
Foreign Direct Investment and Its Environmental Consequences

Every day, staggering amounts of capital—on the order of billions of dollars—flow from country to country, and that volume has skyrocketed over the last 10 years. Capital flows are expanding into an increasing number of developing markets through private direct investment by multinational corporations. Some commentators have suggested that environmental degradation will inevitably intensify in these countries as a result. They claim that restricting foreign investment in developing countries¹ is the only way to protect the environment. The evidence, however, overwhelmingly supports development as a necessary, though not sufficient, condition for improving environmental protection. This paper presents a snapshot of the current state of capital flows, the investments of U.S. industries, and several indicators of environmental quality in developing countries.

What is Foreign Direct Investment?

Foreign direct investment,² or FDI, is one type of private capital available to developing countries. FDI is investment by a multinational company (MNC) that results in ownership or control of a firm outside the MNC's country of origin. FDI is used to build new facilities and to buy or merge with existing companies.³ An example would be a U.S. MNC building a new fertilizer plant in Malaysia. By definition, FDI is a long-term investment; therefore, it can be measured over a given time interval (flow) or as an accumulation to date (stock).

FDI: Misperceptions and Reality

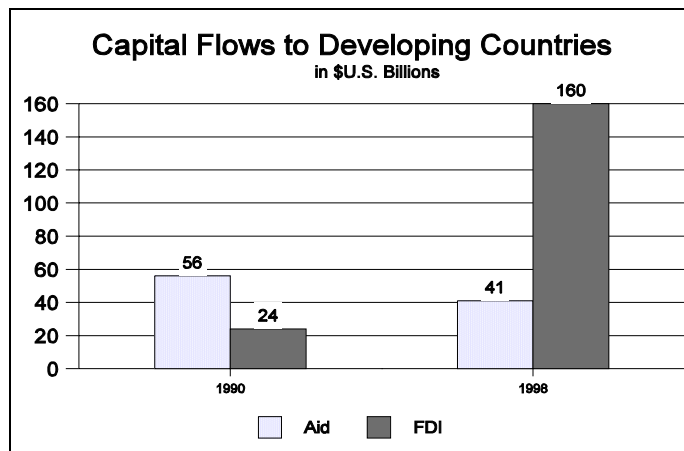
- ***Foreign investment provides developing countries with additional resources to protect their environment.*** Restricting access to open markets in developing countries is unlikely to benefit their environment. In study after study, national income consistently and strongly correlates with a cleaner environment and a better quality of life.⁴ Although pollution levels initially increase, economic growth eventually leads to the emergence of an administrative capacity to devise, implement, and enforce environmental standards. While correlation *should not be confused with causality*, the evidence is clear: environmental quality is unlikely to improve without economic development.
- ***On the whole, the "pollution haven" effect in developing countries has not been observed.*** The "pollution haven" theory suggests that firms from developed countries flock to developing regions where environmental regulations are more lax, and thus production costs are lower; this in turn increases pollution in these countries. However, studies have consistently found that corporations consider other factors above the "friendliness" of environmental regulations when deciding where to locate.⁵ Firms are likely to locate where they have already invested in the necessary tangible and intangible assets, such as roads or employees' skills.⁶ Moreover, *over two-thirds of U.S. investment goes to other developed countries, all with established regulatory regimes.*
- ***A "race to the bottom" among developed countries has not been observed.*** "Race to the bottom" describes a theoretical scenario in which developed countries are pressured to relax or keep from improving their environmental regulations because of the competitive advantage gained by

developing nations with less stringent laws. However, opening markets does not give countries with weak environmental regulations a comparative advantage in international trade. In fact, stronger environmental regulations appear to be economically beneficial to environmentally responsible firms competing both domestically and in foreign markets.⁷

- **Better information about the nexus between trade and the environment is essential.** Research on the relationship between foreign direct investment and environmental quality is highly fragmented and lacks reliable data. Trade and investment statistics compiled by governments and non-governmental organizations often do not include data on developing countries because the flows of capital are still so small. Attempts to quantify environmental quality with indicators are underway in many countries, but determining what sets of statistics are most indicative of a healthy environment has proven difficult.

Global Foreign Direct Investment

- **FDI primarily comes from, and goes to, developed countries.** 85 percent of FDI outflows and 60 percent of FDI inflows go between developed countries with similar standards. Approximately two-thirds of FDI outflow come from five of the largest developed countries (United States, Japan, Germany, France, and the United Kingdom).⁸ 174 of the world's top 200 firms are located in these five countries.⁹

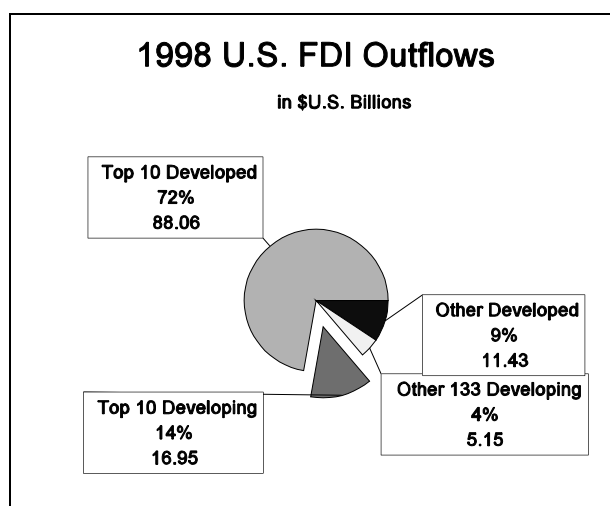


- **FDI is replacing government aid as the most important source of capital for many developing countries.** Traditionally, developing countries depended on flows of development aid from foreign governments or commercial banks in the developed world.¹⁰ Today, however, private sources (including FDI) account for more than four-fifths of all capital flowing into developing countries. FDI is by far the largest. From 1990 to 1998, official public flows and development aid declined from \$56.3 billion to \$40.8 billion. During that same time, flows of FDI to developing countries *increased almost seven-fold*, from approximately \$24 billion to about \$160 billion.¹¹
- **FDI to the developing world is targeted at a handful of countries.** In 1997, the top 10 recipient developing countries of global FDI received almost three-fourths of the total FDI sent to the developing world. The largest recipients of FDI in the developing world are China, Brazil, and Mexico. The remainder of the developing world continues to depend on a declining flow of governmental development assistance and aid.¹²

United States Foreign Direct Investment

- **The United States is the single largest recipient and provider of FDI.** Of the 100 largest MNC corporations, 44 are based in the U.S. 1998 FDI originating in the United States totaled \$122 billion, or about 27 percent of new investment worldwide. That is almost double the FDI totals of the next closest overseas investor, the United Kingdom.¹³ The United States also hosts more foreign direct investment than any other country. In 1998, \$115 billion flowed into the United States—about twice as much as the next most popular host, the United Kingdom.¹⁴

- **The lion's share of U.S. FDI goes to developed countries.** The top 10 developed countries received \$88 billion (72 percent). Only \$17 billion (14 percent) of 1998 U.S. FDI went to the top 10 developing recipients. The rest of the developing world, a group of over 100 countries, received only \$5 billion (4 percent).



Totals do not add up to 100% due to rounding

- **U.S. MNCs invest where they have already created assets.** 1998 U.S. FDI flows mirror the distribution of U.S. MNCs' accumulated capital stock. Sixty-one percent of U.S. FDI stock is in the top 10 recipient developed countries, whereas only 17 percent is held in the top 10 recipient developing countries. Only 5 percent of accumulated U.S. FDI stock is in the rest of the developing world.

1998 U.S. FDI Outflows in \$U.S. billions

	Developing Recipients		Developed Recipients	
1.	Brazil	3.79	United Kingdom	34.43
2.	China and Hong Kong	3.06	Netherlands	15.00
3.	Mexico	2.53	Canada	10.26
4.	Panama	1.84	Switzerland	5.97
5.	Thailand	1.33	Luxembourg	4.58
6.	Argentina	1.24	Bermuda	3.87
7.	Algeria	0.88	Japan	3.84
8.	Kazakhstan	0.87	Australia	3.66
9.	Venezuela	0.79	Ireland	3.55
10.	Costa Rica	0.62	France	2.90
	Total	16.95	Total	88.06
	Percent of total U.S. FDI	13.9%	Percent of total U.S. FDI	72.4%

Source: Bureau of Economic Analysis, U.S. Department of Commerce

United States FDI by Industry

- **U.S. MNCs invest primarily in industries that generate low amounts of waste and are less resource-intensive.** U.S. MNCs' overseas holdings of facilities engaged in heavy, resource-intensive industries are about 20 percent of their total stock and decreasing.¹⁵ Of that, less than half is in extractive industries, like mining or forestry, which tend to have the greatest negative environmental impacts. The remainder is in resource-intensive manufacturing industries, such as paper or fertilizer production.
- **U.S. foreign investment in major waste-producing or resource-intensive industries is concentrated in developed countries.** Although little of U.S. MNCs' direct investment is in heavy industries, what they do invest in these industries is largely in developed countries with strong regulatory regimes (see table below).

U.S. FDI Stock in Heavy Industries as of 1998 in \$U.S. billions

	Chemical	Primary Metals	Petroleum
Top 10 developed recipients	52.19	11.94	43.86
Top 10 developing recipients	10.82	2.82	14.57
Rest of world	20.58	2.35	32.68

Source: U.S. Department of Commerce

Environmental Conditions in Countries Receiving U.S. FDI

Quantitative information on environmental quality in developing countries is difficult to gather and access. Indicators have been identified by several groups, including the United Nations Environment Programme, but they give an incomplete picture. Without better information, the full impact of foreign investment patterns on the environmental condition in developing countries cannot be accurately assessed.

The following indicators are among the few quantitative measures that are available for nearly every country, allowing comparison of the top 10 developed and developing countries receiving U.S. MNC direct investment.

- **Land Preservation.** This metric represents the proportion of surface area greater than 10,000 square meters set aside as protected land free from extractive industry activity. As the following table shows, the major developing and developed country recipients of U.S. FDI protect about the same proportion of their territory (12 and 13 percent respectively).
- **Deforestation.** Deforestation is the conversion of natural forest to other uses. (The metric does not include areas logged but intended for regeneration.) The deforestation rate is measured as the average annual change in total forested land. Deforestation rates are higher on average for the years 1990-95 in developing countries than developed countries. During this time interval, developed countries were actually reforesting more than harvesting, with a rate of -0.18 percent. Forestry practices in developing nations often do not incorporate sustainable forestry practices and regeneration.

- **Water Pollutants.** This metric summarizes water pollution resulting from industrial activity by measuring the pollutant discharge in weight units normalized by the number of industrial workers. Water quality constituents reported include organic matter, sediment, metals, minerals, bacteria, and toxic chemicals. This ratio screens out the influence of large rural populations, and instead focuses on pollution generated relative to population industrialized areas. The daily discharge rates are comparable between the recipient developed countries (0.15 kg/worker) and the recipient developing countries (0.18 kg/worker).
- **Carbon Dioxide Emissions.** Carbon dioxide, a byproduct of fossil fuel burning and other human activity, is a major greenhouse gas. Developing country recipients of U.S. FDI emit, on average, one-third of the CO₂ per capita of the major recipient developed countries (3.6 metric tons versus 11.2 metric tons per person). The United States' per capita CO₂ is almost 5 times greater than the average per capita emissions of developing countries receiving FDI from the U.S.¹⁶

Selected Environmental Indicators in Countries Receiving U.S. FDI¹⁷

	Land area protected	Deforestation rate	Water pollutants per industrial worker (kg/day)	CO ₂ per capita (metric tons)
Avg. of top 10 developing recipients of U.S. FDI	11.63%	1.14%	0.18	3.55
Avg. of top 10 developed recipients of U.S. FDI	12.46%	-0.18%	0.15	11.18
United States	13.40%	-0.30%	0.15	20.80

Sources: World Bank and World Resources Institute

These indicators understate environmental problems in developing countries. Besides their limited scope, the averages shown above do not account for major regional issues, such as the loss of rainforest in Latin American countries, environmental costs of over-population in China and India, flood damage exacerbated by building over wetlands in monsoon-prone regions, loss of wildlife species in biodiversity-rich habitats. Further, these numbers belie the fact that developing countries have few resources to cope with environmental degradation, through building facilities to treat polluted water or providing medical care for people with respiratory problems aggravated by polluted air. There are, as yet, no reliable, universal measures to gauge these types of problems. Nor can foreign investment be blamed for these ills.

As another example of the data dearth, nobody knows how many animal and plant species exist or how many are disappearing. The table below provides a suggestive but incomplete picture of biodiversity. Scientists estimate that only 1.5 million species have been identified out of perhaps 5 million to 15 million.

Biodiversity in Developed and Developing Recipients of U.S. FDI

(Mammals, birds, and higher plants only)

Developing Recipients	Number of threatened species	Total species per 10,000 km ²	Developed Recipients	Number of threatened species	Total species per 10,000 km ²
Brazil	647	6,139	United Kingdom	34	636
China	508	3,267	Netherlands	10	913
Mexico	1,148	4,596	Canada	661	363
Panama	588	5,106	Switzerland	19	1,201
Thailand	461	3,239	Luxembourg	n/a	n/a
Argentina	238	1,597	Bermuda	n/a	n/a
Algeria	168	556	Japan	766	1,458*
Kazakhstan	30	n/a	Australia	1,700	1,772
Venezuela	153	4,845	Ireland	12	557
Costa Rica	483	6,891	France	137	1,295

* Does not include bird species (no count available)

From *World Resources 1998-99*, World Resources Institute et al., Oxford University Press, 1998, pp. 322-23.

Summary

The United States is the largest source of FDI, the most stable form of international capital. Of U.S.-based FDI, the vast majority flowed into developed countries. Only a handful of developing countries receive most of the FDI; the rest depend on decreasing flows of public aid. Contrary to conventional wisdom, little (about 20 percent) of the FDI that does go to developing countries is in heavy, resource-intensive industry. Instead, the majority of U.S. FDI in those sectors flows to developed countries with relatively high standards and strong regulations.

The charge that opening markets causes a race to the bottom or creates pollution havens is often invoked as a reason to restrict investment in emerging markets. There is little evidence that the global environment is suffering from either malady. Instead, opening markets in developing countries to foreign investment can foster the necessary political and economic conditions for enhancing environmental protection. Furthermore, many MNCs are voluntarily regulating their foreign affiliates and forming partnerships with host governments and international environmental groups to build sustainable investment patterns.¹⁸

Liberalized trade and investment are not the root causes of environmental problems. Instead, they are a means to economic development that can have multiple and sometimes conflicting effects on the environment. Restricting trade and investment is not the path to better environmental protection in developing nations. Environmental problem solving should be targeted at the policies and practices within countries that cause the harm.

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Notes

1. "Developing country" means any country defined by the World Bank as "Low Income," "Lower Middle Income," or "Upper Middle Income" in *1998 World Development Indicators*. This definition includes the transition economies of the former Soviet bloc.
2. For a thorough discussion of the types of international capital, see PPI's April 1999 Trade Fact Sheet at http://www.dlcppi.org/texts/trade/tfs_investment.htm.
3. More formally, FDI is the outflow of capital to acquire a lasting management interest (defined as possession or control of 10% of the voting securities of an incorporated foreign business enterprise or the equivalent interest in an unincorporated business enterprise) in a country other than that of the investor. The 10 percent level is somewhat arbitrary; nevertheless, it is commonly accepted by such institutions as the World Bank and The United Nations Environment Program.
4. There is an extensive inter-disciplinary literature on this relationship. The seminal empirical works are Thomas Seldon and Daqing Song, "Environmental Quality and Development: Is There a Kuznets Curve for Air Pollution Emissions?", *Journal of Environmental Economics and Management*, v 27, 1994, pp 147-162; and Gene M. Grossman and Alan B. Krueger, "Economic Growth and the Environment", *Quarterly Journal of Economics*, (1995): pp 353-373..
5. Werner Antweiler, Brian M. Copeland, and M. Scott Taylor, "Is Free Trade Good for the Environment?", National Bureau of Economic Research (Cambridge, MA), Working Paper #6707, available at <http://www.nber.org/papers/w6707>. It includes an excellent literature review.
6. UNCTAD, *World Investment Report 1998: Trends and Determinants*.
7. For a thorough literature survey see Eban Goodstein, "A New Look at Environmental Protection and Competitiveness," Economic Policy Institute Briefing Paper 199711 (1997), <http://www.epinet.org>.
8. John Cavanagh and Sarah Anderson, *International Financial Flows: the New Trends of the 1990s and Projections for the Future*, Policy Brief, C.S. Mott Foundation, International Center for Policy Studies, April 1997, p 5. Based on 1995 figures.
9. *Ibid.*, p 5.
10. OECD defines aid as a loan with at least a 25 percent grant element.
11. World Bank, *1998 World Development Indicators*, 308-9, and World Bank, *Private Capital Flows to Developing Countries* (New York: Oxford University Press, 1997), p 5.
12. *1998 World Development Indicators*, pp 308-9, and Theodore Moran, *Foreign Direct Investment and Development*, Institute for International Economics (Washington, DC, 1998), p 15-17.
13. Based on preliminary figures released by the United Nations Council on Trade and Development (UNCTAD). Revised data will be available in the *World Investment Report 1999* to be released at the end of September.
14. Russell B. Scholl, "The International Investment Position of the United States at Yearend 1998," *Survey of Current Business*, Bureau of Economic Analysis, U.S. Department of Commerce, July 1999, p 43.
15. *Ibid.*

16. *1998 World Development Indicators, op cit.*, pp 146-149.

17. *1998 World Development Indicators, op. cit.*, and World Resources Institute, *World Resources: A Guide to the Global Environment, 1998-99*, (New York: Oxford University Press, 1998), p 320-321 and 327.

18. See the homepages for the Coalition for Environmentally Responsible Economies (CERES) <http://www.ceres.org> or the Global Environmental Management Initiative (GEMI) <http://www.gemi.org> .