Council holds a yearly conference that helps it direct R&D funds into an integrated industrial, science, and government effort. Taiwan spent 1.2 percent of its gross national product (GNP) on R&D in 1988 and plans to spend 2.2 percent of its GNP by 1996—Taipei hopes to match Tokyo's 2.8 percent of GNP. Funds go to assist a variety of research institutions—ranging from packaging research to biotechnology centers—and to help target industries, especially in high-technology areas such as computers and telecommunications.

Appendix B

Foreign Government Assistance to Industry by Practice

This appendix permits the reader to compare the types of government assistance given to industries in each country. The EC has been added as a separate category to identify industries in three of its member countries—France, Germany, and the United Kingdom—that receive assistance on the basis of EC guidelines. This addition avoids some unnecessary repetition and confusion.

Domestic Market-Access Barriers

Tariffs

European Community. Tariffs are generally low overall, but variable levies (VLs) provide protection to agricultural goods—grains, sugar, dairy products, beef, poultry, eggs, pork—and to processed products from these commodities. The VL is assessed to raise the price of imported products above EC price levels. Other products that face high tariffs are kraft paper and board, tobacco products, avocados, solid-wood products, gas-powered trucks, tufted carpets, aluminum products, semiconductors, computer parts, wine, and pollack. *Forestry:* softwood plywood is given a duty-free quota, beyond which additional imports face a 10-percent tariff. *Other:* the EC imposes antidumping duties on goods in sensitive sectors, such as chemicals, textiles, footwear, mechanical engineering, iron and steel, and consumer electronics.

France. France adheres to a common EC tariff.

Germany. Germany adheres to a common EC tariff.

United Kingdom. The United Kingdom adheres to a common EC tariff.

Japan. Tariffs average 2 percent but run higher on some products—avocados, kiwifruit, almonds, oranges, fruit juices, sugar confectionary,

vegetable oil, beef, pork, poultry and eggs, fish, processed food, beer, wine, processed wood products, some petrochemical and related products, leather and leather footwear, and some aluminum products.

South Korea. Non-trade-weighted tariffs average 11.4 percent and will drop below 8 percent by 1993. Duties remain high on a large number of agricultural and fisheries products, including fresh fruits and juices (50 percent), assorted nuts (30 to 40 percent), frozen potatoes (30 percent), avocados, raisins, and wines (from 30 to 50 percent). South Korea grants custom duty exemptions on capital equipment imports and will exempt computer software imported for R&D purposes and industrial use.

Taiwan. Nominal tariffs average 9.7 percent and are scheduled to drop to 7 percent by 1992. High tariffs of 40 to 50 percent remain on agricultural goods such as apples, pears, avocados, citrus, kiwifruit, fruit juice, nuts, dried fruit, frozen french fries, confectioneries, and microwave popcorn. Some manufacturing items such as aluminum products (2.5 to 20 percent) and plywood (up to 20 percent) also have tariffs above the average.

Quantitative Restrictions on Trade

European Community. An EC broadcast directive allows members to reserve a majority of entertainment broadcast transmission time for European-origin programs where practical and appropriate.

France. Paris requires 60 percent of all broadcasts to be European and 50 percent to be French produced. In addition, French stations must reinvest a specified portion of their revenue to produce new French programs, reducing the potential funds that can be spent on foreign programming.

Germany. Bonn follows EC policies.

United Kingdom. London is considering broadcast programming quotas.

Japan. Agriculture: Tokyo imposes quotas on frozen dairy desserts, other processed foods, wheat, wheat flour, barley, rice, dairy products, peanuts, and other pulses. Rice imports are prohibited under the Food Control law. Corn can be imported under quota for direct food use. *Fish products:* quotas apply to fish products such as pollock, pollock roe, herring, cod, mackerel, squid, and others.

South Korea. More than 40 individual laws permit relevant ministries to make "recommendations" that can result in an import quota or ban. Feed-grains, soybeans, and peanuts are affected. Korea uses an import licensing system to implement quantitative restrictions. Despite recent liberalization, restrictions remain on some fruits, vegetables, fruit juices, and beef. Only one government-owned coal corporation is authorized to import anthracite—ensuring a market for domestically produced anthracite. Semigovernmental agencies are authorized to set local content requirements as preconditions for participation in their projects.

Taiwan. Taipei requires an import license or applies a ban on nearly 34 percent of all tariff scheduled goods. Goods with especially tight licensing requirements are chicken, rice, peanuts, beef, and poultry byproducts. Taiwan authorities—when faced with political pressure—are quick to suspend imports of goods already licensed. Some licenses require multiple approvals, imposing extra administrative costs and delays.

Standards and Testing Regulations—Products European Community. Although the EC hopes to establish uniform product standards, currently, separate member-country standards and testing and certification procedures make marketing to the whole community difficult. *Agriculture:* a partial ban on meat from livestock treated with hormones has eliminated 85 percent of US exports. Regulations, which require imported coniferous

products to be kiln dried to a 20-percent moisture content, act as an effective ban on these types of wood products by making them prohibitively expensive. Imports of distilled spirits are limited to products made according to EC regulations.

Rules of origin: foreign producers of integrated circuits and printed circuit boards are effectively pressured by the rules of origin to build production plants in the EC to avoid prohibitively high tariffs. *Automobiles:* local design, technical and safety standards, and domestic registration differ between EC countries.

France. Paris follows EC agricultural regulations and rules of origin guidelines. France makes domestic registration of cars bought in other EC countries difficult by requiring special paperwork.

Germany. Bonn follows EC agricultural regulations and rules of origin guidelines. *Medical and pharmaceutical:* recent regulations for sterile medical devices and diagnostic products may pose additional costs for importers—for example, one part of the law that requires pharmaceutical file samples to be stored at the importer's site, instead of with the exporting company, imposes an additional cost on the importing company.

United Kingdom. London follows EC agricultural regulations and rules of origin guidelines.

Japan. Foreign companies generally do not receive easy access to established product standards. *Agriculture:* fresh fruits, such as apples, pears, and tomatoes, and potatoes are either subjected to quarantine or prohibited for sanitary reasons. Cherry imports are limited to certain months each year. Slow approval for new food additives limits processed foods. Building codes and wood product standards discourage wood imports. *Pharmaceuticals:* imports are discouraged by the local drug approval process and yearly price reduction requirements. *Diagnostic and medical products:* imports are hurt by product testing and health care reimbursement limits. *Distribution:* Japan's vertically integrated distribution network makes import entry expensive for

new-to-market companies. A state trading agency is the sole importer of wheat, wheat flour, and barley, and it resells at a much higher domestic price. Additional corn imports are allowed outside the quota if licensed mills buy flaked corn, which prevents its use in starch production.

South Korea. Agriculture: restrictive health/sanitary regulations can delay entry of food imports. Food items in nonrefrigerated environments often spoil. Seoul's refusal to accept international standards on fumigation for the codling moth hurts apple, papaya, kiwifruit, and strawberry imports. Food import regulations are vague—they do not provide basic information on testing or on needed documents. No restrictions are applied to almonds but often imports take three weeks to clear customs. Every box of cherries is inspected. Sometimes imports are reclassified—putting them under stricter regulations or higher tariff categories. **Medical equipment:** unclear standards make import of medical equipment and veterinary instruments difficult.

Taiwan. Agriculture: Taipei requires prior approval for 120 agricultural items. This process is often used by authorities to bar politically sensitive imports, such as peanuts and rice. Stringent microbiological and chemical residue testing is applied to imports, but not local products. Beef, chicken, and poultry byproducts are tightly controlled or banned. Lengthy labeling requirements for imported cigarettes, beer, wine, and hard liquor are costly for the importer to implement. **Medical equipment and cosmetics:** required import authorizations for more than one agency and documentary requirements can cause long delays. **Pharmaceuticals:** the regulating ministries have a right to cease issuing import licenses for some pharmaceutical raw materials to protect domestic firms. **Distribution:** importers of beer, wine, and tobacco are discouraged by a high monopoly tax. Imports of distilled spirits are not permitted except through the Taiwan Tobacco and Wine Monopoly Bureau.

Standards and Testing Regulations—Services
European Community. Telecommunications: despite considerable progress in liberalizing the

markets for terminal equipment and telecommunications services, the 1987 EC reform proposal has not yet been fully implemented. Each member still favors purchase of network equipment from domestic suppliers by employing a different set of standards for testing and certification, attachment policies, and provisions for value-added services. **Professions:** the EC is working to establish reciprocal licensing for professions, such as lawyers and accountants.

France. Paris has individual regulations for telecommunications and for professional licensing that are currently being liberalized to permit easier entry by EC members. Questions remain whether French rules will permit easier non-EC entry.

Germany. Bonn has individual regulations for telecommunications and for professional licensing that are currently being liberalized.

United Kingdom. London has individual regulations for telecommunications and for professional licensing that are currently being liberalized.

Japan. Telecommunications: Tokyo's business law creates a number of roadblocks to foreign service providers. **Construction:** collusive bidding, tie-ins to domestic subcontractors, and difficulty in obtaining licenses block out foreign competitors. **Legal services:** foreign law firms are prohibited from hiring Japanese attorneys, forming partnerships with Japanese lawyers, or participating in arbitration hearings. Certification to practice law is difficult, and the promotional use of firm names is barred. **Insurance:** foreign firms find getting approval to sell products, not generally sold in Japan, difficult. Licenses are generally granted only in specific categories, and insurers are not allowed to compete freely.

South Korea. Telecommunications and electrical products: regulations impede foreigners from providing value-added telecommunications services, such as government purchase preferences for domestically produced goods, discriminatory equipment standards—often unclear to foreign

suppliers of electrical products—and testing and certification procedures.

Taiwan. Insurance: foreign branches of mutual insurance companies are not allowed. New foreign entrants in life and nonlife insurance areas are limited by a yearly quota. Joint ventures are outlawed. Foreign insurance firms cannot hold real estate in their portfolios.

Foreign Direct Investment

European Community. Selective application of antidumping duties, rules of origin, and local content requirements help steer FDI into industries, such as automobiles and electronics. For example, sometimes EC interpretations of country of origin rules force foreign computer manufacturers to produce semiconductors within the EC—for use in computers sold in the Community—in order to avoid excessively high duties.

France. Approval is required for non-EC investors to acquire firms with assets over \$2 million. FDI can be blocked for national security or public safety concerns. An FDI application can be rejected on grounds of “national interest” without explanation. FDI approvals are often delayed until a French investor can step in or the non-EC investor commits to additional “suggested” FDI areas that aid domestic employment, input sourcing, or export levels. *TRIMs:* performance criteria, pre-screening of high-value foreign acquisitions, and approval of land purchase are required. Paris screens all proposed corporate acquisitions by foreign interests. Corporate rules are designed to keep away unwanted bidders.

Germany. Bonn generally follows EC guidelines.

United Kingdom. TRIMs: London retains authority to screen all foreign takeovers of important manufacturing concerns. A predetermined amount of British-made components and parts is sometimes required of foreign investors who wish to obtain export licenses and export insurance.

Japan. Tokyo places restrictions on investments in aircraft, space development, atomic energy, narcotics and vaccines manufacturing, agriculture, fishing and forestry, oil and gas, mining, and leather and leather products manufacturing. Investing in tobacco manufacturing is prohibited. Banking and securities industries are subject to reciprocity requirements. Tight-knit industrial groupings, *keiretsus*, that are permitted by the government often discourage outside foreign investors. *TRIMs:* the government screens all proposed acquisitions by foreign interests and pre-screens foreign investments. Tokyo may use technology and licensing requirements to force foreign investors to increase their R&D facilities in Japan. Restrictive corporate rules help fend off foreign buyers. Foreign purchase of farmland is not permitted.

South Korea. Laws and procedures encourage transfer of advanced technology. About 61 percent of the services sector is open to FDI, and 97 percent of the industrial sector is open. Phonograph and videotape manufacturing, fisheries, and environmental preservation laws limit FDI in these areas. FDI equity participation is limited in the services sector. There are restrictions on professional services, interpretation-translation, maritime, retailing, transportation, and telecommunications. Seoul has discretionary power to impose equity requirements or block investment—for example, FDI ceilings on investment can be imposed to slow inflation. Foreign firms without access to the local financial sector must drop investment plans or take on a local partner. An ongoing public law can also be invoked to force the sale of up to 30 percent of any firm's stock to the public after three years of existence. *TRIMs:* performance criteria are applied, and a 60-day notice to the Bank of Korea is required before the intended investment is made. No purchase of real estate is allowed. Seoul's investment law makes majority

ownership acquisition in local businesses difficult. It requires screening of all proposed corporate acquisitions by foreign interests and directs pre-screening of "restricted industries."

Taiwan. FDI must be approved by the Foreign Investment Commission. FDI is encouraged in high-technology and large-scale, capital-intensive industrial sectors through the approval process and through incentives—tax holidays, import duty waiver, accelerated depreciation, and low-interest loans. Limits are imposed on investment in agriculture, power generation, petroleum refining, railroads, trucking, telecommunications, and national-defense-related industries. Foreign ownership is limited in securities firms to 40 percent. *TRIMs*: Seoul prescreens investment, screens all proposed acquisitions by foreign interests, imposes performance criteria, and does not allow farmland purchases.

Incentives for Domestic Production

Intellectual Property Rights

European Community. Currently, no EC-wide IPR standard exists; however, the EC is moving to harmonize IPR.

France. Paris provides comprehensive IPR protection.

Germany. Germany provides comprehensive IPR protection; however, a court decision has set a stringent standard for software protection. As a result, 50 percent of business software, including word processing and spreadsheets that are largely of US origin, is not copyrighted.

United Kingdom. London provides comprehensive IPR protection.

Japan. The patent process is slowed by an understaffed office and other delaying factors. Tokyo permits rival patent filings that delay patent issues to foreign interests, thereby increasing the cost of obtaining a patent. This practice permits domestic firms to pressure foreign firms for concessionary

licensing. Trademark registration is slow—up to four years—and no infringement penalty is levied during the processing period. Service marks cannot be registered. Copyright protection extends only 20 to 30 years. The protection afforded sound recordings produced in Japan is not provided to recordings produced outside Japan.

South Korea. Laws on video and textbook piracy and counterfeiting do not meet international standards. Laws preventing copying of pharmaceutical and semiconductor designs are weak.

Taiwan. Patent law does not protect micro-organisms, foodstuffs, and new animal varieties. Patent protection is greatly degraded by sweeping compulsory licensing provisions and provisions that permit cancellation of patents. Trade secrets are not protected; for example, agricultural firms are required to release proprietary toxicology data without compensation. Domestic importers are allowed to import pharmaceutical products not made under license from the patent holder, and the burden of proof is on the complainant. Strict trademark registration standards prevent full protection of IPR or successful prosecution of violators. Taipei currently provides weak enforcement of existing laws, especially in books, computer software, and videotapes.

Low-Cost Lending

European Community. The EC allows member states to offer subsidized export credits to shipbuilders and financial support to Airbus. The EC approves members' subsidies for the coal industry aimed at improving competitiveness and solving social and regional problems related to market changes in the coal industry.

France. France provides financial support to Airbus. State-controlled Renault receives special government financial support and privileges. Low-cost export financing is provided by the French Company for Foreign Trade Insurance and the

French Bank for Foreign Trade. Paris is also encouraging the formation of specialized venture capital banks to help innovative SME firms get started.

Germany. Germany provides financial support to Airbus. Low-cost export financing is provided by Hermes Export Credit Insurance and the German Investment and Reconstruction Bank (KfW).

United Kingdom. The United Kingdom provides financial support to Airbus. Low-cost export financing is provided by the Export Credits Guarantee Department, which is responsible to the Secretary of State for Trade and Industry.

Japan. Shipbuilders receive preferential financing from the Japan Development Bank. Shipowners are encouraged to buy Japanese-built ships through preferential financing from the Maritime Credit Corporation. MITI provides loans to new commercial ventures it wishes to see established in Japan—repayment is required only after the commercial venture is a success—for example, MITI has made this type of loan to the fledgling aerospace industry. The steel industry receives government export credit on more favorable terms than would be provided by private financial institutions.

South Korea. The commercial shipbuilding and repair industry receives preferential loans from the Korean Development Bank. Seoul provides investment assistance to the coal industry. The Small and Medium Enterprise Act (1986) and the Korean Technology Development Corporation (KTDC) encourage venture capital firms. Investment aid is available to firms to increase productivity through mechanization, for R&D, factory automation, and new product development. Loans for FDI in high technology are available.

Taiwan. The government-owned Export-Import Bank offers loans to foreign purchasers of goods made in Taiwan. The Export-Import Bank and other government development banks have provided targeted industries and exporters with low-cost loans even when credit has been tight.

Direct Subsidies

European Community. The CAP provides price supports and export subsidies to protect EC agriculture—beef, dairy, sugar, and wheat—and subsidies for oilseed production, protein crops, and dairy products used in feed. Shipbuilders receive direct subsidies to cover losses and assist competitiveness. Subsidies are provided to the ailing coal industry. EC rules permit member Airbus consortium countries to subsidize participating domestic firms.

France. France has given at least \$3.6 billion in subsidy assistance since 1967 to its Airbus participant—Aerospatiale—which holds a 37.9-percent share in the consortium. Paris helps Renault and Peugeot. The steel and coal industries also receive significant support.

Germany. Germany has given at least \$7.8 billion in financial support since 1967 to its Airbus participant—Deutsche Airbus—which holds a 37.9-percent share in the consortium. Daimler-Benz received exchange rate guarantees from the government when it bought out the private shares in Deutsche Airbus, and it obtained debt forgiveness for loans incurred by Deutsche Airbus before the takeover. German states provide aid to their local auto producers. The steel and coal industries also receive significant support.

United Kingdom. The United Kingdom has given at least \$2.1 billion in financial support since 1979 to its Airbus participant—British Aerospace—which holds a 20-percent share in the consortium. The British Government subsidized the purchase by British Aerospace of the Rover Car Company. The steel and coal industries also receive some support.

Japan. The shipbuilding industry receives substantial grants for R&D from the Japan Development Bank. Steel aid is used to fund improvements in efficiency and smooth the shift of workers to other jobs outside the industry.

South Korea. The commercial shipbuilding and repair industry receives equity infusions. The coal industry receives investment assistance, and direct operating grants go to small coal producers. Investment aid is given to increase mechanization in coal mining to improve productivity.

Taiwan. Rice and sugar are subsidized through production incentives. The government makes the surplus available for sale on the world market. Fruit, poultry, and livestock producers receive assistance with packaging, storage, and shipping for marketing by cooperatives and marketing associations.

Tax Benefits

European Community. The EC allows members to provide tax relief for shipbuilders. Cars bought out-of-country sometimes are subject to special sales and registration taxes or paperwork. EC export trade is helped by the use of the value-added tax (VAT) that is refundable under GATT rules. Pressure to standardize tax rates and regimes may increase as EC-92 approaches, and the impact of tax differences on influencing competition between member countries becomes more obvious.

France. Paris applies special sales and registration taxes to cars bought out-of-country. Shipbuilders receive special tax relief.

Germany. Bonn's tax structure encourages on-the-job training of workers. Shipbuilders receive special tax relief.

United Kingdom. London's tax structure offers general tax cuts and depreciations to industries both domestic and foreign.

Japan. Inheritance tax on land is low—especially on agricultural land—helping to create an incentive to hold on to property. In the past, this has helped slow the sale of property and inflate the price of land, offering businesses owning land a growing source of collateral to increase borrowing. A recently granted import tax credit is limited to companies that are manufacturers in Japan; that is, over half the firm's total income must be derived from manufacturing in Japan.

South Korea. South Korea provides tax credits for firms investing in R&D, factory automation, and new product development. Seoul provides tax breaks for FDI in manufacturing in advanced technology areas, including a five-year exemption on corporate income taxes and a special five-year depreciation allowance on capital goods. The shipbuilding and repair industry receives tax exemptions.

Taiwan. Industries where foreign investment is desired may receive a tax holiday. Taiwan runs export processing zones where taxes are not assessed if the finished product is exported. Sometimes an imported good is assigned a higher value for tax purposes than the equivalent domestically produced good. Some luxury imported goods face higher tax rates than the same lower end locally produced good.

Market Development

Procurement Practices

European Community. EC member government-owned utilities and agencies generally follow strong unwritten "buy national" policies that, at a minimum, hurt non-EC country access to heavy electrical equipment (HEE) and telecommunications markets and even hurt access by other member countries. New EC rules could open the procurement process—at least to other EC members.

France. Electrical utilities: the French-owned Electricite de France buys domestic equipment to promote national manufacture. The company uses short tendering procedures and single tendering for a series of projects to favor domestic companies. **Other:** French-owned government agencies and state-owned corporations have traditionally followed "buy national" policies through short tendering procedures, development of project specifications favoring domestic products, and single tendering.

Germany. *Electrical utilities:* foreign firms are excluded as qualified bidders on projects by Germany's 1,000 electrical utilities.

United Kingdom. *Electrical generation:* until recently, preference was given to domestic producers. With the breakup of the former government utility that generates electricity for all of England and Wales, the British Government has said it will accept bids for HEE from any qualified supplier whether domestic or foreign.

Japan. *Construction and telecommunications:* single tendering favors local suppliers, and pre-qualification and delivery deadlines discriminate against foreign suppliers. *Supercomputers:* government-required discounts of up to 80 percent effectively limit supercomputer imports. *Satellites:* imports are limited by government policies encouraging domestic purchase. Private-sector development is regulated and protected to avoid "excessive capacity."

South Korea. Seoul informally encourages local procurement. Foreign sellers of military equipment often are required by the government, in exchange for a contract, to purchase Korean goods worth 30 to 50 percent of the contract value. Semigovernmental agencies are authorized to set local content requirements. Several semigovernmental agencies—the Korean Telecommunications Authority, the Data Communication Corporation of Korea, the Korean Mobile Telecommunications Corporation, and the Korean Electric Power Company—reportedly set local content requirements. Seoul uses its procurement power to prompt foreign technology transfer.

Taiwan. A substantial state-owned industrial sector gives implicit purchase preference to domestically produced goods.

Export Assistance

European Community. Member countries in the Airbus consortium offer political and economic inducements to foreign governments to encourage the purchase of their planes. EC countries tie assistance for constructing foreign power generating plants that use coal to the purchase of EC coal. (Coal production is subsidized in the EC.)

France. The directorate for Foreign Economic Relations exercises general policy control on two semi-independent government corporations—the French Center of Foreign Commerce (CFCE) and the Committee for Foreign Economic Shows (CFMEE). Help is available to all firms with priority given to SMEs. France also uses high-level government officials and offers of foreign assistance to pressure foreign governments to buy French products. Paris provides funding to French overseas chambers of commerce.

Germany. Bonn runs a limited government export promotion program through the Federal Office for Trade Information—a semiautonomous unit of the Economics Ministry. The government, however, subsidizes the private formation of strong overseas German chambers of commerce that promote German goods to local buyers with information and referrals.

United Kingdom. The British Overseas Trade Board directs policy and operations in the export promotion program of the Department of Trade. It is comprised of a majority of leading businessmen, and emphasis is on helping large, established exporters.

Japan. Tokyo provides export promotional services to all Japanese exporters through the Japan External Trade Organization (JETRO)—a semiautonomous official membership organization. JETRO sometimes pays travel expenses and per diem for potential buyers of Japanese goods and for visits by key foreign leaders. Tokyo uses foreign aid funds to encourage foreign governments to buy Japanese products.

South Korea. The Korean Trade Promotion Corporation (KOTRA)—a quasi-public entity funded by government and private sources—provides export promotional services. Its activities are closely coordinated with the Ministry of Trade and Industry (MTI), some of whose officials sit on its board. Seoul sometimes uses high government officials to encourage foreign governments to buy Korean goods.

Taiwan. Taipei promotes trade through several private nonprofit trade promotion organizations. The China External Trade Development Council (CETRA) is the primary institution and is supported by local business associations, exporters, and the government.

Antitrust Exemption

European Community. Generally, EC policy restricts agreements between firms involved in price fixing or market sharing. The Airbus consortium and the coal and steel cartels are sanctioned. Large mergers are reviewed by the EC. Greater powers for the EC to deny mergers are currently under consideration.

France. Refusals to sell, imposition of price floors, price discrimination, and predatory pricing are illegal in France. Paris, before denying a merger or breaking up a firm, applies the rule of reason principle, that is, if a merger or a firm—by remaining intact—can serve a greater social good, the merger or firm may be allowed to continue. France permits consortium and industry groupings. Aerospace participants in Airbus are under this law.

Germany. German antitrust regulation applies the rule of reason principle. Cartels are normally prohibited except in agriculture, transport, banking, insurance, and public utilities. Bonn, on occasion, organizes a rationalization cartel—a group of firms in an industry that need restructuring, retrenchment, or revitalization—and sometimes permits small firm cartels that help small businesses economize on such activities as marketing and purchasing.

United Kingdom. London applies a rule of reason approach to antitrust regulation. Regulators look at the size of a firm in terms of market share and gross market. A firm must have a 25-percent market share before it is considered for breakup. The burden of proof is on the firm to demonstrate that a greater social good can be achieved by leaving it intact.

Japan. The Fair Trade Commission (FTC) administers antitrust laws. Although Japanese law is similar to US law, Tokyo permits the formation of

cartels to help industries tackle particular challenges, for example, to help new industries get started, to aid in the restructuring and revitalization of ailing industries, to form export groups that can more effectively market goods abroad, to form import consortiums that can wield greater buying power, to help SMEs share market information, and to help firms band together to jointly attack environmental problems. Tokyo permits the formation of business groups—*keiretsu*, by allowing the cross-shareholding of firms from different industries. These groups often cut out foreign suppliers and make foreign direct investment in Japan difficult. Tokyo supports the formation of cartels in shipbuilding, textiles, apparel, food products, paper and paper products, leather and leather products, stone, clay, glass, and aluminum smelting. *Distribution:* the Large Retail Store law makes the creation of new distribution channels difficult.

South Korea. Seoul supported the formation of large, vertically integrated conglomerates—*chaebols*—by lending them money to develop industries in government identified areas.

Taiwan. Taipei passed a fair trade law in January 1991 that will take effect for private firms in 1992 and for public firms in five years. The law restricts monopolies, mergers, and collusive trade practices, but restrictions can be waived by regulating authorities. Currently, domestic price fixing is widespread—roughly 60 percent of industrial products are collusively set, according to academic studies.

R&D Support

European Community. The EC has a variety of R&D programs. Also support to Airbus may increasingly take the form of an EC R&D program. Some Pan-European R&D programs are ESPRIT (information technology), RACE (communications technology), BRITE (industrial technology), EUREKA (general high technology fields).

France. Paris's R&D objectives are to mobilize industry around strategic technologies, integrate new technologies in product processes, improve the R&D environment, and participate in European and international R&D programs. Cooperation between public and research bodies and industry is encouraged by a variety of mechanisms, such as mixed laboratories, commercialization mechanisms, exchanges of research personnel, and support for SMEs to participate in technology transfer mechanisms. Substantial R&D funding is going to domestic projects in space, nuclear, aeronautic, electronic, informatic, and communication fields and to regional and international programs, such as Airbus and the space program.

Germany. Bonn's four R&D objectives are to expand scientific knowledge, improve living conditions, improve conditions and opportunities for innovation, and strengthen international cooperation. Funding has been concentrated on ships, motor vehicles, other transport, engineering, other services, and utilities, but increased emphasis has been placed on core technologies, such as microelectronics, informatics, advanced materials, and biotechnology. The government provides seed money, but firms bear a significant share of the cost and must share the technologies that are developed.

United Kingdom. Funding is designed to fill in private-sector gaps; international competitiveness is only a byproduct. Support is given for basic research. Selective grants are used to augment private R&D, but tax incentives are minor for scientific equipment. Emphasis now is on major new technologies—information technology, biotechnology, and advanced materials. In the past, funding focused on aerospace, machinery, electronics, and components. The United Kingdom has a series of research and technology organizations and regional technology centers.

Japan. Government R&D funding is relatively low and is used as seed money to encourage private-sector participation. R&D goes mostly to venture capital firms, research institutions, and universities. MITI receives 13 percent of total government

funds to directly support government programs that foster technological advance in targeted industries. Core technology research emphasis is on advanced materials, information technology, and biotechnology. Shipbuilders receive substantial R&D grants, as do petroleum refineries, some transport industries, mining, and utilities.

South Korea. Seoul's policy is to promote basic science research, international joint research, high-technology development, and technical information systems and to procure R&D equipment. KTDC plays a key role in improving technology and marketing cooperation in SME industries. The Ministry of Trade plans to complete a center for standardized data bases and the distribution of industrial technology. The World Bank is lending South Korea money to support expansion plans for S&T training to overcome a shortage of technicians, engineers, and R&D personnel. Public research institutes are cooperating with the *chaebol*s to develop indigenous technology; institutes are increasingly engaged in basic research. Seoul is encouraging S&T cooperation with Europe, China, and the CIS to relieve its dependence on the United States and Japan.

Taiwan. The National Science Council holds a yearly conference that helps it direct R&D funds into an integrated industrial, science, and government effort. Taiwan spent 1.2 percent of its GNP on R&D in 1988 and plans to spend 2.2 percent of its GNP by 1996—Taipei's goal is to match Tokyo's 2.8 percent of GNP. Funds go to assist a variety of research institutions—ranging from packaging research to biotechnology centers—and to help target industries, especially in high-technology areas such as computers and telecommunications.

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DIRECTORATE STATUS

FROM: WATKINS, James D.: U.S. SECRETARY OF ENERGY

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 01/16/92

SUBJECT: HE REQUESTS A STUDY BE CONDUCTED TO REVEIW POLICY
GUIDANCE FOR ADMINISTRATION WIDE INTERNATIONAL S&T
ACTIVITIES.

DIRECTORATE
ASSIGNED: FCCSET

STAFF
ASSIGNED:

ACTION
REQUIRED: AS NECESSARY

STAFF
ACTION:

OSTP DUE DATE: SENDER'S DUE DATE: 02/05/92

DATE COMPLETED: STAFF DUE DATE
DATE COMPLETED/DEPT:

COPIES TO: D. Allan Bromley
PHYSICAL SCIENCES
INTERNATIONAL/POLICY

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Background
for your
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w/ JTR



The Secretary of Energy
Washington, DC 20585

January 16, 1992

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92 JAN 21 P4: 51

The Honorable D. Allan Bromley
Director, Office of Science and Technology Policy
Executive Office of the President
Washington, DC 20506

OSTP
MAIL ROOM

Dear Dr. *Dr. Allan* Bromley:

I want to bring to your attention a major concern I have regarding international science and technology (S&T) cooperation and commitments entered into by my Department and other Federal agencies. A few months ago, I commissioned an independent review of the handling of S&T agreements at the Department of Energy (DOE). The review saw a need for DOE to "get its own house in order," in part by articulating clear policies, procedures, and goals. I have since directed such corrective action.

This review, however, noted shortcomings in overall policy guidance for Administration wide international S&T activities and recommended that the White House initiate a study to enunciate such policies. I agree with this recommendation and request such a study. The policy guidance would help to better integrate our government's disparate efforts and processes in this area as well as provide an aggressive Presidential vision and mandate for implementation.

We need an overall strategy concerning such agreements and consistent standards. In my mind, we should be concerned about what is in these agreements for the United States, whether we are giving away more technology than we are receiving, and what opportunities are being lost in our not seeking agreements that could help us. We should be proactive rather than reactive, as I fear many of our agreements were signed simply because we were asked, without any analysis as to need or benefit. Obviously, a successful and coordinated science and technology policy could assist our economic competitiveness.

I suggest the best way to proceed is either through the OSTP Federal Coordinating Council on Science, Engineering and Technology/Committee on International Science, Engineering and Technology or the NSC Policy Coordinating Committee. We stand ready to assist you in this important undertaking and volunteer DOE to participate in an "executive secretariat" role.

I am sending a similar letter to General Brent Scowcroft, USAF (Retired), Assistant to the President for National Security Affairs.

Sincerely,

James D. Watkins
James D. Watkins
Admiral, U.S. Navy (Retired)

January 31, 1992

Dear Secretary Watkins:

Thank you for your letter of January 16 regarding the need for Administration-wide principals for international science and technology collaboration. I am pleased to learn of efforts within your department to address issues related to international agreements and was very favorably impressed with the July 1991 Center for Naval Analyses report on DOE's international S&T agreements. It is my firm belief that improvements to agency procedures, operations and goals must come from within each agency within a broad envelop of government-wide principles.

Your suggestion for a White House initiated study to develop an up-to-date strategy for handling international S&T efforts is a timely one. It is consistent with discussions within OSTP, the FCCSET Committee on International Science, Engineering and Technology (CISSET), and several agencies in addition to DOE, to look at the need for and possible development of principles and guidelines governing agency actions related to international S&T activities. There may be broader questions, particularly related to national security affairs which should be discussed within the NSC framework. I plan to discuss this with General Scowcroft.

Thank you for bringing this important issue to light and I look forward to working with you to bring about real and substantial improvements to our international S&T endeavors.

Sincerely,

D. Allan Bromley
The Assistant to the President
for
Science and Technology

The Honorable James D. Watkins, USN (Retired)
The Secretary of Energy
Washington, D.C. 20585

cc: General Brent Scowcroft, USAF (Retired)
Ambassador Reginald Bartholomew

CNA

CENTER FOR NAVAL ANALYSES

4401 Ford Avenue • Post Office Box 16268 • Alexandria, Virginia 22302-0268 • (703) 824-2000

President

Date: 30 July 1991

To: Admiral James D. Watkins, USN (Ret.)
Secretary of Energy

Via: W. Henson Moore
Deputy Secretary of Energy

Subj: Report of the Review Panel on International Science and Technology
Agreements

It is a pleasure to forward to you the final report of the CNA Review Panel on International Science and Technology Agreements. The members of the Panel appreciated the excellent cooperation and assistance they received from your staff. We trust that this report will contribute to your efforts to ensure that the Department remains a leader in advancing America's position in the field of international science and technology.



Robert J. Murray

CHAIRMAN'S PREFACE

In March 1991, the Office of the Secretary of Energy asked me if the Center for Naval Analyses (CNA) would undertake a review of the Department of Energy's international civilian science and technology agreements. The initial concept envisioned a year-long effort by two teams: eight or nine professionals from within DOE, and a group of outside policy experts.

I agreed to undertake the review, but with the understanding that CNA would rely on individuals identified by the Department as advisors. I also indicated that with such an arrangement we could complete the review within four months. I reasoned that a review of that scope should be able to identify any major problems and recommend a remedial course of action to be pursued in a more detailed, long-term effort.

The CNA team consisted of Ms. Karen Smith and myself. The principal advisors from DOE were Mr. Edward Smida of the Office of International Affairs and Energy Emergencies, Dr. William H. Kirchhoff of the Office of Energy Research, and Ms. Rebecca Dyer of the Office of Conservation and Renewable Energy. Without their valuable contributions, this report could not have been written.

Additionally, the Department contracted with the Honorable David Emery, former Congressman from Maine, to be a consultant. Mr. Emery brought to the study a broad and penetrating perspective gained from his background as an engineer, his experience as Deputy Director of the Arms Control and Disarmament Agency, and his years in the Congress. His insights and grasp of the larger governmental issues greatly aided us in conducting our analyses and making our recommendations.

I would be negligent not to thank Mr. Doug Faulkner, a special assistant to the Deputy Secretary on international affairs, for his excellent advice, guidance, and assistance. He managed to keep us oriented on our objectives, as ambitious as they were, and ensured that we received the fullest cooperation of the Department. We also benefited from the sage advice of Dr. Robert Simon, Executive Director of the Office of the Secretary of Energy Advisory Board.

I think it is important here to outline the methodology the Panel followed to accomplish its objectives. At the outset we decided to look at the task at hand from three perspectives: from a national viewpoint, from an interagency perspective, and from within the Department.

We began at the national level in order to determine what Presidential guidance and national-level mechanisms govern the conduct of international agreements. We conducted in-depth interviews with senior officials from the White House, the National Security Council (NSC), the Office of Science and Technology Policy (OSTP), the Office of Management and Budget (OMB), the National Science Foundation (NSF), the Department of State, and the Department of Commerce. Our recommendations regarding the need for Presidential guidance with respect to the United States' international S&T activities, and the efficacy of current oversight mechanisms, emerged from these discussions.

The Panel's second focus was on the interagency level to understand the process for interagency coordination and the extent of DOE's participation and effectiveness in this process. Interviews were conducted with State, Commerce, the Arms Control and Disarmament Agency (ACDA), OMB, and DOE's Office of International Affairs and Energy Emergencies. From these talks we were able to draft recommendations about ways in which DOE could improve its influence and competence in the interagency arena.

Finally, and most importantly, the Panel examined policies and procedures within the Department itself. Of great value in this effort were the surveys we distributed to all DOE offices. From them we gained an understanding of the Department's international portfolio and the costs and benefits of its S&T agreements. The results not only provided the Panel with valuable insights, but will give DOE a good understanding of the nature of its international activities. We also decided to examine six case studies, a representative sampling of agreements, in considerable detail. The analysis of the case studies provided insights into the Department's policies and procedures and an appreciation of what considerations and mechanisms should guide the development of international S&T agreements in the future. We also conducted numerous interviews within the Department, from the Assistant Secretary level on down, focusing particularly on the program manager level. We found these personal interviews to be particularly valuable.

As a final comment, I have been deeply impressed by the forthright responsiveness of your Department's staff at all levels. In all the offices with which we interacted, we found individuals eager to describe their programs and to encourage us in our effort. We are therefore optimistic about the likelihood of realizing the recommendations we make in this report.

Tyrus W. Cobb
Chairman

EXECUTIVE SUMMARY

BACKGROUND

The Department of Energy (DOE) enters into agreements with foreign countries to establish cooperation and collaboration in science, technology, and energy activities. Senior DOE officials recently expressed concern over the Department's management of these international agreements. In March 1991, the Secretary of Energy tasked the Center for Naval Analyses (CNA) to review DOE's agreements and examine the policies and procedures that guide them. This report presents the findings of the CNA Review Panel.

FINDINGS

DOE's management of its international S&T agreements reflects the relatively low priority accorded to this endeavor. By and large, these activities are not a major concern to senior management, nor do they account for significant fiscal or staff commitments. The permanent staff dedicated to the oversight of the Department's international S&T agenda is small.

National-Level Guidance and Mechanisms

Surprisingly, there is no Presidential guidance that specifically provides direction for the conduct of the United States' international S&T agreements. Nor is there any established mechanism in the White House for routine oversight and management of the process.

There is an urgent requirement for a comprehensive policy directive emanating from the White House that would provide direction for these activities. While this is not a direct responsibility of DOE, the Review Panel recommends that the Secretary of Energy take the lead in requesting that the White House initiate a study to formulate such a policy. The policy would integrate the U.S. government's (USG's) international S&T activities and provide a mandate to cabinet officers to pursue a more aggressive course with respect to these efforts. In short, the United States would have a clearly enunciated policy guiding its international S&T activities.

There is also a lack of a regular, ongoing national oversight mechanism for supervising international S&T activities. However, the Panel concluded that there is no advantage in establishing such an oversight mechanism in the White House. At present the National Security Council and the Office of Science and Technology Policy provide effective, albeit sporadic, guidance and oversight. Further centralization of these activities, given the limited resources of these agencies, would provide little advantage.

OSTP
Chair

Interagency Policies and Procedures

The wide-ranging spectrum of international S&T agreements touches on the interests and concerns of a number of USG agencies and organizations. Effective DOE coordination with the Departments of State, Commerce, and Defense, as well as with other policy-making arms of government, is essential for the proper preparation and implementation of these agreements.

DOE has not adequately participated in the processes discussed above. Until recently, it did not appear to be an active participant in the Circular 175 process, the main interagency coordinating mechanism for these agreements. In many cases the Department failed to submit its agreements for scrutiny. While the Department's wish to preserve its independence and authority is understandable, the Circular 175 process does not circumvent the Department's competence. Rather, full participation in this interagency process would enhance the quality and effectiveness of DOE's activities in this area.

The Department has been reticent to take the lead in guiding interagency work with respect to international S&T activities. It should take a more active and leading role in this arena and forcefully advocate its interests at the highest levels of the interagency process. Senior Department officials must become more engaged, taking matters of major concern to the White House's subordinate coordinating bodies, such as the Deputies Committee and the Policy Coordinating Committee on S&T activities.

DOE's Internal Handling of Agreements

Evaluation of the Department's Database

DOE has not maintained a comprehensive, central inventory of all of its international S&T agreements. The existing database, used primarily to satisfy a Congressional reporting requirement, is inadequate. It does not include the multilateral agreements, and its coverage of bilateral agreements is deficient with respect to data on resource commitments, benefits to be accrued by the U.S., information on the technologies involved, and negotiating histories.

The Panel recommends that DOE compile a comprehensive database on all of its international S&T activities. This inventory can be based on the extensive data that the Panel has already compiled. The Panel also recommends that each program office maintain a computerized inventory of the agreements it administers. This data base, while similar to the central DOE file, should contain more detailed information.

DOE's Portfolio of Agreements

DOE has in effect about 200 international S&T agreements, of which 42 percent are multilateral and 58 percent are bilateral. The Panel was unable to get complete information on the resources involved. The data provided—which probably understate the actual amounts somewhat—indicate that the total cost is about \$75 million a year and thus not a significant portion of the Department's yearly expenditures. The staffing figures provided indicate that about 200 full-time equivalents (FTEs) are committed to this effort yearly—again not a significant fraction of DOE's staff structure. However, only 5 percent of the agreements account for nearly 80 percent of the Department's expenditures on international agreements and 55 percent of the staff committed to them. The remaining 190 or so agreements apparently require so few resources that they seldom claim the attention of senior Department management.

The Department's existing agreements have been concluded largely with the major industrialized countries; nearly three-fourths are with Japan and the nations of West Europe. Close to a third are with Japan alone, reflecting a de facto policy of concentration on those nations where DOE perceives the greatest return to lie. There are few agreements with Third World nations.

Four program offices also dominate the portfolio: Fossil Energy (FE), Conservation and Renewable Energy (CE), Nuclear Energy (NE), and Energy Research (ER). Of these, ER and NE are the most prominent, accounting for over 80 percent of the expenditures and 71 percent of the staff known to be dedicated to international S&T activities. Within the technology areas, the Panel found a heavy emphasis on fusion and fission projects, although activities related to radioactive waste are growing.

DOE's Policies and Procedures

The Department has not articulated an overall policy regarding international S&T activities. Several policy statements have addressed pieces of the Department's global S&T concerns, but there is no single coherent and comprehensive policy guidance.

As a first priority the Secretary should issue a policy statement enunciating the Department's approach to international S&T agreements. It should include the considerations that should be addressed in preparing an agreement, provide guidelines for DOE's actions in the interagency review process, and outline the organizational changes needed to remedy shortcomings. The structure that has been created to deal with international S&T activities is rudimentary and barely able to achieve the minimum processing required for a proposed agreement. The four or five high-priority, large-scale agreements are managed quite well (by exception). However, the vast majority of the Department's agreements are not seriously administered. Existing mechanisms are understaffed, overburdened, and, to a great extent, ignored by senior management.

With respect to improving organizational structure, the Panel makes four key recommendations:

- A single official should be designated as the senior authority in charge of activities involving international S&T agreements. After evaluating a number of alternatives, the Panel concluded that the Deputy Secretary himself should assume personal responsibility for these efforts, at least until new procedures and mechanisms are in place.
- To assist the Deputy Secretary, a Steering Committee should be created composed of officials from the program offices with direct responsibility for administering these activities, plus representatives from other offices who participate in the process. The Steering Committee would serve as a policy review panel, as a forum where new policies and developments could be discussed, and as a peer review panel for selected agreements.
- In addition, a small, permanent staff, which the Panel labeled the "Analysis and Implementation Group," should be created to support the Steering Committee and provide the aggressive approach needed to manage these activities.
- The Department should lay out the specific considerations that need to be addressed in evaluating proposed agreements. The Panel endorsed the initiative of the Deputy Secretary, who, upon reviewing the existing standards, immediately imposed a more stringent set of such considerations (which were developed in cooperation with the Panel). This report provides a more detailed set of considerations.

CONCLUSIONS

A handful of agreements dominate the Department's activities in the international S&T area. Most of DOE's agreements involve only a small commitment of resources and staff and receive little attention from senior management. In the past, this approach—management of the key agreements by exception—evolved as a prudent allocation of management time. However, the Panel believes that this style will be inadequate in the future. In the post-Cold War era, the definition of "national security" will shift its focus from the military competition between the superpowers toward concerns over economic competitiveness, energy security, technological sophistication, and a safe environment. Achieving advances in these areas will require adroit interaction and cooperation on a global scale. DOE's international S&T activities could make a significant contribution to America's prowess in this new era, but only if these activities are managed aggressively.

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NATIONAL-LEVEL POLICIES AND PROCEDURES

Background

The Department of Energy (DOE) enters into agreements with foreign countries to establish cooperation and collaboration in science, technology, and energy activities. Senior DOE officials recently expressed concern over the Department's management of these international agreements. In March 1991, the Secretary of Energy tasked the Center for Naval Analyses (CNA) to review DOE's agreements and examine the policies and procedures that guide them. This report presents the findings of the CNA Review Panel. The Panel's charter is reproduced in Annex 1.

The primary focus of the Panel was on DOE's management of its international S&T agreements. Before undertaking its analysis, however, the Panel felt a need to understand the national-level guidance under which DOE operates. It wanted to ascertain at the outset whether the national direction is adequately enunciated and how well the Department complies with existing guidance. In addition, the Panel wanted to discern how the Department coordinates with the national-level mechanisms for supervising the conduct of international S&T agreements.

The Panel conducted interviews in several offices, including the White House Office of Cabinet Affairs, the National Security Council (NSC), the Office of Science and Technology Policy (OSTP), and the Office of Management and Budget (OMB). Two basic questions were addressed:

- What national-level policy guidance governs these agreements on international S&T cooperation (and where can that guidance be found)?
- What national-level processes or mechanisms exist to manage the conduct of these agreements?

Policies and Procedures

The Panel was surprised to find that there is no Presidential guidance that provides specific direction for the conduct of the United States' international S&T agreements. It was also struck by the absence of any established mechanism in the White House complex providing continuing oversight and management of the process.

Since formal international agreements are only a small part of the United States Government's (USG's) overall domestic and global S&T activities, the Panel did not expect to find guidance specifically for these agreements. But it did expect to find a national policy providing broad direction for U.S. global S&T efforts. The Panel also anticipated that it would find an elaborate mechanism in place to direct these activities.

Responsibilities

OSTP has primary responsibility in the White House for both domestic and international S&T issues. OSTP occasionally issues broad policy statements that influence, among other things, international S&T agreements. An example is in the first biennial report of OSTP's National Critical Technologies Panel, issued in March 1991. This report describes 22 technologies—such as materials, biotechnology, and aeronautics—considered essential for the nation's long-term security and economic prosperity.

OSTP also provides, through the Federal Coordinating Council on Science, Engineering and Technology (FCCSET), a mechanism for interagency discussion of key issues. Possibly the most important topic that OSTP addresses in this interagency group is the USG's S&T budget for certain key technical fields. As chair of FCCSET, OSTP is charged with identifying the areas of highest priority to the nation and managing the difficult process through which a budget is produced. Recently, five high-priority fields have been designated: materials, super-computers, biotechnology, education, and global climate change. Through this budgetary process, OSTP has proven its leadership ability and sent a clear signal for agencies such as DOE to follow as it undertakes its international S&T activities.

Like OSTP, NSC occasionally issues policy statements on important, high-level issues. However, also like OSTP, NSC does not have a permanent mechanism for monitoring or supervising international S&T agreements on a routine basis, and it only gets involved on special occasions. These occasions might include settling an interagency dispute, realigning an agency's activities with the President's foreign policy objectives, finalizing a document for a Presidential signing ceremony, or directing one of the technical agencies to explore a particular S&T initiative with a given country or region.

The third office within the White House that influences international S&T agreements is OMB. Again, like the NSC and OSTP, OMB's involvement is sporadic and irregular. DOE is currently required to obtain OMB clearance before negotiating any international agreement whose estimated total cost will exceed \$2 million over its life. OMB is principally concerned about avoiding a long-term commitment of funds without due consideration of other priorities. However, OMB does not regularly issue policy guidance or have an ongoing supervisory role for the implementation of these agreements.

What Is Required

The lack of a national policy on international S&T cooperation is a major deficiency. Although OSTP and NSC occasionally issue policy statements, there is no single Presidential directive that pulls these separate yet related pieces together.

There is an urgent need for a comprehensive policy directive from the White House. The Panel believes that the Secretary of Energy should take the lead in requesting that the White House initiate a study to establish such a policy. An outline of a proposed letter from Admiral Watkins to the White House is in Annex 2. NSC and OSTP would probably co-chair such an effort; however, DOE, given its extensive involvement in the area, could serve as the group's Executive Secretariat. The major thrust of the study would be to formulate a policy that would integrate the USG's international S&T cooperative activities and provide a mandate to cabinet officers to pursue an aggressive course with respect to these efforts. This study should address such issues as:

- The implications of the end of the Cold War, the potential democratization of Eastern Europe and the Soviet Union, and the move toward a market economy in those countries.
- The redirection of U.S. national security policy away from its stress on defense concerns and toward such issues as economic competitiveness.
- The resultant shift in national security R&D priorities.
- The emergence of the environment as a major national security factor.
- The advantages of an aggressive technology transfer policy.
- Cost-sharing with foreign partners on high-cost facilities for long-term, basic research.
- The exploitation of commercial opportunities arising from basic R&D activities.
- The need to define the "equitable exchange" that ideally takes place under an international S&T agreement.

The resulting policy framework would allow the USG to optimize and leverage the wide-ranging benefits derived from cooperation. Most importantly, this exercise would be a first step toward establishing a regular, coherent dialogue within the USG that would better coordinate our current, rather disparate and unfocused process.

The Panel conducted preliminary coordination with several agencies regarding this recommendation—the Department of Commerce, the Department of State, the National Science Foundation, OSTP, NSC, and OMB—and found strong support for this idea.

The Panel also identified a need for an oversight mechanism responsible for supervising international S&T activities. However, such a mechanism need not be in the White House. The sheer scope of this task—reviewing every proposed international S&T agreement and

providing day-to-day oversight—would be too much for the White House's limited staff. In addition, overcentralization would probably cause the process to stagnate while providing few real advantages. Instead the Panel proposes the formation of a mechanism within DOE, to be discussed later in this report. This new mechanism, working in conjunction with the Circular 175 process, should ensure that DOE's international S&T agreements are thoroughly and properly evaluated.

INTERAGENCY POLICIES AND PROCEDURES

The Panel shifted its attention next to the interagency level. It wanted to examine the rules and regulations governing the interagency review of international S&T agreements and ascertain DOE's willingness to seek the cooperation of other cabinet departments. The wide-ranging spectrum of international S&T agreements touches on the interests and concerns of many USG agencies and organizations. Effective coordination with the Departments of State, Commerce, and Defense, as well as with other policy-making arms of the government, is essential for the preparation and implementation of these agreements. Two major questions were addressed:

- Is there an established process or mechanism for interagency coordination and review of international agreements?
- Is DOE following interagency procedures and thus deriving the benefits the review process affords in evaluating potential agreements?

Policies and Procedures

In all of the regulations governing interagency review of international S&T agreements, the State Department is assigned the primary responsibility for coordination and oversight. Furthermore, the regulations state that no agency of the USG may conclude an international agreement, whether entered into in the name of the USG or in the name of the agency, without prior consultation with the State Department.

The regulations also identify the so-called "Circular 175" process as the primary means by which the Department of State shall ensure that all international S&T agreements have been properly cleared. This process is designed to consider the myriad of policy aspects associated with a proposed international agreement and reach a consensus within the USG. Under the Circular 175 process, the negotiation (including exploratory discussions), revision, extension, or termination of an international agreement cannot be undertaken without written authorization by the Department of State. This authorization can be granted for a class of agreements (an umbrella agreement plus its annexes) and can be satisfied if the State Department has been consulted in its capacity as a member of an interagency committee or council established for the purpose of approving such agreements.

There are many of these subsidiary interagency groups for monitoring and managing existing agreements and for coordinating specific aspects of international S&T policy. They include the Working Group on Soviet Science and Technology (GOSSAT), the Working Group on East European Science and Technology (GEESAT), and the Working Group on India. While the Circular 175 process is used on all major actions pertaining to international agreements, these subsidiary groups may grant interagency blessing for smaller work

projects to be pursued under an existing agreement. In addition, these groups provide a forum for discussion of international S&T issues, as well as an opportunity to build a consensus prior to seeking formal Circular 175 authority.

When there is a particularly large or important agreement, or a country with which the USG has numerous agreements, ad hoc groups are frequently convened. For instance, the agreement on the International Thermonuclear Experimental Reactor (ITER) has its own working group which meets periodically to work on issues pertaining only to ITER. In addition, the USG's S&T activities with Japan are closely monitored through several interagency groups that deal only with Japan.

DOE's Role in the Interagency Process

The Department of Energy has not adequately participated in the processes discussed above. Until recently, it did not appear to be a regular participant in the Circular 175 process, and it even failed to submit many of its agreements for scrutiny. This disturbing lack of participation appears to be the result of an opinion held by some that DOE's enabling legislation grants it independent authority to conduct its own international affairs. While DOE's desire to maintain its independence and authority is understandable, the Panel feels that the Circular 175 process should be viewed as a positive instrument through which the Department can gain support and consensus from other agencies and receive valuable assistance in evaluating proposed agreements—not as a bureaucratic impediment.

DOE has also been reticent in the interagency process in general. It has not been a major participant in the establishment of critical policy positions relating to international S&T activities. The Department could enhance its role in the policy community by becoming more active at all levels and by pushing more contentious issues up to higher decision-making bodies.

What Is Required

It is imperative that DOE become a more competent player in the interagency process. As a first step, the Panel recommends that Admiral Watkins issue a Secretary of Energy Notice (SEN) stating that he expects the Department to comply fully with the Circular 175 process and diligently participate in the interagency working groups. The SEN should identify five classes of agreements that must be submitted for Circular 175 review:

- All umbrella agreements (initiation, extension, or renewal).
- The first agreement with a country.
- Any new technical area of cooperation with a country.

- All implementing agreements or annexes that exceed the intended scope or spirit of their umbrella agreement.
- All agreements being prematurely terminated.

A comprehensive SEN outline, including these points, is provided in Annex 3.

Besides ensuring that DOE is fulfilling its legal requirements, complying with the SEN will help DOE reap the benefits of submitting its agreements to a comprehensive interagency scrutiny. No international agreement, no matter how technical, is the sole property of one agency and devoid of implications for any other USG body. They all have foreign policy, national security, and trade ramifications. Since one objective of the Circular 175 process is to identify agreements at the outset that might pose potential problems for the USG, the process can assist the Department by functioning as an extended analytical team, providing insights into areas in which the Department has less expertise.

Secondly, the Circular 175 process has typically been the final authority in determining whether a DOE-sponsored international S&T agreement will move forward. However, a department has the right to appeal its case to a higher level in the interagency process. Informally, the department may appeal to the NSC staff to adjudicate the dispute. Or the department can follow the formal appeal process by taking the disagreement to the Policy Coordination Committee (PCC) on Oceans, Environment and Science (OES), chaired by the Assistant Secretary of State for OES. In rare instances where the issues are still not resolved and are of sufficient importance, the disagreement can be taken to the NSC-chaired "Deputies Committee" or even to the full NSC.

The Panel could not find any dispute concerning a proposed DOE international agreement that has ever been elevated to the PCC group for resolution. If DOE feels strongly about an issue that cannot be resolved, it should not be reluctant to "raise the stakes" and seek PCC or even NSC resolution. A mechanism is in place for this purpose, and there is no reason why the Circular 175 community should be able to squelch a DOE initiative on its own—as has happened before. But high-level officials at DOE will have to assume a more active role and become more forceful advocates for the Department in the interagency arena.

Finally, the time it takes to achieve Circular 175 approval has often been excessive. For most international agreements, time is of the essence, and if the process drags on, the window of opportunity for negotiating an agreement could vanish. But excessive delays are not inevitable. State Department Regulation 22 CFR, Part 181 states that "the approval of, or opinion on, a proposed international agreement will normally be given within 20 days of receipt of the request for consultation . . ." DOE has the right to—and should—insist that this requirement be closely observed.

DOE's PORTFOLIO OF INTERNATIONAL AGREEMENTS

The Panel next turned its attention to DOE's portfolio of agreements and its internal policies, procedures, mechanisms, and regulations regarding them. This effort accounted for most of the Panel's time.

The Panel's Analytical Framework

In conducting the intradepartmental analysis, the Panel first met with the Assistant Secretaries and major office directors to explain its purpose and solicit their observations and recommendations. All of them supported the effort and suggested profitable areas of analysis. They regarded the project as a potentially useful instrument for improving their own international activities, which have not generally been a major focus of their interests.

Each of the offices designated points of contact (POCs) for the Panel to work with. The POCs provided an overall understanding of their offices' approach to international activities, the nature of their programs' agreements, and the scope of future activities their offices anticipated pursuing. The POCs were helpful, but the Panel was disappointed to find that some of them—ostensibly the officials most qualified to provide data and expertise regarding international S&T agreements under their purview—were less than fully knowledgeable of these activities. In many cases, basic information relating to the agreements (even the number and type of agreements) was difficult to get.

The last comprehensive survey of DOE's international agreements was done in 1986. Although that survey was helpful, the Panel decided to do another survey of its own, using a more complete questionnaire. A copy of this questionnaire is in Annex 4. The purpose was to compile an inventory of DOE's international agreements, to gain insights on how the offices calculated the costs and benefits of these agreements, and to get a better understanding of the goals and objectives established by the program offices for the conduct of these activities.

Although the analysis and assimilation of the information gained through the surveys proved to be time consuming and demanding, the results justified the effort. The survey data have been entered into a computerized database that should be valuable for any follow-on effort to the Panel's initial undertaking and for the Department's own understanding of its activities.

A third major endeavor of the Panel was an examination of six agreements in considerable detail, as case studies. These agreements were selected as being representative of the Department's programs and various geographical regions, and included multilateral and bilateral agreements and large and small agreements. In conducting these case studies Panel members interviewed DOE program managers who were directly involved in implementing

the agreements, plus any other officials who were knowledgeable about the agreements and their histories. These case studies formed the basis for most of the Panel's findings and recommendations on DOE processes and policies.

Evaluation of the Department's Database

To initiate its investigation of the Department's internal operations, the Panel first sought a complete listing of all of DOE's international S&T agreements. In addition, it hoped to find brief descriptions or summaries of all the agreements and short appraisals of their value.

It turned out, however, that DOE has not maintained a complete central inventory of its agreements. The Office of the Assistant Secretary for International Affairs and Energy Emergencies (IE) keeps a partial database of the Department's bilateral agreements. However, this database does not include any of the Department's multilateral agreements (approximately 40 percent of the total), and it gives little more than the agreements' titles, their effective dates, the countries concerned, and the principal DOE contacts. This inadequate database has been the primary source for the Department's contribution to the Title V report on "Science, Technology and American Diplomacy" that the President submits annually to Congress.

The existing database lacks specifics on resource commitments, the benefits accrued by the Department and the United States, the energy technologies involved, and the track record and negotiating history of the agreements. Such information would be invaluable to any office embarking on a negotiation of a similar agreement.

Constructing a Useful Database

The Panel recommends that DOE compile a more comprehensive database on all of the international S&T agreements under its purview. The compilers could draw on the extensive data that the Panel has already collected and entered into a computer file.

The Panel also recommends that each program office maintain a computerized inventory of the agreements it administers. These files should be maintained in a similar fashion as the one held by IE-12 (the office that will presumably remain responsible for the central inventory). But the program office database should also include a more extensive evaluation of the agreements themselves. For example, the program office should include an analysis of the expected value of the agreement, more detailed descriptions of the activities conducted under the agreements, and a time-line for reviewing how these activities have been accomplished. (A suggested form that could assist in the program office's data collection effort is in Annex 5.)

Finally, the Panel strongly recommends that the Department continue to evaluate the benefits and costs of DOE's current agreements. Although the Panel was only able to look at six of the agreements in detail, its findings represent a useful initial endeavor. Another small group, composed of outside experts as well as DOE officials, should be convened under the direction of the "Analysis and Implementation Group" (discussed on p. 20) to evaluate all of the agreements.

The Department's Portfolio

The Panel's conclusions regarding the nature of DOE's portfolio of international S&T agreements are tentative because its observations are based solely on the analysis of the survey data it received, and these data are still incomplete (although they do represent the most thorough and comprehensive information on the agreements up to now).

The Department currently has 198 international S&T agreements, of which 84 (42 percent) are multilateral and 114 (58 percent) are bilateral. Figure 1 shows the growth in the number of these international agreements. (Unfortunately, data are unavailable for 1987 through 1990.) As the graph shows, the number has almost tripled in the last ten years.

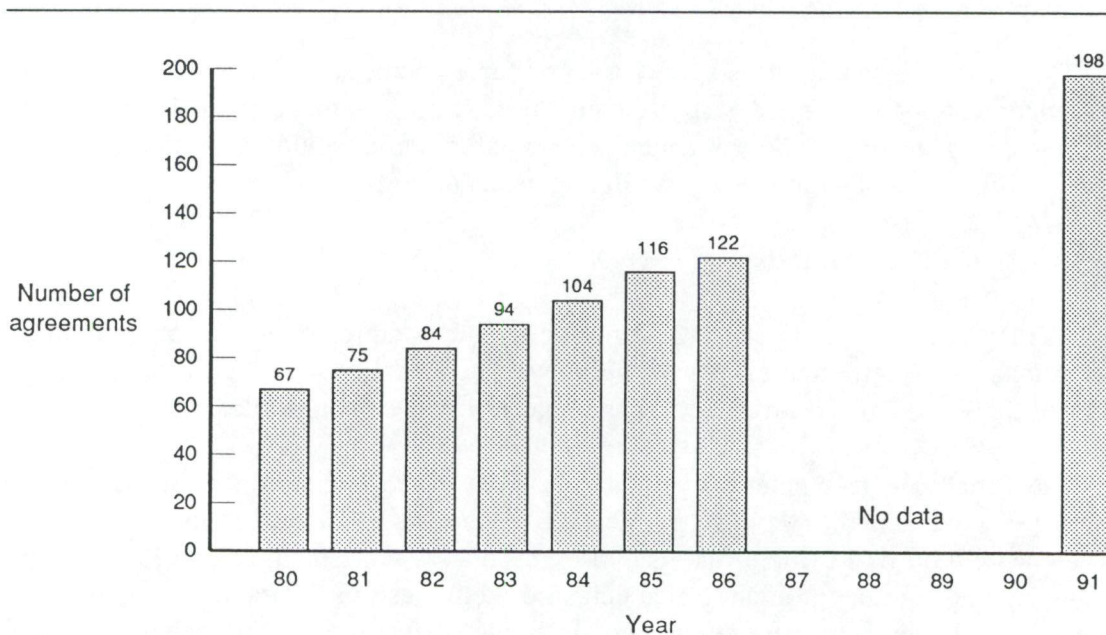


Figure 1. Reported international agreements over time

In the survey form, questions on the amount of money and staff devoted to each agreement included the qualifier "if known." Consequently, the costs and staff are underreported. For those responses including such information, the total annual budget and full-time equivalents (FTEs) devoted to the agreements are reported to be about \$75 million and 200 FTEs. Neither of these figures represents a significant fraction of DOE's resources.¹

The overall numbers are somewhat misleading, since they do not illustrate the Department's stress on a few, highly important agreements. A more useful analysis breaks down the portfolio according to program, geographic area, and technical area.

Figures 2 through 4 illustrate the numbers, costs, and FTEs broken out by program office. Four large, established programs have 162 of the 198 agreements: Conservation and Renewable Energy (CE), Energy Research (ER), Fossil Energy (FE), and Nuclear Energy (NE). Of these, ER and NE dominate in terms of money and staff, accounting together for 81 percent of the reported costs and 71 percent of the reported FTEs. Relatively new programs, particularly Civilian Radioactive Waste Management (RW) and Environmental Restoration and Waste Management (EM), account for much of the balance of the portfolio.

The geographic distribution, shown in figures 5 through 7, reveals that the Department's portfolio is heavily oriented toward the technically advanced countries; about a third of the agreements are with Western Europe and another third are with Japan alone. The dominance of Japan may be because Japan pursues these agreements more aggressively—an observation that should provide the Department food for thought. The focus on the advanced industrial nations probably reflects a conscious search by DOE officials for collaborative projects with countries that can contribute the most.

The large number of multilateral agreements results primarily from the existence of several international bodies, such as the International Energy Agency (IEA) and International Atomic Energy Agency (IAEA). These agencies provide broad umbrellas under which a wide range of collaborative S&T activities can be pursued. They also provide a useful mechanism for rapidly entering into cooperative agreements with a minimum of bureaucratic interference or clearance.

Figures 8 through 10 break down the agreements by technical area. The broadly defined technology of nuclear energy dominates, especially fusion and fission. The focus on nuclear technology is particularly evident in the graphs of costs and FTEs.

1. The information provided to the Panel on dollar and staff resources was incomplete. The Panel is fairly confident about the number of agreements, but is less confident about the dollar amounts and suspects that the FTE figures underestimate the actual commitment.

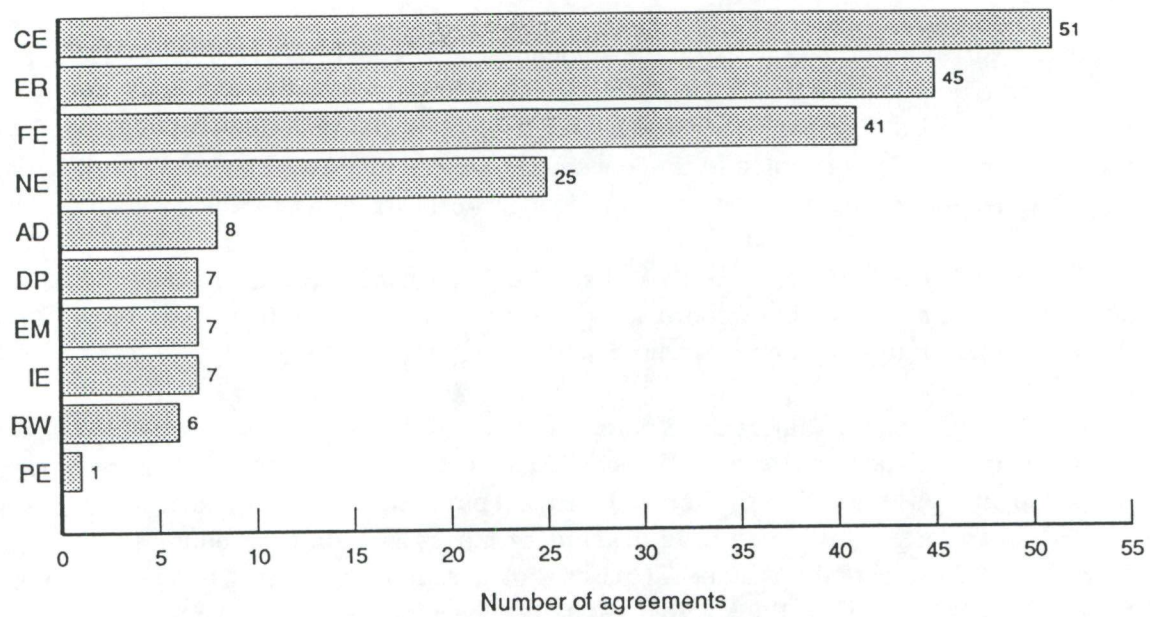


Figure 2. Reported international agreements by Program Office

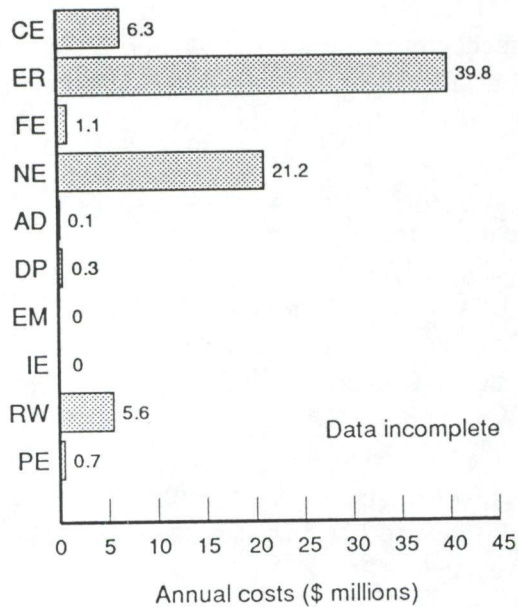


Figure 3. Reported annual costs by Program Office

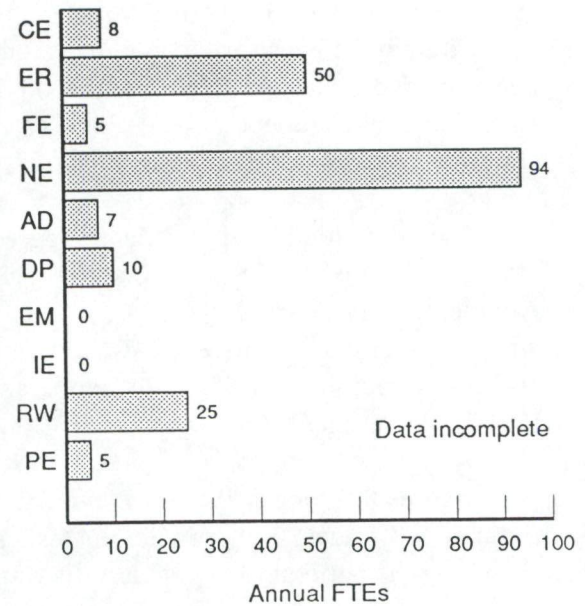


Figure 4. Reported annual FTEs by Program Office

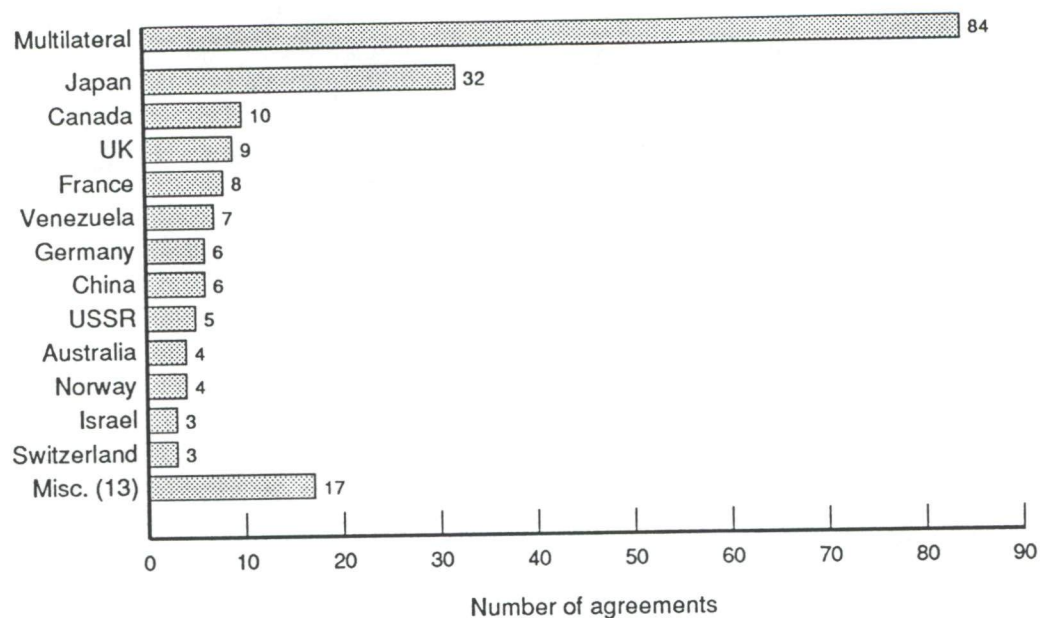


Figure 5. Reported international agreements by country

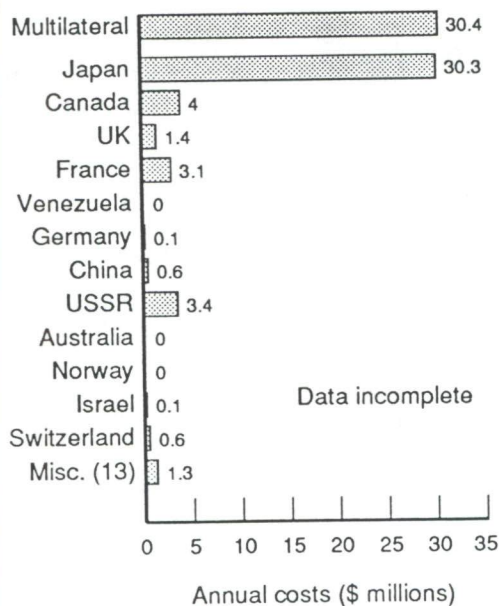


Figure 6. Reported annual costs by country

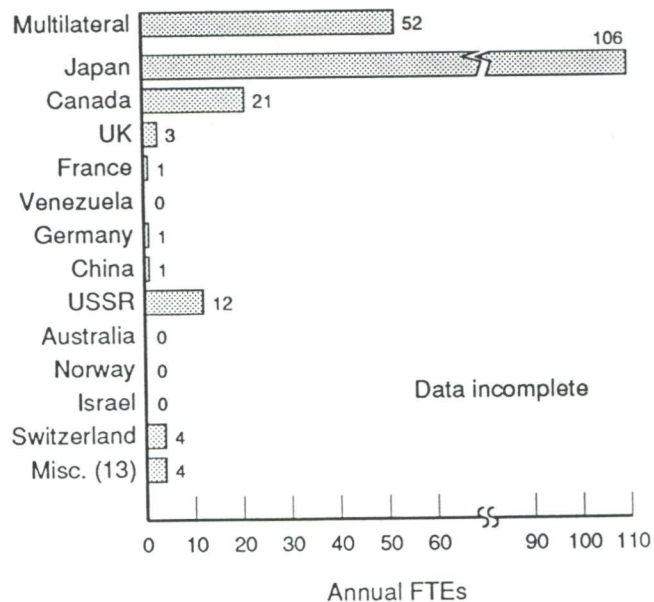


Figure 7. Reported annual FTEs by country

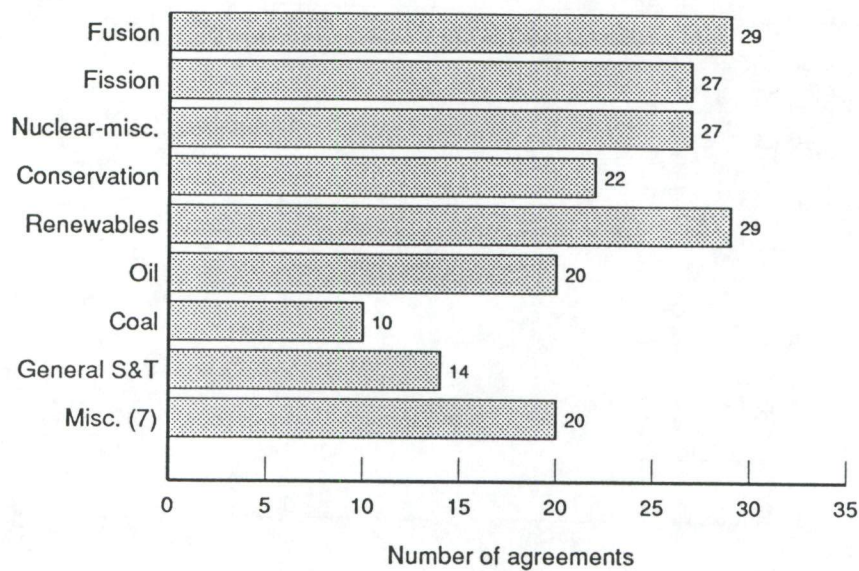


Figure 8. Reported international agreements by technical field

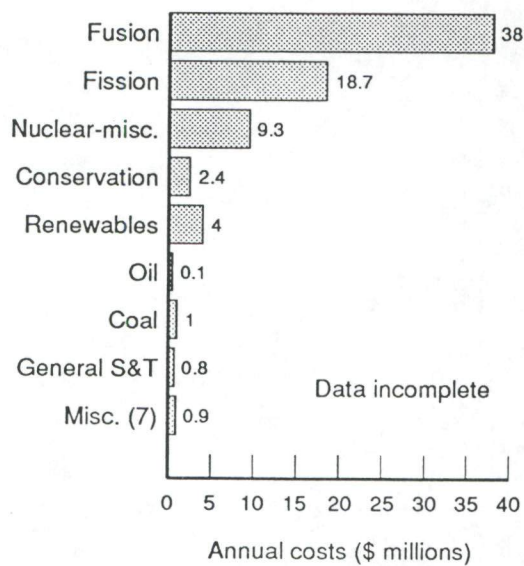


Figure 9. Reported annual costs by technical field

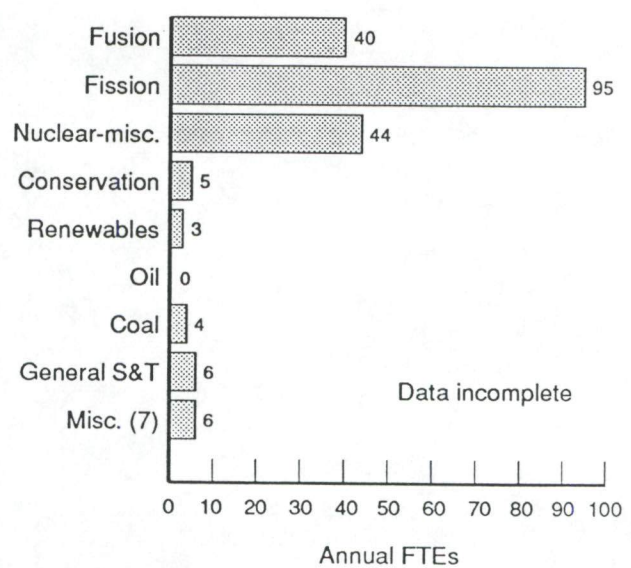


Figure 10. Reported annual FTEs by technical field

In summary, looking at the numbers of agreements alone, all of the reasons for entering into international S&T agreements are evident—scientific collaboration, cost sharing, trade considerations, energy security, foreign policy, and global environmental issues. In terms of resource commitments, a handful of agreements account for the vast majority of the money and staff commitments. All of these stress scientific collaboration and cost sharing. In terms of countries involved, cooperation with the technologically advanced nations dominates. Finally, when we look at the technologies, the focus is on one—nuclear energy.

A New Agenda

In the National Energy Strategy, the Department has identified for international collaboration only global climate change and the sharing of costs for expensive scientific facilities, such as the Superconducting Super Collider. In its portfolio of international agreements, the predominance of technically advanced nations in large collaborative efforts is consistent with a de facto policy of pursuing agreements for the purposes of cost sharing.

But the Department needs to strengthen its international S&T programs that meet other national goals. These goals include:

- Developing international consensus on environmental issues in addition to global climate change where problems are truly international and require collaboration for effective solution.
- Gaining access to unique natural or scientific resources not available to U.S. scientists for study.
- Fostering wise stewardship of scarce natural resources in other countries, including, but not limited to, energy conservation.
- Reducing barriers to trade in energy technologies. One example would be the export of clean coal technology. Another might be standardization of energy technologies where these would foster ease of changing suppliers in times of localized political unrest.
- Promoting efficient and safe production, use, and disposal of energy resources.
- Encouraging technical development in less well-developed countries. In a sense, underdevelopment becomes a barrier to trade by an absence of markets for U.S. technology.

Conclusions

A handful of agreements dominate the Department's activities in the international S&T area. The vast majority of DOE's agreements involve only a small portion of the Department's resource or staff commitments and consequently receive little attention from senior management. In the past, this approach, management of the key agreements by exception, was justified as a prudent allocation of management time. However, the Panel believes that this style will be inadequate in the future. In the post-Cold War era, the definition of "national security" will shift its focus from the military competition between the superpowers toward concerns over economic competitiveness, energy security, technological sophistication, and a safe environment. Achieving advances in these areas will require adroit interaction and cooperation on a global scale. DOE's international S&T activities will make a significant contribution to America's prowess in this new era, but only if these activities are managed aggressively.

DOE's POLICIES AND PROCEDURES

The Panel next directed its attention toward DOE's policies and procedures concerning its international S&T agreements. It sought to determine how well the Department has established clear guidance for DOE personnel. It also wanted to find out how the responsible offices within DOE have structured the mechanisms for overseeing the Department's international S&T activities.

Policy Direction

The Panel found that the Department has not articulated a clear policy direction regarding international S&T activities. Several policy statements have addressed pieces of the Department's global S&T concerns, but there is no coherent and comprehensive policy statement. The lack of such guidance typifies DOE's ad hoc approach to the management of its international S&T activities.

The Panel also looked at the National Energy Strategy (NES) to discern if that document gives a clearer statement of the Department's objectives and strategy in the international S&T area. The NES addresses international agreements in the context of two separate issues: global climate change and high-cost facilities for long-term research. It calls for international cooperation to reduce emissions of greenhouse gases and, more relevant to S&T agreements, "cooperation with other countries to improve understanding of potential global climate change and its impact, and to develop a consensus on appropriate responses." In regard to high-cost research facilities, the NES favors "increased international collaboration in both the[ir] construction and operation"

The NES stresses that the United States will focus more on international cooperation to achieve its energy strategy, but it lacks an overview of goals or tactics. There are scattered references to international cooperative activities, but no comprehensive statement of the USG's or DOE's objectives. The Panel concluded that the absence of a clear policy direction not only inhibits the conduct of programs in effect, but also signals the program offices that this area of activity is simply not a high priority for DOE.

Possibly because of this lack of direction, few program offices had established their own priorities, policies, and guidance. In the course of the interviews, the Panel found that many officials would welcome a clear statement of policy regarding their program's objectives in the international arena. In many cases they felt they were developing agreements in a policy vacuum, basing their efforts on past programs and on what they were able to glean indirectly about management's goals. This lack of guidance often led to misdirected and wasteful efforts and clearly did not enable the USG to take full advantage of the opportunities the international arena offers in S&T.

As a first priority, the Secretary of Energy should issue a policy statement, in the form of a SEN, regarding the Department's approach to international S&T endeavors. The SEN should ultimately flow from the national-level policy initiative discussed earlier in this report. However, until that policy direction is established, the Department should enunciate its own policy guidance.

A fairly detailed outline of what such a SEN might encompass is presented in Annex 3. The SEN would lay out the objectives of DOE's international activities, list the considerations that should be addressed in preparing an agreement, provide guidelines for DOE's actions in the interagency review process, and outline the organizational changes needed to remedy the shortcomings described in the next section of this report. All Assistant Secretaries should take part in preparing the SEN to ensure that it reflects a comprehensive perspective.

On the Assistant Secretary level, the Panel recommends that each program office draw up a statement of its goals and strategies in the international S&T arena and publish it in the office's annual Strategic Plan. This statement should be communicated widely to guide the actions of subordinate offices in their international activities.

DOE's Mechanisms and Processes

The Panel next turned its attention to the mechanisms that DOE has established to supervise its international S&T activities, and the processes developed to formulate and review these agreements.

The Panel found the existing intradepartmental mechanisms and processes to be inadequate for the task at hand—the management of an aggressive international S&T agenda. They can barely achieve the minimum processing required for any proposed agreement. The mechanisms are overburdened, understaffed, and largely ignored by senior management. The processes for reviewing these agreements are rudimentary at best, designed to move documents from one office to another but unable to provide a close scrutiny except for certain high-profile agreements.

At present the focus of DOE's management of its international S&T agreements lies in IE-12, the Office of International Research and Development Policy (under the Assistant Secretary for International Affairs and Energy Emergencies). IE-12 is responsible for coordinating the preparation of international agreements, both within DOE and in the interagency arena. Currently no official guidance is available that prescribes the paths a draft agreement must follow to ensure adequate review of its substance, as well as its legal, technology transfer, and broader policy implications. IE-12 has been working on a DOE order that would describe in detail the functions to be performed by IE-12 and other offices, and the process for intradepartmental and interagency approval. Such a document, reflecting the Secretary's guidance in the SEN, should be completed and published as soon as possible.

Through interviews with IE-12 and other offices, the Panel obtained a general picture of the path an international agreement is supposed to take from its inception, through drafting, internal and external review, signing, and eventual incorporation into DOE's programs. Theoretically, many offices within DOE are involved. The main responsibility for evaluating the technical merits of the agreement and determining "what's in it for DOE" lies with the program office sponsoring the cooperation. Several offices—such as the Assistant General Counsel for International Affairs, the Deputy Assistant Secretary for Export Assistance, and the Office of Technology Analysis—serve in an advisory capacity on DOE international agreements. Finally, IE-12 is charged with coordinating the distribution of the draft agreement within DOE, and serving as the principal liaison with other agencies.

Through its case studies, however, the Panel observed quite a different picture. It found that the lack of a definitive mechanism results in management by "serendipity": if the person in charge of the agreement is familiar with the existing process and submits the agreement to the right place at the right time, the appropriate review will probably take place. However, since some points in the review cycle are judgment calls and no written policy exists to inform those judgments, inconsistency is more common than the systematic application of well-understood policy.

The lack of high-level attention to many of the agreements has yet another consequence. Without systematic checks and balances, the potential exists for individuals to pursue agreements that they may be interested in personally but that may not be the best use of DOE's resources. The Panel found no evidence of any such abuse but suspects that the near tripling of agreements over the past ten years may be the result of individuals pursuing their own interests rather than the outcome of a deliberate departmental strategy.

In sum, there is no standard requirement for substantive review of international agreements. Rather, the amount and level of review vary, based largely on the investment in the program. While this principle—the more money involved, the closer the scrutiny—is sensible, DOD needs a more consistent approach to its application and a certain minimal level of management attention to all agreements.

Toward a More Rational Structure

The Panel feels strongly that DOE should upgrade its procedures governing the conduct of these international S&T agreements. Particular attention should be directed at the means by which these agreements are evaluated. In addition, major structural changes should be implemented within the Department to upgrade and rationalize its mechanisms for overseeing international S&T activities. The Panel offers the following recommendations:

- A set of considerations should be adopted against which any prospective new or renewable agreement, or any action involving an agreement (initiation, renewal, or termination) must be evaluated.

- A Steering Committee should be established that would provide ongoing policy guidance and serve as a forum for discussion of new developments and opportunities in global S&T activities.
- A new mechanism, which the Panel labeled the "Analysis and Implementation Group," should be created to support the Steering Committee and provide the aggressive approach needed to manage these activities.
- A single individual should be designated as the senior authority in charge of activities related to international S&T activities.

With respect to the first recommendation, some important measures have already been adopted. The absence of a stringent set of standards was noted by the Deputy Secretary during a session with the Panel at the start of its review. At his request the Panel drafted a preliminary set of considerations for evaluating the worth of a proposed agreement. The considerations, which were based on the Panel's early review of selected agreements already in force, have been used by the Office of the Deputy Secretary as a temporary measure pending the Panel's final recommendations. This initiative by itself has injected a certain vitality to a moribund process and sent notice that the Department intends to pursue a more aggressive and rigorous approach to international S&T agreements.

The Panel subsequently developed a comprehensive set of considerations that it believes should be applied to any new or renewable agreement. They expand and refine the interim set provided earlier to the Deputy Secretary. A draft of the proposed considerations is presented in Annex 6.¹ Relying on this rigorous set of considerations will enable DOE to ensure that all agreements receive a thorough and careful evaluation; it will also help program offices comply with the Department's more aggressive approach to gain the benefits of technological cooperation with foreign partners. Finally, the office responsible for ensuring that this rigorous analysis is applied to the agreements will accumulate a wealth of easily retrievable data. This should enable the department to establish a central database of all DOE S&T agreements, thereby permitting a systematic, quick review and analysis of the Department's portfolio (which cannot be done at present).

Regarding the second recommendation, the creation of a "Steering Committee," at present no means are available for reviewing global S&T developments regularly. The Steering Committee would bring together the officials in DOE most involved in international activities, as well as experts from outside the Department (perhaps on an invitational basis). IE-12, currently the focal point for processing international agreements, could serve as the Committee's Executive Secretariat. The key members of the Committee would be the international specialists (the POCs for this study) designated by the program offices. In addition,

1. A more philosophical treatment of the principles underlying a good agreement is in Annex 7.

representatives from other concerned offices, such as the General Counsel, would be included. A suggested composition for the Steering Committee is shown in figure 11.

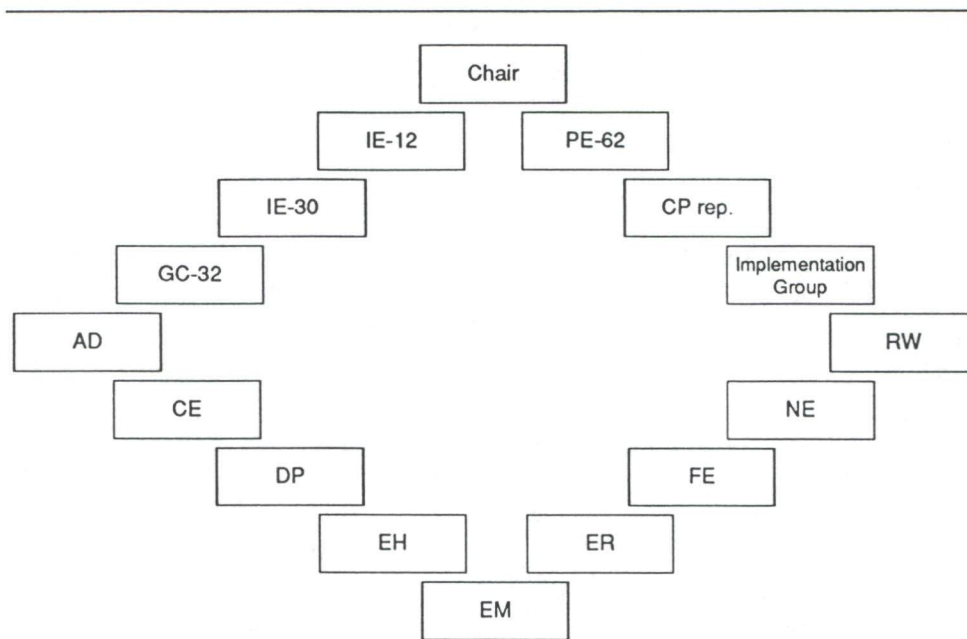


Figure 11. Steering Committee

The specific functions of the Steering Committee would evolve over time, depending on how the Deputy Secretary or other officials wish to use it. At the outset, however, it should be charged with developing and reviewing departmental policy, serving as a forum for discussion of new developments in global S&T activities, facilitating DOE's review and clearance process, and ensuring that the Department's (anticipated) more aggressive approach to capitalize on the opportunities of international cooperation is institutionalized.

Placing the review responsibility with the Steering Committee would ensure that each agreement receives some scrutiny by all offices with administrative review responsibilities. It would also add another dimension of review: substantive peer evaluation external to the program. The Committee should not be expected to scrutinize all agreements in depth, but it could provide a valuable review of selected agreements that represent new policy departures or are particularly important. Distributing drafts of proposed agreements well in advance of a meeting should ensure speedy completion of this review and allow direct, face-to-face contact at the next meeting between the individual responsible for the agreement and those responsible for reviewing it. The visibility of this process would provide additional insurance that agreements will be thoroughly prepared and well conceived before they leave the building for interagency scrutiny.

The third recommendation, to create an "Analysis and Implementation Group," resulted from the Panel's finding that DOE lacks a mechanism to identify and seize opportunities in the international agreements arena, and that no systematic analysis of existing agreements occurs, either individually, within programs (with a few exceptions); or across the Department as a whole. The proposed Group would perform these functions, extend the scrutiny applied to the six case studies to the rest of DOE's portfolio, and provide staff support to the Steering Committee. It could be staffed by one or two DOE employees and one or two external analysts who would provide expert, objective assistance by defining cost and benefit criteria, evaluating individual agreements, and analyzing DOE's portfolio.

This group would be charged with taking an aggressive role in applying the guidance provided by the SEN to DOE's international S&T agreements. It would systematically seek out countries and areas of cooperation that would benefit the United States in terms of trade, science, energy, and environmental security. The emerging post-Cold War global order will provide increased opportunities for exploiting foreign technological advances. But without this Analysis and Implementation Group specifically charged with identifying new developments and providing an impetus to capitalize on opportunities, the Department might continue its current passive, pro-forma approach.

The final recommendation calls for the Secretary to designate a single official to be responsible for overseeing the Department's global S&T activities. This recommendation could be implemented in a number of ways. A modest approach would be simply to designate a Deputy Assistant Secretary in IE to fill the role. A more ambitious extreme would be to create an outside "Commission." The various alternatives are depicted in figure 12.

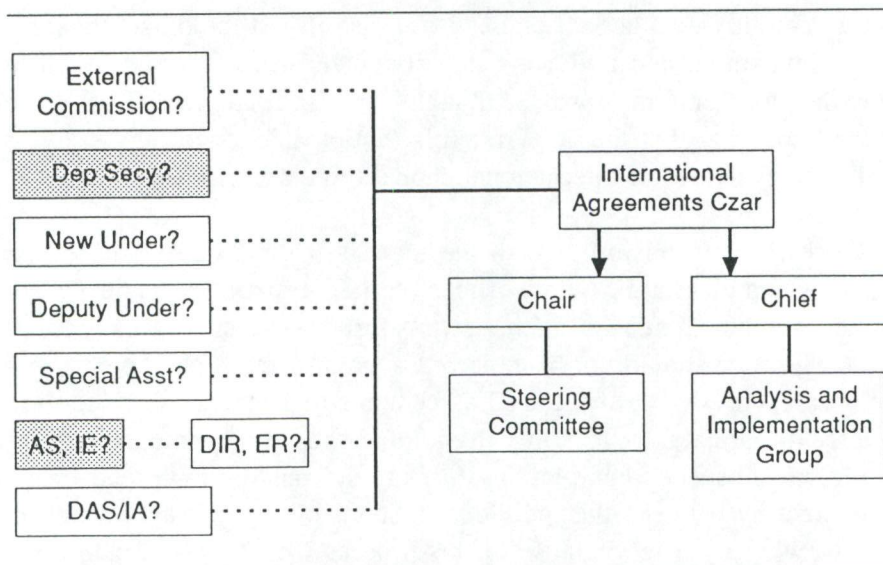


Figure 12. Who should be in charge?

The Panel's preferred solution would be to place these groups under the direction of a new Office of the Undersecretary of Energy for Science and Technology. A proposal to create such a position is now before the Congress. But if legislation creating this post is not forthcoming, the Panel recommends that the Deputy Secretary himself assume the role, at least temporarily. This would ensure that the new approach would receive the required emphasis and that the new bodies would have the bureaucratic support to get off the ground properly.

Alternatively, either the Director of the Office of Energy Research (DIR/ER) or the Assistant Secretary for International Affairs and Energy Emergencies (AS/IE) could be designated to perform this supervisory role. The primary rationale for selecting the DIR/ER for this position would be that the new Director there will be dual-hatted as the Secretary's Science Advisor. However, that individual is also a major program director for many international S&T activities and would not be a disinterested, impartial player. The AS/IE does not have a direct stake in any particular international S&T agreement (not being head of a program office, he has no technical agreements to direct himself). The Deputy Secretary, if he follows the Panel's recommendation, probably would want to transfer supervision of the international programs to the AS/IE after the new mechanisms are in place and sufficient impetus has been given to the program.

The Panel does not believe that either of the options at the modest and ambitious extremes is workable. Creating a new "Commission" would be difficult and unnecessary. At the other end of the spectrum, simply placing a Deputy Assistant Secretary in IE in charge would represent a decision to continue the existing process at only a slightly upgraded status.

The proposed organizational and functional changes would ensure that new agreements receive the proper scrutiny and are in the best interests of the United States. In addition, these changes, combined with the departmental and program policies and strategies recommended above, would help DOE pursue a more rational and aggressive course in the international S&T arena.

DEPARTMENTAL ACRONYMS

AD Administration and Human Resource Management
AS Assistant Secretary
CE Conservation and Renewable Energy
CP Congressional and Intergovernmental Affairs
DAS Deputy Assistant Secretary
DP Defense Programs
EH Environment, Safety and Health
EM Environmental Restoration and Waste Management
ER Energy Research
FE Fossil Energy
GC General Counsel
IA International Affairs
IE International Affairs and Energy Emergencies
NE Nuclear Energy
NES National Energy Strategy
PE Policy, Planning and Analysis
RW Civilian Radioactive Waste Management

ANNEX 1

REVIEW PANEL'S CHARTER



The Secretary of Energy
Washington, DC 20585

March 25, 1991

MEMORANDUM FOR SECRETARIAL OFFICERS

SUBJECT: REVIEW OF DOE INTERNATIONAL CIVILIAN COOPERATION
IN SCIENCE, TECHNOLOGY, AND ENERGY

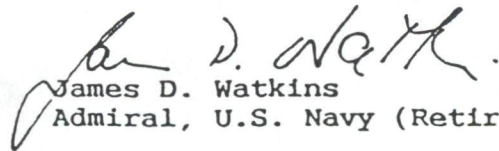
Last December I approved a recommendation by the Deputy Secretary for an in-depth, external review of the Department's international civilian cooperation in science, technology, and energy. We are now ready to launch this review, which will be conducted by the Center for Naval Analyses (CNA).

Dr. Tyrus Cobb, a CNA Senior Fellow, will be in charge of this effort. Dr. Cobb was a National Security Council Special Assistant to President Reagan for Technology Affairs. He was responsible for managing and coordinating U.S. international science and technology policy, and, as such, brings a unique government-wide perspective on the formulation of these types of international cooperation. Former Maine Congressman and ex-Deputy Director of the Arms Control and Disarmament Agency, David Emery, will also participate as an independent consultant.

Dr. Cobb will report his findings and recommendations directly to the Deputy Secretary. Doug Faulkner, in the Office of the Deputy Secretary, will be the Department's point-of-contact for the review.

This will be the first comprehensive review of how the Department manages, evaluates, and sets priorities for its international cooperation. Our international agreements and activities will be of growing importance in the 1990s as we begin to implement the National Energy Strategy and as President Bush starts to flesh out his vision for a New World Order.

I urge and expect each of you to extend your fullest cooperation to this important endeavor.


James D. Watkins
Admiral, U.S. Navy (Retired)

ANNEX 2

**OUTLINE OF PROPOSED LETTER TO WHITE HOUSE
SUGGESTING NATIONAL POLICY STUDY**

ANNEX 2

OUTLINE OF PROPOSED LETTER TO WHITE HOUSE SUGGESTING NATIONAL POLICY STUDY

There is an urgent requirement for a comprehensive policy directive emanating from the White House that would provide direction for the conduct of the U.S. government's (USG's) international S&T activities. If the Secretary decides to take the lead in asking the White House to initiate a study to formulate such a directive, the following outline should serve as a guide for preparing the initial letter.

- Introduction/background:
 - There is a lack of formal policies and processes within DOE to deal with international S&T agreements.
 - As a result of an internal study, it is recommended that a national-level policy study be initiated to clarify the Administration's policy on international S&T cooperation in all major sectors.
- The study would integrate the USG's international S&T cooperative activities with the New World Order, addressing such issues as:
 - The end of the Cold War and the democratization of Eastern Europe and the Soviet Union.
 - The redirection of the national security debate from military competition to economic competitiveness.
 - The resulting inevitable shifts in national security R&D priorities.
 - The emergence of the environment as a major factor.
 - Technology transfer.
 - Cost-sharing with foreign partners on large-scale projects.
- The study would also:
 - Define the "equitable exchange" that ideally occurs under an international S&T agreement.

- Establish a framework to enable the USG to leverage and optimize the benefits derived from cooperation.
- Achieve a balance between national security, foreign policy, and S&T.
- Be a first step toward a regular, positive, cohesive dialogue within the U.S. government, focusing on national interests rather than turf battles.
- Conclusion and next steps:
 - We propose the study group be co-chaired by OSTP and NSC and include representatives from all relevant USG agencies. It might be housed within the FCCSET structure.
 - Given DOE's preeminent role in the USG's S&T community, we volunteer to serve as the executive secretariat.

ANNEX 3

OUTLINE OF PROPOSED SECRETARY OF ENERGY NOTICE
ON INTERNATIONAL S&T AGREEMENTS

ANNEX 3

OUTLINE OF PROPOSED SECRETARY OF ENERGY NOTICE ON INTERNATIONAL S&T AGREEMENTS

The Review Panel, with the concurrence of the Deputy Secretary, recommended that a Secretary of Energy Notice (SEN) be issued on international agreements. This annex outlines what might be included in such a document. Because the SEN establishes a cross-cutting function, we believe it is important that the Department incorporate the views of affected Secretarial Officers.

The Review Panel suggests inclusion of the following points in a draft SEN, which should then be coordinated throughout the Department. These points are not intended to be exhaustive or comprehensive; rather, they represent some basic elements of policies and procedures, which are currently lacking, to govern DOE's international agreements.

- Background: Why the SEN is needed.
- Objectives of DOE's international S&T agreements:
 - In general, to provide a complementary means to carry out the goals of the National Energy Strategy.
 - In particular, to promote U.S. interests in the following ways:
 - Seek partners to share in very expensive S&T initiatives.
 - Establish cooperative/collaborative efforts in specific areas of S&T to promote information exchange and ensure/speed up international scientific communication.
 - Promote transfer of U.S. products and technology. These efforts are of several types: technical assistance to less developed countries, transitional arrangements with the evolving economies of Eastern Europe, transfer of environmentally responsible energy technology.
 - Promote global environmental responsibility, e.g., R&D to solve energy emergencies, cooperation in establishing standards and procedures for nuclear power generation and radioactive waste disposal.
 - Promote alliance energy security through such activities as sharing technology for establishing strategic oil reserves.

- Support foreign policy, often at the behest of the State Department.
- Criteria for international agreements:
 - The general rule is that every effort be made to maximize the benefit of each international agreement to the U.S. taxpayer.
 - Specific considerations that should be addressed have been provided separately from this draft SEN, in annex 6. They should be reviewed, refined, and incorporated in the SEN.
- DOE's stance in interagency review process :
 - Submit to Circular 175 and other appropriate bodies:
 - All umbrella agreements (initiation, extension, or revision)
 - First agreement of any type with a new country
 - First agreement in a new area of S&T
 - Any annex that deviates from the spirit or scope of its umbrella
 - Any agreement being prematurely terminated.
- Actions:
 - Departmental officers issue strategies for international S&T agreements in their annual strategic plans.
 - Establish internal policy and review mechanism (Steering Committee)
 - Establish independent internal analysis and oversight, with assistance of objective, external expertise as needed (Analysis and Implementation Group)
 - Define cost-benefit framework.
 - Write order spelling out procedures for international agreements.
 - Evaluate existing agreements.
 - Analyze portfolio.
 - Identify opportunities for new agreements.

ANNEX 4

SURVEY QUESTIONNAIRE

International Agreements Survey

Agreement Title: _____

Program Office(s) (FE, ER, etc.): _____

Principal Subject(s) or Technical Field(s) (Oil, Coal, Fusion, etc.): _____

Term of Agreement (Effective date - Termination date): _____

Type of Agreement (MOU, Treaty, Informal, etc.): _____

Originating Organization (if known, e.g., Department of State, Secretary's Office, Assistant Secretary's office, Foreign Partner, National Laboratory, U.S. Ambassador to Foreign Partner, etc.): _____

Country(ies): _____

Other participating agencies or organizations (IEA, IAEA, etc.): _____

Reporting (minutes of meetings, annual reports, occasional biweekly report, etc. Specify to whom reports are circulated): _____

Progress Evaluation (annual reports, at renewal, informal, etc.): _____

Approximate annual funding by DOE and its contractors (if known): _____

Approximate annual FTE's by DOE and its contractors (if known): _____

Pending action and date (e.g. Initiation, Extension, Termination, Implementing Agreement or Annex, etc.): _____

(Continued on following page)

Office responsible for pending action: _____

Clearances required for pending action: _____

Principal Benefits:

Distribute 5 points among the following 5 categories to indicate what, in your judgement, are the principal benefits to the U.S. of the agreement. For example, if the principal benefits serve some broad foreign policy goal for the U.S. but also result in some cost savings to the U.S. research effort, enter the number 3 or 4 in the box corresponding to Foreign Policy and 2 or 1 in the box corresponding to Cost Savings.

☐

Technical or Scientific

- improved reliability, validity, verification through exchange of data or enlarged data base
- access to particular technical strengths or capabilities
- enhanced research capability through broadening of available expertise
- access to unique facilities

☐

Program Development

- pace of program increased
- scope of program increased
- establishment of common guidelines or standards where international agreement is beneficial

☐

Commercial Opportunities

- prospects for foreign markets improved
- availability of data beneficial to commercial interests
- prospective introduction of technology into marketplace

☐

Cost Savings

- avoids duplication by U.S. of foreign work
- reduced cost from cost or task sharing

☐

Foreign Policy

- principal benefits satisfy other foreign policy objectives

Principal DOE representative,
routing symbol, phone number: _____

ANNEX 5
DATA FORM

Department of Energy International Agreement

Bilateral: ☐ Multilateral: ☐ Agency, if any (IEA, etc.): _____

Program: _____ Subject: _____

Country(ies): _____

Who initiated this agreement? _____

Relationship, if any, to other agreements: _____

Historical highlights: _____

Date effective: _____ Length: _____

Describe the U.S. part in the agreement: _____

Who will perform the work? _____

Who is the point of contact? _____

Direct \$ commitment, if any: a)DOE: _____ b)Partner(s): _____

FTEs: a)DOE: _____ b)Lab: _____ c)Contractor: _____

Prorated cost of FTEs (multiply salary by annual % of time devoted to agreement): _____

How much, if any, of this work would have been done domestically in the absence of an international agreement? None ☐ Little ☐ Half ☐ Most ☐ All ☐

What is the benefit to the U.S.? _____

What do(es) the foreign partner(s) gain from the U.S.? _____

Briefly describe any of the following that apply:

Trade implications: _____

Technology transfer implications: _____

Benefits: Distribute 5 points amongst the following: Cost savings _____ Foreign policy _____

Program development _____ Commercial applications _____ Technical/scientific _____

Overall, is this agreement a net plus or minus for the U.S.? ☐

for the foreign partner(s)? ☐

ANNEX 6

**CONSIDERATIONS TO BE ADDRESSED IN REQUESTING DEPARTMENTAL
APPROVAL OF ACTIONS ON INTERNATIONAL S&T AGREEMENTS**

ANNEX 6

CONSIDERATIONS TO BE ADDRESSED IN REQUESTING DEPARTMENTAL APPROVAL OF ACTIONS ON INTERNATIONAL AGREEMENTS

- What is the proposed action (initiation, termination, extension, etc.)?
- Who are the parties to the agreement? Who will sign? When?
- What is the purpose of the agreement?
- What are its linkages to other agreements?
- Who wants this action (e.g., DOE program official, another cabinet department)?
- Who will be responsible for its implementation?
- What are the historical highlights of the agreement?
- How do the U.S., DOE, and foreign partner(s) benefit from the agreement?
- What DOE resources (staff time and cost) will be required for implementation? For how long?
- What are the implications of the proposed action for trade, technology transfer, nonproliferation, foreign policy, etc.? What are the potential sensitivities?
- What is the extent, if any, of White House or Congressional interest?
- Who in the Department has reviewed and concurred in the proposed action?
- Has the proposed action received the Department of State's Circular 175 approval? If not, why not?

ANNEX 7

REFLECTIONS ON WHAT CONSTITUTES
A "GOOD" AGREEMENT

REFLECTIONS ON WHAT CONSTITUTES A "GOOD" AGREEMENT

Much of the impetus for the creation of this Panel lay in the perceived requirement to understand better the benefits realized by the United States from participation in particular international science and technology efforts. In short, just how would one go about differentiating a "good" from a "bad" agreement? The success or usefulness of an agreement to the Department cannot be judged from size or cost alone. It is likely that the very largest of the projects will be well managed and successful because of the scrutiny they receive by DOE management, by OMB and Congress, and by the internationally concerned community within the Federal Government. Therefore it is not surprising that the International Thermonuclear Experimental Reactor (ITER) program, for example, which is the most recent of the three large fusion energy projects, received high marks from DOE management and from OMB and State Department officials as an example of a "good" international agreement.

While certain objective criteria must be applied in judging the value of a particular agreement, in many cases the responsible officials will rely on subjective evaluations. As gleaned from the interviews and from the case study analyses, the Panel identified six principles considered by DOE technical managers as contributing to the success of an international agreement: complementarity, scale, communication, universality, realistic expectations, and constancy. This perspective of the DOE staff is worthy of note and is summarized below.

By far the most important principle in a successful agreement is the contribution by the participating parties of complementary resources that result in scientific progress that would not have occurred had the parties proceeded on their own. All of the parties benefit from the value added by the collaboration. The benefits result from the mix of scientific expertise with unique experimental facilities or resources. Examples are theoretical physicists working at major accelerator laboratories or scientists having access to unique geological features. Although the details will vary from one example to another, in each case all the participants are aware of and realize well-defined benefits from the collaboration.

This is not a particularly profound observation since it mirrors on a large scale the collaborative activities of individual scientists. Scientists on their own seek to collaborate only when their partners bring complementary skills or facilities to the collaboration. The tar sands agreement with Canada is one in which the U.S. benefits from unique natural resources plus a developing technology for exploiting those resources, and Canada benefits from the possibility of future trade. The radioactive waste management agreement with Canada is also one in which the U.S. benefits from access to geological resources that it is barred by law from investigating within the U.S., and in which Canada benefits from the development of the waste handling technology.

Note that it is complementarity and not comparability that determines the success of the agreement. In some cases, international agreements are signed between governments or between ministers because the countries have comparable interests and abilities. The signing parties believe that through cooperation they should be able to accomplish more together than they could separately. If their scientists and science managers do not see complementary benefits, however, they will not pursue the agreement energetically. On the other hand, two parties may not be comparable at all, and yet a fruitful collaboration can result. Consider the example of scientists from one country working in the laboratories of a more technologically advanced nation. The less developed country benefits from the training its scientists receive. The advanced nation benefits immediately from the work performed and may also get future payoffs when the scientists return to their country to establish their own programs with the purchase of equipment from their host country.

The second principle is one of scale, of achieving a critical mass of money and staff that could not be mounted by any one of the partners alone. This is the principle highlighted by the National Energy Strategy and the one for which ITER is frequently cited as an example. Currently, the Superconducting Super Collider (SSC) is another example of an expensive scientific enterprise of broad scientific benefit which could be made more affordable through international collaboration.

The third principle is communication. All parties must be committed to open, frequent, easy communication of the results of their collaboration with due consideration for protection of intellectual property rights. Regular meetings incorporated into the terms of the agreement will minimize the lapsing of an agreement by one of the partners. Communication is also important because the main benefit derived from international collaboration is access to scientific discovery and technological innovation. Communication is the life blood of scientific research, and universally scientists strive to inform each other of the results of their work. With the putative doubling of the scientific literature every seven years, access to important or useful discoveries is hampered by the sheer volume of the scientific literature that must be reviewed. International agreements that foster the dissemination of information focused in specific technologies make up the bulk of the DOE agreements. Open and free communication is, however, not without risk because countries risk forfeiture of commercial benefits that could be derived from that information. For this reason, dissemination of information can be one of the most contentious issues in policy debates surrounding international agreements. Indeed, much of the current process for reviewing proposed international S&T agreements has arisen out of a need to address this factor as completely as possible.

The fourth principle is the universality of the benefits derived from the collaboration, where narrow commercial or economic advantages are less important than the overall benefits. Almost all agreements on environment, health, and safety issues are driven by universally perceived benefits. Indeed, in environmental issues, the entire world stands to benefit. The international accords on chlorofluorocarbons are examples where a narrow fixation on economic competitiveness has been overtaken by concerns for a healthy environment.

The fifth principle is one of realistic expectations, where the goals of the collaboration are concrete and realistic. The more general the goals of an agreement, the less likely the participants will be able to initiate fruitful collaborations. Even agreements that are weak in other factors can be successful if the parties are realistic about whatever modest objectives are to be achieved. If the major technical players in the agreement are not able to work out commonly accepted goals before the agreement is signed, there is no reason to expect that they will be able to do so later.

The final principle is constancy. In climates of tight budgets requiring tradeoffs between research programs, maintaining constancy of commitment to an international agreement may be secondary to other national objectives. However, an agreement that fails because of a failure of commitment on the part of one of the participants fails in more ways than unrealized objectives. Lack of constancy calls into doubt the overall reliability of the failing partner and engenders bitterness and distrust. One of the main reasons the OMB has become involved in the process for reviewing international agreements prior to consummation is to ensure that the proposed collaboration has sufficient merit to ensure constancy of funding.

Note that in the discussion of the principles of successful international agreements, the issues of costs and benefits have not been raised. This is because consideration of costs and benefits are not unique to international collaboration but rather lie at the heart of all programmatic decisions of the Department. As with all programs, it is important to identify benefits from a collaborative approach to a particular S&T objective. Obviously a program for which the benefits are poorly defined or realized will be a poor candidate for support. However, this is as true for domestic programs as it is for international ones.