

Developing Country Environmental Needs and Aid

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Recognition is growing that developing countries may not be able to achieve their development objectives without also addressing their serious environmental problems. This chapter briefly reviews developing country environmental problems and their environmental investment needs (as characterized by the World Bank and the United Nations Conference on Environment and Development). It also discusses the environmental market in developing countries, and reviews estimates of environmental aid as a component of Official Development Assistance (ODA).

DEVELOPING WORLD ENVIRONMENTAL PROBLEMS

Developing country environmental problems are serious and wide ranging. Some arise from poverty and the overuse of resources that can result from poverty. Some result from development projects and industrialization undertaken with too little concern for the environment. Some result from the environmental pressures of urbanization and population growth. Some reflect global concerns about stratospheric ozone depletion, greenhouse gas emissions, and biodiversity.

The economic and human costs of inadequate environmental infrastructure or environmental management in developing countries are vast. According to the World Bank, two million people, mostly children, die each year from diarrheal diseases spread through contaminated water. Between 300,000 and 700,000 premature deaths each year could be averted in developing countries if concentrations of dust, soot, and other suspended particulate matter from air pollution could be brought down to levels considered safe by the World Health Organization. Although only recently receiving attention from research-

ers, exposure to indoor air pollution may pose even greater health risks. Solid waste collection and disposal is inadequate in the cities of many developing countries; the common alternative of dumping refuse in waterways or public spaces can increase the likelihood of exposure to disease carrying organisms. Health risks and environmental contamination from hazardous waste can also be a problem, especially where industrial growth is rapid.¹

Serious damage from pollution and overuse of renewable resources also challenge the developing world's fisheries, agriculture, and forests, with significant adverse effects for productivity and biological diversity. Studies in several developing countries have found that soil erosion reduced economic output by amounts equal to between 0.5 and 1.5 percent of GDP—offsetting a significant amount of annual growth (as measured by conventional means).² While per capita measures of resource use and environmental impact are low compared with that of developed countries, the fast climb in developing country populations and the drive to increase incomes have prompted widespread concern about sustainable levels of growth.

Estimates of the investments needed to address the environmental needs of developing countries are imprecise. Often, environmental needs and basic development requirements overlap. The World Bank estimates that as little as 2 percent of sewage in Latin America is treated. Worldwide, 1.7 billion people lack access to sanitation services; even in urban areas, the number of people without such services grew by more than

70 million in the 1980s. Roughly 170 million people in urban areas lack nearby access to potable water; in rural areas an estimated 855 million people lack safe water.³ These families often must buy water from vendors, paying 4 to 100 times more per unit of water (with a median of 12 times more) than families connected to municipal water supplies.⁴

The World Bank, in an effort to put environmental protection costs in context, identified a sample of benefits that might arise if \$75 billion per year (about 1.4 percent of the projected GDP in developing countries in the year 2000) were invested in developing countries for environmental improvement.⁵ As shown in table 2-1, these benefits could be substantial. Among them: reducing child mortality by 3 million per year; reductions in respiratory diseases; and stabilizing world population at a lower level than would otherwise be expected. The costs, according to the Bank, might seem large in absolute terms, but would be small in relation to added incomes produced from “good economic management.” Moreover, many of the lower cost items (e.g., family planning and costs associated with increasing education for girls) could have a high pay-off. The examples are illustrative; the Bank did not include programs to, as examples, restore degraded areas or conduct remedial cleanup of already polluted sites.

Some of the environmental programs listed in table 2-1, such as reducing emissions from power plants and industry, would require more expensive or more sophisticated technology than is

¹ Examples cited are from the World Bank, *Development and the Environment: World Development Report 1992* (Oxford University Press, 1992), pp. 44-63.

² Ibid., p. 56.

³ Ibid., p. 47.

⁴ As cited in John Briscoe, “When the Cup is Half Full,” *Environment*, Vol. 35, No. 4, May 1993, p.10.

⁵ Such investment levels would be comparable as a portion of GDP to commitments made by several advanced industrial economies during the 1970s, when environmental protection emerged as an important priority in these countries. The \$75 billion figure cited above assumes rapid economic growth rates. If developing world growth occurred at the rate prevailing in the 1980s, and if countries committed only 1 percent of GDP to the environment \$50 billion in additional investments would be required.

Table 2-I—Estimated Costs and Long-Term Benefits of Selected Environmental Programs in Developing Countries

Program	Additional investment in year 2000 (in 1990 dollars)			Long-term benefits
	Billions of dollars per year	As a percentage of GDP in 2000 ^a	As a percentage of GDP growth, 1990-2000a	
Increased investment in water and sanitation. ^b	10.0	0.2	0.5	Over 2 billion more people provided with service. Major labor savings and health and productivity benefits. Child mortality reduced by more than 3 million per year.
Controlling particulate matter (PM) emissions from coal-fired power stations.	2.0	0.04	0.1	PM emissions virtually eliminated. Large reductions in respiratory illnesses and acid deposition, and improvements in amenity.
Reducing acid deposition from new coal-fired stations. ^c	5.0	0.1	0.25	
Changing to unleaded fuels; controls on the main pollutants from vehicles. ^c	10.0	0.2	0.5	Elimination of pollution from lead; more than 90 percent reductions in other pollutants, with improvements in health and amenity.
Reducing emissions, effluents, and wastes from industry.	10.0-15.0	0.2-0.3	0.5-0.7	Appreciable reductions in levels of ambient pollution, and improvements in health and amenity, despite rapid industrial growth. Low-waste processes often a source of cost savings for industry.
Soil conservation and afforestation, including extension and training.	15.0-20.0	0.3-0.4	0.7-1.0	Improvements in yields and productivity of agriculture and forests, which increase the economic returns to investment. Lower pressures on natural forests. All areas eventually brought under sustainable forms of cultivation and pasture.
Additional resources for agricultural and forestry research, in relation to projected levels, and for resource surveys.	5.0	0.1	0.2	
Family planning (incremental costs of an expanded program to stabilize future world population at 10 billion rather than 12.5 billion).	7.0	0.1	0.3	Could contribute to proportionately less environmental damage resulting from natural resource use, consumption, and waste.
Increasing primary and secondary education for girls so that as many girls as boys enroll in primary and secondary education in low-income countries.	2.5	0.05	0.1	The World Bank maintains that improving education for girls should be seen as a critical developing world environmental priority; with the education, women are likely to have smaller families, and to manage natural resources (a critical role of many women in developing countries) more productively.

^aThe GDP of developing countries in 1990 was \$3.4 trillion, and it is here projected to rise to \$5.4 trillion by 2000 (in 1990 prices). The projected GDP growth rate is 4.7 percent a year, significantly higher than historic rates except in Asia. If the GDP growth rate for the 1980s of 3.4 percent continued in the 1990s, developing country GDP in 2000 would total \$4.7 trillion.

^bCurrent developing world spending on water and sanitation was estimated by the World Bank to be \$15-\$20 billion per year.

^cCosts may eventually be lowered by the use of new combustion technologies and other measures discussed in ch. 6.

SOURCE: Taken with some modifications from the World Bank, *Development and the Environment: World Development Report 1992* (Oxford: Oxford University Press, May 1992), p. 174, table 9.1.

UNDP AND WORLD BANK



Poor families without access to potable water typically pay 12 times as much per unit to buy water from vendors as middle-class families pay for water supplied through municipal systems.

readily available in many developing countries. Some of this technology could be obtained from foreign sources. Table 2-1 emphasizes “end-of-pipe” pollution control technologies (treatment plants, air pollution control devices, waste incinerators) for power plants and factories. In some cases (e.g., electric power plants) life-cycle costs could be reduced through use of cleaner technologies that are much more energy efficient and generate less pollution. The front-end costs of such technologies are often higher—an important barrier to their use in developing countries—but

they otherwise can be an attractive option from both an economic and environmental standpoint.

ENVIRONMENTAL MARKETS IN DEVELOPING COUNTRIES

The current market for environmental goods and services (EGS) in developing countries is small compared to that of industrialized countries. However, as these countries grow, they are increasingly addressing environmental needs in their development strategies. Environmental needs associated with water supply and wastewater treatment, electric power, motorized transport, solid and hazardous waste management, industrial pollution prevention and control, and environmental monitoring could produce growing business opportunities. These opportunities are discussed in more detail in appendix A.

It is hard to say how large the developing country environmental market is or will be as few estimates separately identify this market. Several estimates have been made of current and prospective EGS demand in non-OECD countries—a grouping that includes newly industrialized countries (NICs), developing nations, and the transforming economies of Eastern Europe and the former Soviet Union. These estimates and projections vary widely. Different definitions of ‘environmental goods and services’ partly explain the variations in projections.

One study concluded that these non-OECD countries accounted for \$36 billion out of a \$200-billion global EGS market in 1990, and that these markets could grow to \$55 billion by the year 2000.⁶ Another estimate concluded that the non-OECD market could grow to \$61 billion by 1996.⁷ The International Finance Corporation (IFC), the private sector lending affiliate of the World Bank, suggests that one-third of the current

⁶ OECD, *The OECD Environment Industry: Situation, Prospects and Government Policies*, OCDE/GD(92)1 (Paris: OECD, 1992).

⁷ Grant Ferrier, President of Environmental Business International Inc., testimony to House Committee on Merchant Marine and Fisheries, Subcommittee on Environment and Natural Resources, Feb. 25, 1993.

global environmental market is found outside the United States, Canada, Europe, and Japan.⁸ The IFC believes the world market (which it estimated to be \$300 billion) could grow to \$600 billion by the year 2000.

Environmental business opportunities in some developing countries and regions are already appreciable. Some of these countries could become important new markets for environmental technologies and services, as has been the case with some newly industrialized countries that were considered developing countries a few years ago. Environmental markets are growing in relatively prosperous, fast-growing countries—East Asia and Latin America, such as Mexico, Brazil, Chile, Malaysia, and Thailand. One study estimated the annual environmental market in the six ASEAN nations to be \$1.8 billion.⁹ Another study estimated the 1992 environmental market in six Latin American countries to be \$2.4 billion.¹⁰ Opportunities are also growing in some lower-income countries, including India and China. China, for example, plans 80 billion yuan (\$15 billion) for expenditures in environmental projects or projects with an environmental component in its current five-year plan that ends in 1995.¹¹

Lack of financing constrains growth of some developing country environmental markets, however. Financial packages—private funds, official assistance and credits, and innovative project financing approaches—can be the determining factor in contract awards. The opening of various developing country economies to greater foreign investment and the loosening of state controls on

energy, transport, and manufacturing industries—including privatization—could provide opportunities for environmentally favorable investment.

Some innovative approaches for financing infrastructure projects have potential to ease financial strains on developing country agencies while improving project performance.¹² In one approach, called build-operate-transfer (BOT), a private company builds and operates a project, such as a water treatment facility, power plant, or road, until it achieves an agreed-upon payback. At that time, the facility is turned over to the local authority. Payments to the private company may come from revenues generated by the project (such as water fees) or from government payments. Financing is often the responsibility of the private developer, who also may assume the risks of construction cost overruns or delays, and inefficient operation. The developer thus has more incentive to build and operate the facility efficiently than would be the case with 'turnkey' projects transferred upon completion. A training component may be included in the project. However, financial risks for developers and investors can be substantial and the cost-effectiveness of the approach has been questioned. The BOT approach is new and evolving, with little track record to date.

Firms in the United States, Japan, Germany, the United Kingdom, France, Scandinavia, and other industrialized countries compete for environmental projects in developing country markets. Some firms have production operations or subsidiaries in several OECD countries. Environ-

⁸ International Finance Corporation, *Investing in the Environment: Business Opportunities in Developing Countries* (Washington, DC: The World Bank and the IFC, 1992), p. iii.

⁹ Jonathan Menes, Acting Assistant Secretary for Trade Development, U.S. Department of Commerce, testimony before the House Committee on Merchant Marine and Fisheries, Subcommittee on Environment and Natural Resources, Feb. 25, 1993. ASEAN is the Association of South East Asian Nations, consisting of Brunei, Indonesia, Malaysia, Philippines, Singapore, and Thailand.

¹⁰ USAID, *Environmental Market Conditions ~& Business Opportunities in Key Latin American Countries*, Business Focus Series, October 1992. The six countries are Argentina, Brazil, Chile, Colombia, Mexico, and Venezuela.

¹¹ As cited in Foreign Broadcast Information Service, "China Battles Hard to Clean Up Environment" *Environmental Issues*, Nov. 12, 1992, p. 6.

¹² These approaches are discussed in International Finance Corporation, *Investing in the Environment: Business Opportunities in Developing Countries*, op. cit., box 1, p. 14.

mental infrastructure projects often involve much locally or regionally provided labor and materials (e.g., construction labor, cement or other low-value materials, and local assembly); in such projects, prospects for industrial country exports can be limited to project management and relatively sophisticated goods and services.

The NICS and many developing nations are by no means wholly dependent on EGS imports; in some cases local firms produce major portions of their EGS market needs. The technical capabilities of environmental industries in such countries as Singapore, South Korea, Taiwan, Mexico, Brazil, India, and China are expanding. In fact, environmental goods are sometimes exported by these countries—often at lower prices than U.S., European, or Japanese firms can offer. At the same time, environmental firms headquartered in OECD countries are finding opportunities for joint ventures and licensing with local and regional companies.

As their environmental investments grow, decisionmakers in developing countries will need to choose among competing technologies. Some developing nations may be reluctant to use equipment that does not meet stringent U. S., EC, or Japanese environmental standards. Yet, the most advanced technology and equipment from the industrialized nations may not be affordable. Even if the price is acceptable, other considerations—such as lack of technically trained personnel, limited resources for maintenance, and inadequate support infrastructure—may make advanced equipment inappropriate.

Under such circumstances, less expensive but reliable equipment could be a better choice than state-of-art facilities. The appropriate mix of technologies in a given country will depend on

the types and sources of pollution, physical factors such as climate and geology, availability of capital, and technical and managerial capabilities. In some cases, it makes sense to modify technologies to circumstances in developing countries. For instance, Japan is building lower cost (and lower pollution removal efficiency) flue-gas desulfurization equipment for Asian markets¹³ and a number of U.S. firms have lower cost, lower efficiency air pollution control technologies available.

Developing country decisionmakers also may be able to keep costs below what they otherwise might be through use of “pollution prevention” and cleaner production processes and technologies to complement end-of-pipe approaches (see box 2-A.) Pollution prevention cannot eliminate the need for investments in conventional pollution control and equipment or of treatment facilities. But, when practiced effectively, it can lead to savings—in some cases, appreciable savings—relative to what otherwise would be required. Thus, it can contribute to sustainable development objectives and could reduce longer term costs for environmental protection.

ODA AND THE ENVIRONMENT

ODA has long been an important source of funds for developing countries. In 1991, ODA amounted to nearly \$57 billion—roughly twice as much as foreign direct investment in developing countries.¹⁴ About \$42 billion of the ODA was bilateral; \$14 billion was multilateral.¹⁵ ODA serves a variety of purposes, such as meeting basic human needs, and helping lower income countries to build or rebuild economic infrastructure. The United States and Japan are the largest donors in absolute terms, although other countries

¹³ *International Environment Reporter*, “Japan to Work With China In Developing Cheap Desulfurization Units For Plants,” July 29, 1992, p. 497; and Kawasaki Heavy Industries, Ltd. information booklet, 1992.

¹⁴ OECD, *Development Cooperation 1992 Report* (Paris: OECD, 1992), P. 78.

¹⁵ Multilateral aid is provided by a combination of countries and sources, through organizations such as the World Bank or U.N. agencies. Bilateral aid flows from only one donor country government. Private development assistance, such as from religious or wildlife conservation groups, is unofficial and generally operates outside the purview of government.

Box 2-A-Assistance For Pollution Prevention and Cleaner Production

Pollution prevention—the practice of first considering ways to prevent generation of pollution or waste, thus reducing the need for subsequent treatment or disposal—accounts for a small but growing part of efforts to deal with industrial pollution and waste in industrialized countries.¹ While controlling or treating waste and pollution through remedial measures or end-of-pipe controls is often essential, pollution prevention in many cases is a less expensive and environmentally preferable option.

As pollution prevention has become more prominent, a few industrialized countries have begun to support pollution prevention and cleaner production activities through their development assistance. A modest level of support for bilateral and multilateral technical assistance for pollution prevention and cleaner production is now available.

Bilateral Programs

Although no survey has been conducted, the Scandinavian countries and The Netherlands have been leaders in promoting pollution prevention in developing countries and in Eastern Europe. For example, Denmark, Norway, and Sweden have initiated pollution prevention programs as part of their follow up to a decision by the Nordic Council of Ministers to assist Eastern European countries in improving their environment. In 1991, the Danish Ministry of Environment launched its Eastern Europe pollution prevention assistance program. To date, \$50 million has been spent on a variety of projects. While some support is for environmental infrastructure projects (such as wastewater and sewer systems), a pollution prevention assessment is conducted on all projects; the assessments may identify opportunities to reduce the size and cost of treatment systems. Increased funding for the program, on the order of \$30 million per year, is under discussion. Norway and Sweden also have begun programs.

The Netherlands has funded several pollution prevention projects. One is a joint project operated by the University of Amsterdam and a university in Indonesia. The objective is to build capacity in Indonesia for the implementation of cleaner production strategies.

In 1992, USAID launched its own environmental pollution prevention program (EP3). The program also involves the U.S. Environmental Protection Agency and cooperative agreements with U.S. environmental associations. These arrangements will be used to tap environmental expertise from industry, consulting groups,

¹U.S. Congress, Office of Technology Assessment, *Serious Reduction of Hazardous Wastes: For Pollution Prevention and Industrial Efficiency*, OTA-ITE-317 (Washington, DC: U.S. Government Printing Office, September 1988).

(Continued on next page)

provide a larger percentage of their gross national products (see table 2-2).¹⁶

Donor countries vary widely in their aid priorities. For example, only about two-thirds of U.S. bilateral ODA in 1989 and one-third in 1990 was project-specific assistance—lower figures than other aid donors. The rest involved cash or

commodity transfers to countries where the United States has special security interests, or debt relief (see fig. 4-1).¹⁷ There is also considerable variation in the geographic distribution of aid (see table 2-3). The United States dispersed over 40 percent of its aid in 1991 to Egypt (a low-income country) and Israel (a high-income country).

¹⁶Table 2-2 gives figures for “net disbursements,” as defined by the DAC. The DAC defines net disbursements as equal to gross disbursements, minus repayments of principal on any outstanding aid loans. Interest payments are not subtracted out. Thus, net aid money flows from a donor country will in general be less than the DAC figures by the amount of interest payments received.

¹⁷OECD, *Development Cooperation 1991 Report* (Paris, OECD, 1991), p. 152. U.S. debt relief in 1990 was extraordinarily high.

Box 2-A--Assistance For Pollution Prevention and Cleaner Production--Continued

academia, and professional associations. Activities include pollution prevention audits, training, and assistance with national program development, as well as broader environmental quality assistance. Core funding of \$20 million for EP3 is expected during the five-year life of the project; other agencies may buy in.

United Nations Activities

United Nations agencies---including the United Nations Environment Programme (UNEP), the United Nations Industrial Development Organisation (UNIDO), and the United Nations Development Programme (UNDP)-- have several pollution prevention and cleaner production activities underway. UNEP's Industry & Environment Programme Activity Centre established a Cleaner Production Programme in 1989 to raise awareness in developing countries about the benefits of prevention. The Centre collects and disseminates information to facilitate transfer of know-how and cleaner production techniques and technology to developing countries. Donor countries provide much of this information and often provide bilateral funding to carry out specific activities. For example, Finland's international development assistance agency supported preparation of 50 case studies on cleaner production in the pulp and paper industry, and the United Kingdom has issued a publication, called "Cleaner Production Worldwide," in collaboration with UNEP.

UNEP offers training and technical assistance, often in cooperation with other agencies. For example, it is assisting the World Bank and the Chinese National Environmental Protection Agency with a \$15 million cleaner production project (with half the funds coming from the World Bank). It is anticipated that roughly 100 Chinese experts will receive training about The Netherlands's systematic pollution prevention process audit procedure (originally developed by the U.S. EPA). There are also plans to install cleaner process equipment in at least 10 factories. Recommendations may be made about changes in government environmental and industrial policies to overcome end-of-pipe biases and to add incentives for cleaner production. A dissemination phase will aim to prompt more widespread action in China. At certain stages of the project, China will hire foreign consultants as advisers, and UNEP will convene a special foreign advisory group to assist in the policy review. The project could encourage the emergence of a market for cleaner process technology in Chinese industry.

Another multilateral activity, a joint UNEP/UNIDO project begun in 1993 to establish National Cleaner Production Centers in 20 developing countries, also could encourage new markets for cleaner process technologies. The cost of the centers (\$750,000 each, for five years) will be funded by UNEP and UNIDO using bilateral monies from several European countries (Denmark has pledged \$1.6 million). UNIDO and UNEP will train key personnel for the centers and assist with industry demonstration projects.

Although Japan is diversifying its aid, over 30 percent of its 1991 aid disbursements went to five Asian countries.

Environmental protection emerged relatively recently as a prominent ODA issue.¹⁸ In the 1970s and 1980s, development aid from DAC members and the World Bank was heavily criticized by

environmental groups and other nongovernmental organizations (NGOs) for contributing to serious environmental problems in the developing world. Often, these problems arose from inadequate attention to the environment in large development projects (e.g., dams, power plants, and industrial facilities).

¹⁸ Much of the groundwork for including environmental protection as a specific objective in bilateral and multilateral ODA was developed by the U.N. World Commission on Environment and Development in its 1987 report, *Our Common Future*. This document is best known for presenting a concept of "sustainable development" that stressed the link between economic growth and wise management of natural resources. World Commission on Environment and Development, *Our Common Future* (New York, NY: Oxford University Press, 1987). Some of the groundwork was also developed in the 1972 United Nations Conference on the Human Environment and its Stockholm Declaration of "Only one Earth."

Table 2-2—ODA Performance of DAC Countries
1991 Net Disbursements

	Million \$	Percentage of GNP
Australia	1,050	0.38
Austria	548	0.34
Belgium	831	0.42
Canada	2,604	0.45
Denmark	1,200	0.96
Finland	930	0.76
France ^a	7,484	0.62
Germany	6,890	0.41
Ireland	72	0.19
Italy	3,352	0.30
Japan ^b	10,952	0.32
Netherlands	2,517	0.88
New Zealand	100	0.25
Norway	1,178	1.14
Portugal	213	0.31
Spain	1,177	0.23
Sweden	2,116	0.92
Switzerland	863	0.36
United Kingdom ^b	3,248	0.32
United States ^b	11,262	0.20
Total DAC ^c	56,709	0.33
Unweighed DAC average —		0.49

a Including overseas territories (TOMS) but not overseas departments (DOMS).

b Includes forgiveness of non-ODA debt as follows: United States, \$1,855 million in military debt; United Kingdom, \$17 million in debt from export credits; Japan, \$7 million in debt from export credits. Exclusion of these amounts would change the 1991 ratio for the United States to 0.17, but would not appreciably change the ratios for the United Kingdom or Japan.

c excludes the amounts shown in footnote b.

SOURCE: OECD, *Development Cooperation 1992 Report*, pp. A-8, A-9, table 1.

In 1976, the United States became the first DAC member to institute formal procedures for environmental review of its aid.¹⁹ Since then, Congress has required USAID to upgrade environmental considerations in its programs on



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Energy recovery from palm oil wastewater treatment, Malaysia. Environmental projects can create business opportunities not only for environmental firms but for providers of other needed equipment, such as the engine used at this facility.

several occasions. By the late 1980s, several other donors and multilateral institutions had begun to consider ways to mitigate or reduce the adverse environmental impacts of development projects they fund. In 1992, a DAC Working Party on Environment and Development, set up in 1989, issued guidelines to help its members incorporate environmental considerations into their development assistance.²⁰

In addition to seeking to avoid environmental damage from ODA, DAC members fund projects or project components specifically aimed at improving the environment and encouraging sustainable management of resources in developing countries. Many DAC members contribute bilateral or multilateral aid to help developing countries address global environmental issues such as depletion of stratospheric ozone, global climate change, and biological diversity.

¹⁹ OECD, *Development Cooperation: 1990 Report* (OECD, Paris, 1990), p. 52. These procedures, adopted in response to the National Environmental Policy Act of 1969, can be found in 22 Code of Federal Regulations 216.

²⁰ “Guidelines on Good Practices for Environment and Aid for Aid Agencies,” “Guidelines for Environmental Impact Assessments and Surveys,” “Guidelines for Aid Agencies on Involuntary Resettlement Related to Aid Projects,” and “Guidelines for Aid Agencies on Global Environmental Projects.” All “Guidelines” are OECD, Development Assistance Committee, 1992.

Table 2-3—Top Five Recipients of ODA From Major Donors (Gross Disbursements, 1990-1991)

Donor and the top five recipients	Percentage of total ODA	Donor and the top five recipients	Percentage of total ODA
<i>United States:</i>		<i>United Kingdom</i>	
1. Egypt	32.1	1. India	5.1
2. Israel	8.3	2. Bangladesh	3.2
3. Honduras	2.4	3. Kenya	2.4
4. Nicaragua	2.2	4. Malawi	1.8
5. Jamaica	2.1	5. Zambia	1.8
<i>France:</i>		<i>Germany</i>	
1. Cote d'Ivoire	5.5	1. Kenya	6.1
2. New Caledonia	4.2	2. Turkey	5.1
3. Polynesia, French	3.8	3. Egypt	4.2
4. Morocco	3.6	4. Zambia	4.0
5. Senegal	3.4	5. Ghana	3.5
<i>Japan:</i>		<i>Total DAC:</i>	
1. Indonesia	10.8	1. Egypt	9.4
2. Philippines	7.4	2. Indonesia	3.2
3. China	7.1	3. China	2.5
4. Thailand	4.8	4. Israel	2.3
5. Malaysia	4.5	5. Bangladesh	2.0

SOURCE: OECD, *Development Cooperation 1992 Report*, pp. A-58, A-60, A-64, A-65, table 43.

This environmental aid takes several forms:

- support for institution and capacity building and training. Examples include technical assistance and cooperation for development and implementation of environmental management procedures, identification of environmental priorities, and training or education of personnel and officials (box 2-B). As is discussed in chapter 5, much U.S. environmental aid is of this sort. Although the purpose of such aid may be to build up capabilities in developing countries, much of the experience and technical background on environmental management resides in developed countries. Developed country consultants often are hired to carry out these activities.
- support for environmental infrastructure and for mitigation of environmental impacts in development projects. This can include grants for pre-project studies (such as feasibility studies), often conducted by donor country firms, and confessional financing of capital projects. While the United States routinely

funds feasibility studies, its provision of confessional financing for capital projects is less frequent than many other donors.

Much environmental aid has been undertaken in rural areas, often as part of rural development programs. With increased migration and population growth in urban areas, urban environmental problems are becoming a more significant concern and focus for aid. (Most of the population and much of the aid continues to be rural, however).

In some developing countries, environmental problems associated with rapid industrialization (e.g., air and water pollution, hazardous and toxic waste) have become a focus for environmental aid. Most projects focus on treatment and control of waste after it is generated without first considering means to prevent waste or pollution in the first place. Such means, usually called pollution prevention or cleaner production approaches, often can achieve environmental goals in a more cost-effective way than conventional treatment alone. While pollution prevention and cleaner

Box 2-B—Technology Cooperation and Technical Assistance

Bilateral Activities

Many donor countries help developing countries with training, support collaborative research and development and assist with developing environmental standards and regulations. While primarily intended to strengthen developing country capacities, such activities may contribute to longer term commercial relationships. Technical training may expose developing country technicians and managers to equipment sold by donor country firms. People from donor countries that are engaged in collaborative research and development may gain a better understanding of how to adapt products to developing country needs. Donor country officials or consultants, in advising on environmental regulations, may be partial to their own national environmental standards and regulations; if their advice is followed, subsequent regulations may, to some degree, favor technologies known to be able to meet the donor country's standards.

Many different public and private agencies and institutions from donor countries may engage in such cooperative activities with their developing country counterparts. (Some activities qualify as "official" development assistance; others do not). Examples from the United States, such as the United States Environmental Training Institute and the United States-Africa Environmental Partnership, are discussed in appendix B. A sampling of activities from other countries:

Germany: The German government funds the Carl Duisberg Gesellschaft (CDG), a non-governmental organization with close ties to German industry, for developing country environmental training. About half the training takes place in Germany; the remainder in the developing country. Since 1990, the CDG has been working with developing country manufacturing associations and planning or manufacturing ministries on environmental improvements in industrial processes. It also undertakes training pertinent to industrial water pollution and water use in several Saharan countries, and industrial energy efficiency in members of the Southern African Development Cooperation Countries. (Germany's environmental aid is discussed further in chapter 5.)

Japan: Several Japanese programs provide environmental training for developing country officials. Japan has provided funds for environmental management centers in Thailand, China and Indonesia, which, among other functions, undertake and provide training for environmental monitoring. Japan also is cooperating with Indonesia and China on joint projects to adapt, develop and transfer simplified desulfurization equipment for developing country use. (Japan's environmental ODA, including the "green aid plan" administered by the Ministry of International Trade and Industry, are discussed in chapter 5.)

The Netherlands: A 40-million-guilder fund (known as MILIEV) was set up in 1993 for transferring environmental technologies to developing countries. Private sector projects that would contribute to sustainable development are eligible for government financial support that could cover up to half the costs of the project. The projects must benefit the environment and in time must be managed by the recipient country.

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production approaches could become an important part of developing country environmental strategies, they have received little attention from development assistance agencies until very recently. Box 2-A describes recent activities by some donor nations and the United Nations Environment Programme, which has had a small program to promote cleaner production since 1990.

Estimates of Environmental Aid

The 1992 United Nations Conference on Environment and Development (**UNCED**) gave additional prominence to the role of environmental aid in development assistance. UNCED's Secretariat estimated that it could take \$125 billion per year in aid to catalyze annual investments of \$500 to \$625 billion to achieve the conference agenda

Box 2-B--Technology Cooperation and Technical Assistance-Continued

United Kingdom: A government-sponsored Technology Partnership Initiative, launched in March 1993, aims to give developing country business representatives better access to United Kingdom technologies and management techniques that would further sustainable development. A guide to United Kingdom environmental technology and services has been prepared. United Kingdom companies also may get help for training developing country business personnel. UK and developing country firms can gain access to an information network through British Embassy or High Commission commercial sections, or participating trade associations. (see chapter 5 for further discussion of the United Kingdom's environmental aid.)

Multilateral Activities

Multilateral agencies and funds support training, institutional development, research, and similar activities. The Global Environment Facility (GEF) was setup in 1990 to help countries with per capita incomes of less than \$4000 address global environmental problems. GEF helps these countries deal with added costs of activities with global environmental benefits. Grants support investments, technical assistance and research related to climate change, ozone depletion, pollution in international waters, and biodiversity. Administered by the United Nations Development Programme (UNDP), the United Nations Environment Programme (UNEP) and the World Bank, GEF was funded at a \$1.3 billion level during an initial three-year pilot phase; replenishment is now under consideration.

Several multilateral activities have been launched as follow up to the 1992 United Nations Conference on Environment and Development. A new Commission on Sustainable Development has been setup under the United Nations Economic and Social Council. Among its missions: to monitor progress in transferring environmentally sound technology and know-how to developing countries and others.

Capacity 21, an activity of the United Nations Development Programme (UNDP), was setup in 1993 to help developing countries implement local sustainable development programs. The focus will be on institution building, human resource development, public participation, factoring environment into development strategies, and technology development, adaptation and applications. UNDP has a target of \$100 million for initial funding, with 10 developing countries the focal point for the first 18 months of effort.

Another UN agency, the United Nations Environment Programme (UNEP), has provided technical assistance on the environment for many years. UNEP was recently authorized by its governing council to examine the feasibility of developing guidelines on information that exporters should provide to importers on the environmental impacts of potentially harmful technologies. (UNEP's pollution prevention work is discussed in box 2-A)

UNEP has setup an international environmental technology center in Japan to promote the transfer of appropriate environmental management technologies to developing countries. Initially proposed and funded by Japan, the center's organization, personnel, programs, and international advisory board are supposed to assure international origins for technologies and expertise. It will continue to be under UNEP's supervision.

(called Agenda 21) for "accelerated and sustainable development" in developing countries. Some portion of the needed investment would be environmental, but most would not. The Secretariat also estimated an additional \$15 billion would be needed to help developing countries mitigate their impacts on the global environment, and

\$750 million to strengthen the capacity of international institutions.²¹

UNCED provided new focus for an old debate about the appropriate level of development assistance to developing countries. In 1973, the UN General Assembly urged donors to increase their ODA to average 0.7 percent of their GNP or more.

²¹ Report of the Secretary General of the conference, "Financial Resources and Mechanisms" Preparatory Committee for the United Nations Conference on Environment and Development, Fourth Sessions, New York, March 2 to April 3, 1992, Plenary Session, AA/Conf.151/PC/101, United Nations General Assembly,

However, the DAC has not adopted this goal and, of DAC members, only Norway, The Netherlands, Sweden, Finland, and Denmark have met it in recent years.²² Of the six largest DAC donors, only France has approached this level in recent years. Japan has remained at about 0.3 percent for several years despite steady increases in the absolute amount of aid. The United States, which never committed itself to the General Assembly goal, has seldom exceeded 0.26 percent of its GNP in aid value since the mid-1970s, and now spends about 0.20 percent.

All countries at UNCED accepted Agenda 21 financing chapter, which reaffirmed commitments to the 1973 goal and called for “new and additional financial resources” to implement sustainable development.²³ As the United States had not affirmed the earlier goal, U.S. officials held that its acceptance of the financing chapter would not be a commitment. However, then-President Bush announced an increase in assistance for international forestry and indicated the United States would increase its international environmental assistance by two-thirds over the 1990 level. Japan made the largest pledge: it announced its intention to provide 900 billion to 1 trillion yen (\$7.1 billion to \$7.8 billion at 1992

exchange rates) over 5 years for global environmental protection (including bilateral and multilateral aid).²⁴

Since UNCED, most donors have continued to acknowledge the need for “new and additional” resources, but have pointed out constraints that have slowed their response. Expanding ODA has proven difficult in a period of slow economic growth and intensifying global competition. Developing countries, meanwhile, have continued to press for “new and additional” resources, including environmental aid.²⁵ They are concerned that, without new and additional funding, donors will divert to the environment other aid now used for such purposes as basic health care, general education and small enterprise development.

In followup to UNCED, the DAC is attempting to track environmental assistance flows to developing countries.²⁶ The initial effort to develop statistics on environmental aid is still in progress. One major obstacle is that donors and multilateral agencies have yet to adopt common definitions for estimating their environmental aid. The absence of common definitions is a problem in comparing or assessing what various countries are doing with their environmental aid. For example, Japan includes some aspects of natural

22 Three non-DAC members, Saudi Arabia, Kuwait, and the United Arab Emirates, are also important providers of ODA. During much of the last two decades, their ODA routinely exceeded 2 percent of their respective GNPs. This proportion declined in the aftermath of the 1990-1991 Gulf war, with Saudi Arabia falling to 1.5 percent and the United Arab Emirates to 1.66 percent of their respective GNPs. The 1991 figures for Kuwait were not cited by DAC.

23 The financing chapter stated: “In general, financing for the implementation of Agenda 21 will come from a country’s own public and private sectors. For developing countries, particularly the least developed countries, ODA is a main source of external funding, and substantial new and additional funding for sustainable development and implementation of Agenda 21 will be required. Developed countries reaffirm their commitments to reach the accepted United Nations target of 0.7 percent of GNP. . . and agree..to augment their aid. ..to reach that target as soon as possible and to ensure a prompt and effective implementation of Agenda 21.” United Nations Conference on Environment and Development, “Financial Resources and Mechanisms,” Agenda 21, Chapter 33, final advance version as adopted by the Plenary in Rio de Janeiro on June 14, 1992, para. 33.15.

24 Japanese Ministry of Foreign Affairs, *Official Development Assistance 1992*, vol. 1 [Wagakuni no Seifu-Kaihatsu-Enjo 1992]* p.217.

25 Japan’s environmental aid was reported to have increased to about 280 billion yen (\$2.4 billion) in financial year 1992—an apparent tripling over the 1991 level. However, the reported information, contained in a June 1993 United Nations publication, provides few specific details about what is included in this estimate of environmental aid or how it was derived. As cited in Commission on Sustainable Development Report of the Secretary General, “Addendum: Information provided by Governments on initial financial commitments, financial flows and arrangements to give effect to the decisions of the United Nations Conference on Environment and Development” United Nations Economic and Social Council, E/Ch.17/1993/11/Add.1, 8 June 1993, p.15. The Commission, setup in follow up to UNCED, has established an ad hoc working group on finances to assess financial needs and monitor resource flows.

26 OECD, *Development Cooperation 1992 Report*, *Op. Cit.*, pp. 13, 22.

disaster relief in its estimates of environmental aid,²⁷ while other donors may not.

In 1990, the DAC questioned whether an apparent increase in the number of environmental projects cited by donors was real or simply the result of reclassification.²⁸ In the absence of common definitions, countries are free to “relabel,” or reclassify, projects to claim a larger volume of environmental aid. Sometimes this may be justified: certain longstanding kinds of development assistance (such as help for building and operating wastewater treatment facilities) could be considered environmental infrastructure. Some other aid projects might fall into the environmental category if environmental protection and/or resource conservation and restoration are primary objectives. Generalization is difficult, as is suggested by the case of reforestation, which can be undertaken for many different reasons. A project to stock a logged area with commercially desirable tree species might normally be seen as forestry development. However, if the prime objectives were watershed management, control of soil erosion and introduction of good forest management on lands degraded by unsuitable logging practices, a similar activity might qualify as environmental.

Another question is how to account for development projects that have an environmental component or aspect. For example, water resource development projects may have mitigation components to reduce environmental impacts (e.g., measures for afforestation and to reduce erosion in reservoir catchment areas). What portion of project costs should be environmental before such projects are considered to have an environmental component?

Many environmental problems can be avoided if good design practices are used in planning projects; by anticipating and addressing likely environmental problems in the planning stage,

project designers can reduce the need to spend as much on mitigation components. Hence, environmental spending is not always a good indicator of the environmental care taken in the project.

Further complications arise in classifying aid for “cleaner production technology” and “pollution prevention” approaches which are an integral part of production technologies. As has been mentioned, such techniques reduce the amount of waste or pollution that is generated, and thus offset the need for subsequent treatment or disposal, or require less inputs of energy and other resources. A narrow definition of environmental spending can mask environmentally favorable investment in such cleaner production technologies. Indeed, donors attempting to meet their environmental aid commitments using a narrow definition could conceivably skew resources from cleaner production to less effective and more costly investments in “end-of-pipe” pollution abatement and waste disposal equipment.

DAC members have begun to introduce “indicators” or markers of environmental aid as part of their creditor reports. The guidance for enumerators suggests that DAC members identify the environmental content of projects using one of three codes: those undertaken “specifically for environmental purposes,” those in which the content is “significantly influenced by environmental considerations,” and those in which the environmental content is not applicable or known. Some specific kinds of projects are considered *prima facie* environmental.

Some donors are using these guidelines to report their own calculations for specific environmental projects, and for projects which include an important environmental component. The DAC has yet to issue an estimate of environmental aid. Nine of DAC’S 21 countries had reported their bilateral environmental commitments for 1991, the first year to be covered, as of May 1993. These

²⁷ Government of Japan, *Environment and Development: Japan’s Experience and Achievement, Japan’s National Report to UNCED 1992*, December 1991, p. 22.

²⁸ OECD, *Development Cooperation 1990 Report*, op. cit., p. 45.

countries estimated that their environmental or environmentally related projects accounted for over \$375 million of their bilateral ODA (see table 2-4).

The major donors had yet to report to DAC; however, some information is available about spending for environmental aid by four of the five major donors profiled in chapter 5. (United Kingdom estimates are not yet available.) Preliminary information about donors' 1991 aid for environmental projects and projects with an environmental component is as follows:

Japan	\$779 million ²⁹ (includes component projects)
United States	\$625-700 million ³⁰ (includes component projects)
Germany	\$511 million + (direct environmental aid only) ³¹
France	\$146 million + (partial report) .32

These estimates, which are further discussed in chapter 5, should be seen as rough estimates that could change. Donors do not always define "environmental" in the same way, and countries may vary in the care they have taken to avoid inflating estimates by double counting or counting the full cost of a project when only a part of it qualifies as environmental.

Despite these caveats, it is reasonable to conclude that DAC members committed at least \$2.0 billion of their 1991 bilateral ODA to

**Table 2-4--Bilateral Environmental Aid, 1991
Reported to DAC by Nine Countries**

(amount in millions \$)

	Specifically environmental projects ^a	Integrated projects ^{a,b} with a substantial environmental component
Australia	\$1.86	\$50.3 ^a
Austria	7.39	20.68
Belgium	0.13	2.68
Canada	53.63	43.11
Finland	80.10	---
The Netherlands	25.17	28.95
New Zealand	1.79	5.72
Norway	33.55	28.67
Sweden	6.70	---
Total	210.32	177.43

^a As defined by donor country.

^b Countries vary in how they count totals for integrated projects: some count the entire project; some count only the portion of the project that is "environmental"; some have not counted integrated projects.

SOURCE: Unpublished OECD data.

projects they define as environmental or as having an important environmental component. A fuller account of financial resources would include multilateral aid. The European Community (EC) provided 250 million ECU (roughly \$300 million) in 1992 for projects or programs that were primarily environmental in nature.³³ DAC members also contribute to multilateral development banks (box 2-C), which committed over \$3 billion in loans (some with close to commercial terms and some on highly concessional terms) in 1992

²⁹ At 1991 exchange rates of 135 yen per dollar. Japan's environmental aid is further broken down in figures 5-2 and 5-3 in chapter 5. Roughly one-fourth of the environmental aid shown in figure 5-2 is for natural disaster prevention, an activity not all donors count as environmental. As noted in footnote 25, a June 1993 United Nations publication cites Japan as reporting 280 billion yen (\$2.4 billion as calculated in the document) in financial year 1992 environmental aid. While Japan's overall 1992 aid level was not listed, this level of environmental aid, if confirmed, would appear to represent some "new" resources.

³⁰ USAID is in the process of fine tuning its baseline estimates of its 1991 environmental outlays. USAID's annual obligations for implementing its environmental strategy averaged \$681 million in Fiscal years 1992 and 1993 (see figure 5-1 in ch. 5 for a breakdown of obligations by activity).

³¹ Calculated on an exchange rate of \$1 = 1.66 Deutsche Marks. Germany's sizable aid for projects with an environmental component is not reflected in this estimate.

³² Estimate is for environment spending by only one of four French aid agencies. Calculated on an exchange rate of \$1 = 5.66 French Francs.

³³ Information provided by the Commission of European Communities, Apr. 8, 1993. Much of the EC multilateral aid is tied to EC members. The environmental aid information provided by the Commission of European Communities, Apr. 8, represented about 10 percent of total EC multilateral aid.

Box 2-C-The Multilateral Development Banks

The World Bank and the regional multilateral development banks (MDBs) are major sources of infrastructure financing in developing countries. Their lending terms vary from close to market (in the better off developing countries) to highly concessional (in the poorest countries). Like bilateral donors, the multilateral institutions initially paid little attention to the environmental impacts of the projects they financed. This is changing; most MDBs now use environmental guidelines or assessments in project planning or review. MDBs also are working with developing countries as they prepare or revise national development plans to take into account environmental needs. These plans may identify steps to strengthen environmental institutions or identify environmental investment and lending needs for the coming years.

The multilateral institutions now finance many environmental projects. Like bilateral donors, they have found it difficult to define environmental aid. However, most banks now "mark" environmental projects and projects with a significant environmental component. As shown in table 2-5, these banks made at least \$3 billion in loans for environmentally related projects in 1992. (This does not include assistance provided through the Global Environmental Facility or United Nations agencies discussed in box 2-B.)

While the World Bank, other MDBs and the United Nations conduct procurement under rules that generally prevent discrimination based on nationality, donor countries often supplement multilateral funding with their own aid money, through use of consultant trust funds, cofinancing, and parallel financing (described below). Some of the consultant funds and parallel financing may be tied; cofinancing is not tied (except when provided after a contract is awarded). All three practices may have a subtle influence on multilateral procurement (see ch. 3).

Consultant trust funds can be drawn on by MDBs to finance pre-project appraisals. Several consultant trust funds are available to the World Bank. The largest, a Japanese special fund for policy and human resource development, is untied and is administered by the Bank on behalf of Japan. In 1992, the Bank committed over \$100 million from the fund for feasibility studies and other project preparation work (including work related to global environmental safeguards). Although Japan signs off on proposed uses for the trust fund, the Bank's procurement rules govern subsequent selection of consultants.

Continued on next page

for environmental projects or projects with an important environmental component (table 2-5). (Financing for MDB loans or credits is obtained from various sources, including world capital markets and MDB earnings, as well as contributions from donor countries). Thus, the total amount committed to bilateral and multilateral environmental assistance or assistance with an important environmental component surpasses \$5 billion per year, but by how much is not clear.

Given the definitional problems discussed above, these figures should be treated with caution. Because DAC reporting on environmental ODA leaves the definition up to the donor, comparisons will be difficult. Without benchmarks or common definitions, such estimates shed little light on how much "new and additional" aid is devoted to the environment.

Not all environmental assistance would be reported to DAC. For example, Sweden's export credit agency supports a \$15 million credit facility in Malaysia that provides soft loans for acquisition of Swedish environmental protection and control equipment. While offering below-market rates, this facility does not meet DAC criteria for concessionality, and thus would not be counted in DAC figures. Even counting such funds, environmental aid probably meets only a small part of the overall "catalytic" need identified by the World Bank or by UNCED.

Finally, the quantity of aid reveals little about the quality of environmental aid or whether developing country needs and priorities are adequately addressed.

Box 2-C--The Multilateral Development Banks--Continued

In some other consultant trust funds, donors maintain more control over their contributions. The U.S. Trade and Development Agency administers a trust fund for use by the World Bank for project development and identification studies. When the Bank identifies a need for such a study, it can apply to TDA for funding. If given the go-ahead by TDA, the Bank must commission a U.S. consultant or citizen to perform the study. The aim of the fund is to get U.S. consultants involved in World Bank projects at the project planning stage. TDA only funds studies where it is clear that U.S. contractors would have a **fair chance** to compete in the bidding for the proposed project when undertaken. Initially focused on the environment and also Eastern Europe, the fund now is used for all sectors and regions. TDA has provided about \$2.7 million to the fund in the last four years.

Some consultant trust funds are used only for environmental projects. Several countries have together contributed more than \$15 million to the Technical Assistance Grant Program for the Environment, called the Environmental Trust Fund, since late 1990. Each country contribution is separately maintained; tying policies vary by country. Also, the Netherlands, Norway, Belgium, Canada, and Sweden have trust fund for technical assistance or studies; some of the funds are tied, although the proportion is decreasing. Another special environmental trust fund is being setup by The Netherlands with the inter-American Development Bank.

Cofinancing occurs when additional money is added to multilateral projects, raising the overall budget for project assistance. Cofinancing can come from another multilateral or a bilateral source. The World Bank increasingly uses cofinancing; over half of the Bank's 1992 projects and programs attracted some cofinancing. The financing includes ODA as well as other financing, such as export credits from export-import banks. If the additional money is given in a separate transaction (not as part of the multilateral project budget), it is called parallel financing. An example is a German GTZ (technical assistance agency) grant to China to train maintenance staff in concert with an MDB loan for bus fleet fuel conversion. With several large MDB environmental programs in the works, some countries may seek to promote environmental exports through co-or parallel financing. The subtle ways in which co- and parallel financing can help a country's firms win MDB contracts are discussed in chapter 3.

Table 2-5-1992 Environmental Lending by Selected Multilateral Development Banks

Institution ^a	Environmental and environmentally related lending
World Bank	Loans for 19 primarily environmental projects amounting to about \$1.18 billion were approved in 1992. Of these projects, 10 were concerned with better management of natural resources, and six with building institutional capacity. The other three focused on both priorities. In addition, the Bank funded 43 projects with substantial environmental components.
The Asian Development Bank	1992 lending for environmentally oriented projects amounted to \$1.1 billion. Technical assistance for environmentally oriented projects amounted to about \$19 million.
The Inter-American Development Bank	1992 loans for 10 projects "specifically designed to resolve environmental problems" amounted to slightly over \$1 billion.

^a The European Bank for Reconstruction and Development did not provide information on the extent of its environmental lending.

SOURCE: World Bank, Environment Department, *Environmental Assessment Sourcebook, Volume 1, Policies, Procedures, and Cross-Sectoral Issues*, World Bank Technical Paper, No. 139, and *The World Bank and the Environment*, Fiscal 1992; Asian Development Bank, Information Office, *The Environment Program of the Asian Development Bank*, April 1991, and information provided by the Office of the Environment, Asian Development Bank, May 18, 1993; Inter-American Development Bank, Environmental Committee, *Annual Report on the Environment and Natural Resources*, Washington, DC, 1992, and information provided by the Inter-American Development Bank, Feb. 16, 1992.