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COMMENTS

The Promised Land: Analysis of Environmental Factors of United States Investment in and Development of the Amazon Region in Brazil

The vastness and richness of the Amazon jungle is limited today only by the extent of mankind's current discoveries. Originally consisting of 1.2 billion acres of giant tropical hardwood trees, an unequaled potential for hydro-electric power, and untapped minerals and precious stones from diamonds to bauxite and iron ore, the Amazon is fertile ground for foreign investment and development.¹ Moreover, the hopes of the Brazilian people, staggering under a tremendous balance-of-trade deficit combined with runaway inflation and widespread poverty, depend on the effective development of the Amazon River basin.² In the past decade, however, it has become increasingly obvious to scientists, businessmen, and government officials that unchecked exploitation of the Amazon could bring about the greatest environmental disaster of the century.³ The seemingly indestructible jungle has been discovered to be an exceedingly fragile ecosystem which, once cleared, could turn into rock-hard wasteland.⁴ Brazil needs the use of a productive Amazon basin not only for continued economic development, but also for the agricultural production necessary to serve its massive popu-

¹ See *infra* notes 24-42 and accompanying text.

² See *infra* notes 11-23 and accompanying text.

³ See *infra* notes 24-42 and accompanying text.

⁴ *Id.*

lation.⁵ Consequently, regional and global economic, social, and environmental consequences of the deforestation of the jungle have recently come to be matters of international concern.⁶ The value and fragility of the Amazon jungle make a strong case for rational, regulated management of this important resource.

This comment will look at the social, economic, and environmental situation pertaining to the Amazon region, the present regulation and policy, and foreseeable future trends, from three vantage points. The Brazilian perspective is one of conflicting interests, with the country's dramatic need for economic development balanced against its need to prevent the Amazon, its most valuable resource, from total destruction.⁷ The international perspective is one of increasing awareness of the global impact of the deforestation of tropical moist forests, and the need to develop and implement regional and international policies to manage this resource.⁸ The United States perspective considers the advantages and disadvantages of unilateral state action to regulate transnational corporations' environmental conduct overseas.⁹ The United States Government has a unique position of influence stemming from its ability to regulate transnational corporations based in the United States, and its opportunity to serve as a model for other nations and facilitate international action.¹⁰

I. THE BRAZILIAN PERSPECTIVE

A. *Economic and Social Setting in Brazil*

To make an accurate assessment of the environmental factors relating to investment in and development of the Amazon region, one must have a basic understanding of Brazil's political, economic, and social setting and of the complex ecosystem of the Amazon rain forest. Brazil, the sixth largest country in the world, occupying nearly half of the continent of South America, has justifiably been called the most dynamic developing nation in the world.¹¹ Following a 1964 military coup and the resulting relative political stability, Brazil entered a period of rapid economic growth unsurpassed by any country in recent

⁵ See *infra* note 54.

⁶ See *infra* notes 122-79 and accompanying text.

⁷ See *infra* notes 11-121 and accompanying text.

⁸ See *infra* notes 122-79 and accompanying text.

⁹ See *infra* notes 180-245 and accompanying text.

¹⁰ *Id.*

¹¹ Rowland, *Foreign Investment in Brazil: A Reconciliation of Perspectives*, 14 J. INT'L L. & ECON. 39 (1979).

times.¹² The nation raised its gross national product by an average of ten percent per year from 1968 to 1974, and averaged an annual industrial growth rate of 8.3% between 1968 and 1978.¹³ With its "we-can-solve-anything" attitude¹⁴ and the vast resources of the Amazon jungle at its disposal, many see Brazil as close to becoming a legitimate world power.¹⁵ Yet, the country has extreme economic and social problems. Brazil's importation of all the oil it consumes gives it the largest foreign debt in the world.¹⁶ The country has an annual inflation rate of 110%.¹⁷ These factors, along with the government's frequent and often contradictory reactions to economic pressures, have created an uncertain economic and political climate which is as difficult to evaluate as to predict. For example, the Business International Corporation's weekly report to managers in Latin America highlighted the Brazilian business outlook as consisting of slower economic growth, gains against inflation, and political stability.¹⁸ Less than six months later, the same report cited continued growth, relentless inflation, and contentious politics as the highlights of Brazil's business outlook.¹⁹ Likewise, the social problems do not lend themselves to easy answers. "Satellite" slums populated by the desperately poor ring all of Brazil's major cities. Thirty million impoverished people live in the northeast region alone.²⁰ The country's population continues to grow, requiring more agricultural land to feed it.²¹ Many people, including many in government, feel that distribution of land to the poor is essential to prevent a food shortage, as well as to forestall an agrarian class revolt.²² Just as North Americans looked west one hundred years ago, Brazilians of all classes are looking west today to the vast resources of the Amazon forest as their "promised land."²³ Active and wise development of the Amazon region is not merely a goal for the Brazilian people; it is a necessity for survival.

¹² *Id.* at 39.

¹³ *Brazil Stresses Farming and Enrolls its 'Miracle' Worker*, N.Y. Times, May 9, 1979, at A2, col. 3.

¹⁴ Kelly & London, *'The Last Frontier' beckons Brazilians*, Chicago Sun-Times, Feb. 23, 1981, at 5, col. 1 [hereinafter cited as Kelly & London, *The Last Frontier*].

¹⁵ Kelly & London, *Conquest of the Amazon*, Chicago Sun-Times, Feb. 22, 1981, at 70, col. 1.

¹⁶ *Id.*

¹⁷ *Id.*

¹⁸ 1980 BUS. LATIN AM. (BUS. INT'L CORP.) 60 (Feb. 20, 1980).

¹⁹ *Id.* at 252.

²⁰ Kelly & London, *Conquest of the Amazon*, *supra* note 15.

²¹ *Id.*

²² *Id.*

²³ *Id.*

B. The Amazon Jungle

The immensity of the Amazon jungle and the vast amount of untapped resources contained in it support the Brazilian view of the region as the country's salvation. Amazonia occupies one-half of Brazil. If it were a country, it would be the ninth largest in the world.²⁴ The Amazon river network is the world's largest. Ocean liners can navigate it 2,300 miles inland, and the river has tremendous potential as a source of hydroelectricity.²⁵ Rich, tropical hardwood lumber grows in a seemingly unending supply.²⁶ The jungle contains an abundance of valuable minerals and metals, including bauxite, tin, gold, and diamonds, as well as more plants and animal species than anywhere else on earth.²⁷ Over 100 inches of rainfall annually, along with the rapid growth and apparent indestructibility of the tropical forest, create the impression of an ideal land for both logging and farming.²⁸ However, tropical moist forests are not the resilient ecosystems they appear to be, but are exceedingly fragile.²⁹ Since the early 1950s Brazil has become painfully aware of the fallacy of thinking that the density and richness of the forest is evidence of fertile soil beneath it. In the warm moist climate of the tropical forest, leaves and dead wood quickly decompose as they fall to the ground, and the shallow root systems immediately recycle the minerals back into the trees. The soil itself attains neither depth nor richness in nutrients.³⁰

Where modern civilization has disrupted this delicate, finely-tuned system, severe ecological damage has followed. Slash and burn clearing of land for farming or ranching has often rendered vast amounts of land useless for its intended purpose.³¹ Nutrients released by this method of clearing create fertile soil for two or three years. Once the nutrients are depleted, they take a decade to regenerate.³² In addition,

²⁴ *Id.*

²⁵ *Id.*

²⁶ *Id.*

²⁷ *Id.*

²⁸ *Id.*

²⁹ Myers, *Corporate Destruction of Tropical Forests*, 36 BUS. & SOC'Y REV. 9, 11 (1980-81).

³⁰ THE WORLD OF THE AMAZON 28-29 (Brazilian Consulate 1976). The Amazon forest consists mainly of varying levels of trees which form an impenetrable canopy when viewed from below or above. The roots of the trees seldom penetrate more than a few feet beneath the surface and often trees are supported as much by the clinging vines which stretch from tree to tree as by their roots. These huge trees grow in soil which is only a few inches deep and almost completely devoid of essential nutrients. The plant nutrients are held in the trees themselves, not in the soil.

³¹ *Id.*

³² 2 COUNCIL ON ENVIRONMENTAL QUALITY & U.S. STATE DEPT., THE GLOBAL 2000 REPORT TO THE PRESIDENT 126, 131 (1980) [hereinafter cited as 2 GLOBAL 2000 REPORT].

frequent intense tropical rains, now unimpeded, cause further loss of nutrients through erosion and leaching of the soil.³³ Other methods of land clearing appear no less destructive. Agent Orange, the chemical defoliant used widely by United States forces in Vietnam, is reportedly available in farm supply stores in the Amazon region where it is used to clear land for cultivation.³⁴ Agent Orange has been linked with birth defects and miscarriages, and is banned in the United States.³⁵ The danger of this toxic pollutant is increased as runoff carries it into water supplies. Another technique, the *correntao*, involves enormous tractors dragging very large chains through the forest uprooting everything in their paths.³⁶ This method also opens the soil to erosion and nutrient depletion, rendering the land useless within a few years. Brazil's need for ever-increasing agricultural production has caused the government to begin to share scientists' and environmentalists' deep concerns over environmental problems in the Amazon.³⁷

As with farming, the physical destruction of the tropical forest from logging is great. Careless logging destroys from one- to two-thirds of the unharvested trees in a tropical forest.³⁸ Further, when a cleared area is not replanted within a short time, the wind, rain, and sun turn the land into a hard-baked, infertile wasteland.³⁹ There are a variety of less destructive logging methods known and available to jungle logging companies.⁴⁰ However, corporations have little incentive to

³³ *Id.* The Brazilian government learned this environmental lesson the hard way in its Bragantina project of the early 1900s. The government colonized a 12,000 square mile area near Belem for the purpose of food production. As areas were cleared, the land provided two or three years of good harvests before the soils were exhausted and the farmers had to move on. By 1950, all of the original forest was gone and the farmers started clearing the secondary growth forests. However, this land produced only one good harvest. The area is now a wasteland where only vigorous weeds and scrub vegetation survive. *THE WORLD OF THE AMAZON*, *supra* note 30, at 29-30.

³⁴ 2 GLOBAL 2000 REPORT, *supra* note 32, at 324.

³⁵ *Id.*

³⁶ *Id.*

³⁷ *THE WORLD OF THE AMAZON*, *supra* note 30, at 29-30.

³⁸ Myers, *supra* note 29, at 10. Tropical moist forests contain a tremendous variety of tree species, some more valuable than others as lumber. Unfortunately, similar trees do not grow together in groups like trees in a temperate forest area. Approximately 10-30% of the trees are commercially valuable; the rest are mere impediments to loggers. Thus, the selecting and cutting of quality timber is initially very costly. Moreover, since commercially valuable trees are often the tallest ones, with shallow roots and strong interconnecting vines, felling and extracting these trees is extremely destructive. 2 GLOBAL 2000 REPORT, *supra* note 32, at 131. Damaged but not unrooted trees are highly susceptible to pathogens. Thus, a minor injury to their bark can cause irreparable damage and death. Myers, *supra* note 29, at 10.

³⁹ 2 GLOBAL 2000 REPORT, *supra* note 32, at 322.

⁴⁰ Myers, *supra* note 29, at 11. Techniques for minimizing environmental damage include:

1. logging relatively narrow strips and leaving wide strips untouched;

increase the time and expense of lumbering.⁴¹ Forestry is a capital intensive activity; the more timber extracted, the lower the unit cost.⁴² Further, foreign corporations are driven by high interest rates and a fear of strict government regulation or even expropriation to try to exploit the jungle for immediate profits.⁴³ For these reasons, a corporation is likely to be indifferent to the host country's long term welfare.

C. Development of the Amazon Region

It is against the backdrop of potentially conflicting dilemmas—the serious economic and social problems of a developing nation versus the potential destruction of the country's most valuable resource, its “promised land” for a better life—that Brazilian programs to develop and protect the Amazon region must be evaluated. Further, it must be recognized that environmentalists and “no-growth” groups in the developed western world have a perspective very different from that of a government of a third world country desperately in need of development for political, economic, and social reasons, and from the profit-maximizing multinational corporation that takes on the task of development.⁴⁴ Thus, legitimate local, regional, and global environmental concerns must be balanced against harsh economic and social realities to determine their true importance.

The recent history of Amazon development began following the 1964 military coup, when after a visit to the region, President Castello Branco decided to launch “Operation Amazonia” in 1966. The Superintendency for the Development of Amazonia (SUDAM) was created to supervise the development progress.⁴⁵ SUDAM has endeavored to achieve the dual goals of development and protection of Amazonia by private industry and individuals, mainly through financial incentives, including tax breaks, easier credit and low interest loans, and direct

-
2. careful directional felling;
 3. severing clinging vines before felling—a method that will reduce damage by 20% at a cost of three dollars per tree;
 4. using helicopters to extract logs by air;
 5. engaging biologists to collect plant and animal specimens as the logging operation penetrates deep into the forest.

Id.

⁴¹ *Id.* at 12.

⁴² *Id.*

⁴³ *Id.*

⁴⁴ Gross & Scott, *Comparative Environmental Legislation and Action*, 29 INT'L & COMP. L.Q. 619, 621 (1980).

⁴⁵ THE WORLD OF THE AMAZON, *supra* note 30, at 8. SUDAM is basically a federal agency established to develop plans to encourage private investment and to coordinate the development of public agencies in the Amazon region. *Id.*

subsidies.⁴⁶ This method is consistent with the Brazilian government's economic philosophy of "free enterprise, liberally dosed with official planning and outright intervention in economic affairs, plus tax policies geared to channel private-sector investment into priority areas."⁴⁷ Over the years, Brazil has continued to maintain a favorable view of foreign investment.⁴⁸ An advertising brochure for foreign corporations from the Office of the Minister of Mines and Minerals describes the government's encouragement of a "competitive race" among international businessmen for the resources of Amazonia.⁴⁹ This attitude generally predominates at present, though environmental, political, and nationalistic pressures have decreased the popularity of the transnational corporation as a tool for development. Cutbacks in foreign investment incentives have resulted.⁵⁰

D. Development Incentives

In the first five years of SUDAM's existence, the government introduced a series of tax concessions to stimulate private industry interest. Under Law 5174, registered companies received a fifty percent reduction in tax liabilities so long as the money saved was invested in agriculture, cattle breeding, or basic industrial projects approved by SUDAM as necessary to the development of the Amazon region.⁵¹ Individuals or corporations which invested in a project approved by SUDAM were entitled to reduce their income tax liabilities by an amount equal to the sum invested, up to fifty percent of their total income tax bill. Both new and existing industries in the region received tax exemptions⁵² and deductions. Customs duty on imported equip-

⁴⁶ *Id.* See also *infra* notes 51-71 and accompanying text.

⁴⁷ Brazil, INVESTING, LICENSING & TRADING CONDITIONS ABROAD (BUS. INT'L CORP.) § 1.02, at 2 (Dec. 1980) [hereinafter cited as IL&T].

⁴⁸ *Id.* § 1.05.

⁴⁹ Kelly & London, *The Last Frontier*, *supra* note 14. United States billionaire Daniel Ludwig's massive \$700,000,000 development project on the Jari River, deep in the Amazon jungle, is a case in point. Encouraged by the cheap price of land and the incentive plans of a cooperative Brazilian government, Ludwig purchased approximately 875,000 acres (the amount of land is now in dispute), bulldozed the jungle, began mining bauxite and kaolin, floated a giant pulp mill pre-built in Japan all the way to the Jari River and began production, built communities with a population of 30,000 in 1979, connected them with a road and rail system, and imported foreign specialists to run the project. Ludwig was clearly a front runner in the competitive race as of 1979. Hoge, *U.S. Magnate, Once Assailed, Is Hailed for Amazon Project*, N.Y. Times, Nov. 30, 1979, at A2, col. 3. But see *infra* note 117.

⁵⁰ IL&T, *supra* note 47, § 1.02.

⁵¹ THE WORLD OF THE AMAZON, *supra* note 30, at 8.

⁵² Tax holidays ranging from 5 to 20 years were granted. IL&T, *supra* note 47, § 10.04.

ment and machinery was waived.⁵³ There were very few limits on the range of investments eligible: industry, mining, lumbering, agriculture, cattle raising, and others were included.⁵⁴ Any talk about maintaining the ecological balance of the Amazon region was mostly lip service. According to Planning Minister Antonio Delfim Netto, "Brazil [had] no time for ecology."⁵⁵

Today, Brazil has cut back its once broad range of federal and regional incentives for industrial and agricultural projects. The reasons range from a desire to increase tax revenues and cut bureaucratic red tape, to a desire to increase national control over Amazon industry in response to political and environmental pressure, and to a realization that some incentives were ineffective or, on the other hand, had already accomplished their purpose. The indirect tax concessions and exemptions on import duties for a wide range of industries were severely limited.⁵⁶ Now, partial reduction of import duties (up to eighty percent) is generally granted only to priority projects in Amazonia which are approved by SUDAM.⁵⁷ Incentives formerly available for mining projects have been eliminated.⁵⁸ The range of investment projects in which companies could previously promise to invest in in return for a fifty percent tax cut have been limited to only those in Amazonia which SUDAM designates.⁵⁹ Presently, SUDAM tends to favor investment projects presented by Brazilian firms over those of foreign companies.⁶⁰ This limits not only a transnational corporation's possibilities for investment, but also its opportunity to receive SUDAM-backed investment funds for its projects.⁶¹

Nonetheless, many of the more valuable incentives still remain. Import duties on equipment for approved priority projects can still be reduced up to eighty percent.⁶² Corporations can still receive a tax cut of fifty percent for expansions of their business approved by

⁵³ THE WORLD OF THE AMAZON, *supra* note 30, at 10.

⁵⁴ *Id.* At the same time, the establishment of more easily obtainable loans and cheaper credit (especially to small farmers), minimum prices for farm products, and government subsidized co-operatives encouraged an increase in both individual and corporate agricultural activities in the Amazon basin. *Brazil Stresses Farming and Enrolls its 'Miracle' Worker*, N.Y. Times, May 9, 1979, at A2, col. 3.

⁵⁵ Kelly & London, *The Last Frontier*, *supra* note 14.

⁵⁶ IL&T, *supra* note 47, at 21, 23.

⁵⁷ *Id.* § 10.01.

⁵⁸ *Id.*

⁵⁹ *Id.* § 10.04.

⁶⁰ *Id.* § 10.02.

⁶¹ *Id.*

⁶² *Id.* §§ 10.01, 10.06.

SUDAM.⁶³ Likewise, they can still get a fifty percent reduction if the money saved is invested in a priority project as designated by SUDAM (an increasingly more restricted area).⁶⁴ Individual income tax can still be reduced by thirty to sixty percent for investment in shares of companies with operating schemes approved by SUDAM.⁶⁵ Further, there is still a ten year tax holiday for new companies in the SUDAM area or for existing companies in the region that began substantial expansion, modification, or diversification of their businesses before December 31, 1982.⁶⁶ The government has also developed a scheme of "risk contracts" to attract transnational corporations for oil exploration⁶⁷ and large scale logging operations.⁶⁸ These contracts, in essence, reward the corporation for success in risky ventures which the government views as essential to the growth of Brazil. For instance, if a company discovers oil, it may participate in the development of the newly discovered deposit and take a percentage of the oil as payment for its efforts.⁶⁹ SUDAM also has identified approximately 100 million additional acres (between five and ten percent of the Amazon region) for timber exploitation.⁷⁰ Among investment projects readily available to corporations to qualify for tax reductions are programs for reforestation.⁷¹ The retention of incentives for this project is but one indication of the increasing awareness in Brazil of the need to preserve the Amazon River basin.

E. Environmental Protection

Many in Brazil, including people high in the government, have begun to realize that Brazil cannot afford to destroy the Amazon forest for the sake of development. In spite of the growing interest, environmental legislation has been very limited in its effects. Legislation passed early in SUDAM's career allows the financing of projects only if

⁶³ PINHEIRO, NETO & CIA, DOING BUSINESS IN BRAZIL 195 (rev. 3, 1981).

⁶⁴ IL&T, *supra* note 47, § 10.04.

⁶⁵ PINHEIRO, NETO & CIA, *supra* note 63, at 196.

⁶⁶ *Id.* Of course, there always exists the unofficial incentive of tax cheating. While returns on investments in the capital city of Brasilia are taxed at a rate of up to 50%, in the less accessible regions of the Amazon basin, the tax man can be paid off for as little as five percent of the bill. Kelly & London, *New Jungle Cry: 'Amazon is Money'*, Chicago Sun-Times, Feb. 24, 1981, at 4, col. 1.

⁶⁷ 1980 BUS. LATIN AM. (BUS. INT'L CORP.) 2 (Jan. 2, 1980).

⁶⁸ 2 GLOBAL 2000 REPORT, *supra* note 32, at 330.

⁶⁹ 1980 BUS. LATIN AM. (BUS. INT'L CORP.) 2 (Jan. 2, 1980).

⁷⁰ 2 GLOBAL 2000 REPORT, *supra* note 32, at 330.

⁷¹ IL&T, *supra* note 47, § 10.04.

they leave fifty percent of the natural forest cover intact.⁷² However, this law is virtually unenforced and unenforceable.⁷³ The government has acted directly to preserve parts of the Amazon River basin by declaring them to be national parks, forest reserves, and animal reserves.⁷⁴ As of 1976, over 169,000 square kilometers had been designated as animal reserves, and Amazonia National Park, covering ten million square kilometers (approximately 2.5 million acres), had been established.⁷⁵ President João Baptista Figueiredo, who was elected in 1979 as Brazil moved toward becoming a parliamentary democracy, established three more national parks during his first six months in office.⁷⁶ In spite of the progress made in this area, less than one-fourth of one percent of the Amazon region has been set aside for protection. The most ambitious current proposal for conservation in the Amazon basin would set aside five percent of the region for parks and reserves.⁷⁷ A number of well-respected government centers do research for the Amazon region. These centers study engineering, agriculture, medicine, transportation, agronomy, forestry, fishing, and other problem areas relating to the Amazon basin. However, the centers are understaffed, severely hampering their effectiveness.⁷⁸

Reforestation of the jungle has been a keynote of the country's environmental policy since the 1966 enactment of Law 5106. Strong tax incentives, up to a fifty percent tax break for companies engaged in reforestation or for companies that reinvested the tax savings in the reforestation project,⁷⁹ achieved noticeable results.⁸⁰ Corporations and large landowners took advantage of the savings by planting a substantial number of softwood trees, trees that would be suitable for the production of the wood pulp used to make paper.⁸¹ With these incentives, the amount of land replanted annually in Brazil reached three times the goal set by the Food and Agriculture Organization for all of Latin

⁷² THE WORLD OF THE AMAZON, *supra* note 30, at 30.

⁷³ Kelly & London, *New Jungle Cry: 'Amazon is Money,' supra* note 66.

⁷⁴ THE WORLD OF THE AMAZON, *supra* note 30, at 30.

⁷⁵ *Id.*

⁷⁶ *Governments Move to Stem Amazon Destruction*, N.Y. Times, Nov. 20, 1979, at C3, col. 1.

⁷⁷ 2 GLOBAL 2000 REPORT, *supra* note 32, at 330-31.

⁷⁸ Kelly & London, *Science Racing Time in Amazon*, Chicago Sun-Times, Feb. 26, 1981, at 4, col. 1. The Manaus National Institute for Amazon Research has a staff of 40 highly regarded Ph.D. researchers. However, staffers feel they need at least 250 more researchers, or they will continue to fall further behind in their race to understand the jungle and to save some of it before it is completely cut down. *Id.*

⁷⁹ IL&T, *supra* note 47, § 10.04.

⁸⁰ 2 GLOBAL 2000 REPORT, *supra* note 32, at 326.

⁸¹ THE WORLD OF THE AMAZON, *supra* note 30, at 30.

America.⁸² While these incentives have been cut back since 1978—mainly by SUDAM's greater selectivity in granting approval—they continue to make investment opportunities attractive, especially in light of the even larger cutbacks and restrictions in other tax incentives.⁸³

A more subtle factor limiting the success of the reforestation program involves the economic and ecological effects of planting large amounts of softwood groves. The groves are incompatible with the jungle's original ecosystem, which consists of a variety of different hardwoods, randomly scattered throughout the forest. This intensive silviculture⁸⁴ in tropical regions has a number of serious problems associated with it, including the time it takes for trees to grow, making research more difficult and substantially delaying a return on investment.⁸⁵ The doubtful forest management methods now in practice create additional environmental problems in the fragile tropical forest.⁸⁶ As a result, investors tend to consider tropical silviculture an unproven technology. Most transnational forest product corporations do not expect tropical commercial planting before the 1990s.⁸⁷

⁸² 2 GLOBAL 2000 REPORT, *supra* note 32, at 326. The United States Embassy in Brazil Report on Forestry Trends called the program a twelve year success story. The number of trees planted by the 500 companies engaged in reforestation under the program was annually seven to ten times the amount planted prior to 1966. The program placed Brazil fourth in the world in reforestation practices, behind the United States, the Soviet Union, and China. *Id.* at 725-26.

⁸³ IL&T, *supra* note 47, § 10.04.

⁸⁴ Silviculture involves human planning, production, and tending of forests. WEBSTER'S NEW COLLEGIATE DICTIONARY 789.

⁸⁵ The most devastating of these problems is the time lag inherent in forestry research: a growth cycle measured in decades as opposed to months for grains. Most silviculture methods were developed in temperate zones and their applicability to tropical regions is doubtful. However, the substantial delays in economic returns for tropical forest research investments due to the time lag make the needed extensive research and technological breakthroughs for tropical silviculture unlikely to occur for several decades. Further, a 1970 study found that increased fertilization and a shorter rotation period resulted in a 38% increase in Douglas fir production, while costs, especially energy subsidies, increased 64%. The higher the energy costs, the greater the need for attention to indigenous species, which are naturally adapted to climate and soil conditions. 2 GLOBAL 2000 REPORT, *supra* note 32, at 325-26.

⁸⁶ The great ecological diversity of tropical forests, which makes them extremely stable under natural conditions, also makes them exceptionally vulnerable to permanent damage when natural conditions are altered. Efforts to shorten the rotational cycle have so far resulted in higher costs than benefits. *See supra* note 85. Recent research indicates that the loss of nutrients following a clear-cutting operation in tropical regions could be catastrophic even with replanting. There is evidence that uniformly aged trees do not stabilize watersheds as well as natural forests. Further, as with grains, pests and pathogens will likely evolve ways to overcome the defenses of single strains of trees grouped together. This problem was virtually non-existent in the highly diversified natural jungle. Thus, pesticides and fertilizers will be required which will likely affect flora, fauna, lakes, and streams. Instead of the natural forest filtering and purifying air and water, the intensively managed forest may become a source of pollution. 2 GLOBAL 2000 REPORT, *supra* note 32, at 326.

⁸⁷ *Id.*

There is increasing environmental concern in Brazil over the Amazon region. Environmental groups have raised a strong voice protesting what they see as government inaction in neglecting to pass effective legislation or enforce the legislation now in effect.⁸⁸ The ever-increasing rate of deforestation lends credence to their cries. According to Landsat, the United States survey satellite, current estimates of the amount of deforested wasteland in the Amazon basin range from three⁸⁹ to ten percent.⁹⁰ Even using the low estimate, land covering almost ten times the amount of area replanted (3.75 million acres) has been left as a degraded wasteland (thirty-six million acres—about the size of Illinois.)⁹¹ However, the crucial question is not the present amount of deforestation, but the rate at which the jungle is disappearing.⁹² There was an 150% increase in the rate of deforestation from 1975 to 1978.⁹³ By the year 2000, at least forty percent of the forest cover in less developed countries will be gone,⁹⁴ and at the current rate, some scientists feel that the entire Amazon jungle will have virtually disappeared.⁹⁵

In response to economic, environmental, and political pressures, the Brazilian government has recently sought greater control over foreign development of the Amazon. The government passed legislation to restrict foreign acquisition of rural lands and foreign investment in "national security zones," which include priority areas of Amazonia. Recently-enacted financial measures limit foreign access to local financing and reduce the permissible foreign equity share.⁹⁶ Besides aiding the Brazilian economy and balance of trade, these methods give the government greater control over corporate activity and major new investments.⁹⁷ The question still remains whether environmental con-

⁸⁸ Kelly & London, *New Jungle Cry: 'Amazon is Money,'* *supra* note 66. Orlando Valverde, a former naval officer who heads one Brazilian environmental group, stated: "The jungle is being given over to the corporations and there are no laws to stop them . . ." *Id.* Some in the Brazilian government agree. See *infra* notes 99-103 and accompanying text.

⁸⁹ Kelly & London, *The Last Frontier,* *supra* note 14.

⁹⁰ 2 GLOBAL 2000 REPORT, *supra* note 32, at 330.

⁹¹ *Id.* at 127.

⁹² Kelly & London, *The Last Frontier,* *supra* note 14.

⁹³ *Id.*

⁹⁴ 1 COUNCIL ON ENVIRONMENTAL QUALITY & U.S. STATE DEPT., THE GLOBAL 2000 REPORT TO THE PRESIDENT 2 (1980).

⁹⁵ Kelly & London, *Conquest of the Amazon,* *supra* note 15.

⁹⁶ IL&T, *supra* note 47, § 1.05. Certain mining incentives are available only to Brazilian-controlled firms. The government of Brazil may consider foreign investors for loans only if Brazilian-owned businesses cannot do the job adequately. In addition, certain sectors, such as computers, have been singled out as "reserved markets" for locally controlled companies. *Id.*

⁹⁷ Rowland, *Foreign Investment in Brazil: Reconciliation of Perspectives,* *supra* note 11, at 40 (1979). The new laws are still quite amenable to foreign investment, according to Rowland,

cerns will lead to an altered approach to development with substantial weight on managing and preserving this valuable resource. There will be no answer as long as the country's struggling economy and balance of trade deficit are seen as weighing heavily on the side of rapid, unregulated development.

F. Future in Brazil

The major goals for the Brazilian government over the next few years include developing alternative energy sources, stabilizing balance of payments, and improving social conditions via income redistribution, job creation, and reduction of regional disparities.⁹⁸ The Amazon region figures prominently in all these goals. Missing in the midst of these immediate and pressing problems is a statement about wise utilization and preservation of the Amazon.

The success or failure of a bill now under consideration by the Brazilian legislature could give a strong indication of the path Brazil will take in the 1980s regarding the development and preservation of the Amazon. The *Política Florestal* (Forest Policy), a national management plan for the Amazon, has stirred fervent and heated debate within the government.⁹⁹ Though the policy itself is apparently not yet public, its goal is to "harmonize development with the preservation of ecology through rational, disciplined occupation of the Amazon."¹⁰⁰ The policy would set aside areas for industrial development, farming, Indian reserves, logging forest, mining districts, and environmental preserves.¹⁰¹ Many government officials and businessmen believe that the only way to develop the Amazon while maintaining its ecological balance is through a clear national policy.¹⁰² Mauro Reis, head of the Brazilian Institute for Forest Development (IBDF), believes such a policy is the key to managing the forest.¹⁰³ By taking no action, the government is in essence encouraging unrestrained exploitation of the region. Others, like influential Subminister Paulo Yakota, head of the

through an arrangement involving the sale of know-how to a Brazilian-controlled joint venture.
Id.

⁹⁸ IL&T, *supra* note 47, § 1.03.

⁹⁹ Kelly & London, *The Last Frontier*, *supra* note 14. While proposals originally called for 600,000 square miles of national parks and ecological preserves, 300,000 square miles of national forests, and a ban on the leasing of forest lands or timber concessions to corporations, the bill has been the subject of considerable compromise. *Id.*

¹⁰⁰ *Id.*

¹⁰¹ *Id.*

¹⁰² *Id.*

¹⁰³ *Id.* Reis stated, "We need the forest. We have to use it and learn how to grow it back. If we don't manage it properly, it will disappear." *Id.*

government's Land-Colonization Program, feel that the policy is the work of radical environmentalists and that it will be scrapped.¹⁰⁴ Stressing the need for flexibility and greater use of the Amazon's resources, Yakota maintains that the government simply does not yet know enough to effectively manage the Amazon through such all-encompassing regulation.¹⁰⁵ Yakota, noting that his views reflect those of Antonio Delfim Netto, one of the three most powerful men in Brazil, intimated that a new policy was needed but would take time.¹⁰⁶

There is presently no effective method for resource planners in tropical regions to weigh the costs and benefits of transforming tropical moist forests to other uses.¹⁰⁷ This makes developing and implementing an enlightened management plan for the Amazon difficult. While the benefits are relatively immediate and can be measured in economic gains, the costs are extremely diverse, often long range and not conclusively measurable.¹⁰⁸ Contrary to the view of many scientists and government officials, Yakota does not feel time is of the essence. "[O]ur inefficiency will prevent us from cutting down too much of the forest."¹⁰⁹

While passage of the *Política Florestal* in an undiluted form would almost assuredly limit opportunities for foreign investment by placing further restraints on Amazon development projects, it is not clear whether scrapping the policy would increase or even preserve the present level of foreign investment. Environmentalists and nationalists in Brazil's government have come down strongly against further foreign investment in the Amazon. They have proposed a code of conduct for transnational corporations, which passed the Chamber of Deputies in 1979 and is now before Congress, along with a host of other bills restricting foreign investors.¹¹⁰ The code calls for harsh penalties on transnational corporations (TNCs) for a wide variety of vaguely defined offenses.¹¹¹ In 1980, Congress appeared to favor the bill and its passage looked promising.¹¹² More recently, however, it has been viewed mainly as a campaign device.¹¹³ In addition, President Figueiredo strongly opposes the code and has indicated that he will veto it, if

¹⁰⁴ *Id.*

¹⁰⁵ *Id.*

¹⁰⁶ *Id.*

¹⁰⁷ 2 GLOBAL 2000 REPORT, *supra* note 32, at 132.

¹⁰⁸ *Id.* See also *infra* notes 122-44 and accompanying text.

¹⁰⁹ Kelly & London, *The Last Frontier*, *supra* note 14.

¹¹⁰ IL&T, *supra* note 47, § 1.05.

¹¹¹ *Id.*

¹¹² 1980 BUS. LATIN AM. (BUS. INT'L CORP.) 154-55 (May 14, 1980).

¹¹³ IL&T, *supra* note 47, § 1.05.

necessary.¹¹⁴ Other legislation that will almost certainly pass involves new incentives for mining and agricultural projects in the Carajas region of the eastern Amazon, where vast deposits of iron, manganese, copper, and other minerals have been discovered.¹¹⁵ Further, while TNCs have frequently been on bad terms with the government over the recent austerity program,¹¹⁶ which has stirred renewed nationalist fervor against foreign corporations,¹¹⁷ the official government attitude towards TNCs seems to be one of accommodation and support.¹¹⁸ Brazilian leaders favor the continued development of transnational corporations in Brazil because TNCs help ease the country's balance of trade difficulties, help supply Brazil's growing internal markets, and provide lessons in jungle development at someone else's expense.¹¹⁹

G. Conclusion

The growing emphasis on ecological issues in Brazil, initially triggered by greater scientific awareness, is today attributable to the de-

¹¹⁴ *Id.*

¹¹⁵ *Id.* at 21. Similarly, increased mining of bauxite in the Amazon region could turn Brazil's aluminum trade deficit of 140-180 million dollars per year into earnings of over \$600 million, thus making bauxite mining another very likely candidate for government incentives. 1980 BUS. LATIN AM. (BUS. INT'L CORP.) 122 (Apr. 16, 1980).

¹¹⁶ Rhodia, the Brazilian subsidiary of Rhone Poulenc, a French corporation, publicly blamed government restrictions and austerity programs for its poor 1979 performance. Many other firms privately agreed. 1980 BUS. LATIN AM. (BUS. INT'L CORP.) 169 (May 28, 1980). A United States billionaire, Daniel Ludwig, threatened to shut down his adventurous Jari project unless the government came through with promised financial relief and resolved some persistent bureaucratic problems. Hoge, *Ludwig May Cut Brazil Project*, N.Y. Times, Oct. 16, 1980, at D1, col. 4.

¹¹⁷ Ludwig's demands triggered the reappearance of the wallside slogans: "Ludwig get out" and "the Amazon is ours." The Rio daily *Jornal do Brasil* intoned that "the Brazilian political system should have no difficulty acting through Congress and aided by a free press, in barring the federal government from bailing Mr. Ludwig out of his own business collapses." Hoge, *supra* note 116. In January, 1982, Ludwig gave up on his ambitious and unprecedented Amazon project, selling it to a group of Brazilian businessmen and writing off most of the billion-dollar loss. A combination of factors, including the bureaucratic difficulties of dealing with the Brazilian government and the initial heavy losses incurred because of early mistakes, precipitated Ludwig's withdrawal. It is interesting to note that the managers at the Jari project feel that most of the physical obstacles have been overcome, and they cite first-time profits in 1981 as evidence that the project is beginning to work. Kelly & London, *Amazon Pioneer Gives Up With Goal in Sight*, Chicago Sun-Times, Jan. 24, 1982, at 44, col. 1.

¹¹⁸ As stated by the powerful Planning Minister, Antonio Delfim Netto, in response to Daniel Ludwig's threats to paralyze his multimillion dollar development project at Jari: "The time has come when Ludwig should stop being treated like a foreign body in this country. We will give him the support he needs to guarantee the project." Hoge, *supra* note 116. While the government's position has not changed, Ludwig's withdrawal from his Jari project reflects the growing strength of government opposition parties. Kelly & London, *Amazon Pioneer Gives Up With Goal in Sight*, *supra* note 117.

¹¹⁹ Hoge, *supra* note 116.

mocratization of the country. With the rise of a free press and the advent of political opposition (there will be at least four legitimate parties competing in the 1982 elections¹²⁰) the environment has become a public issue. Once a democratic government has embarked on some sort of environmental program, the resulting momentum tends to create an even greater public demand for further action and enforcement.¹²¹

The Amazon region embodies both the short and long term hopes of Brazil for everything from industrial and capital development, gross national product and the balance of trade deficit, to the agricultural and land needs of a large population. Because of the immediacy of Brazil's present needs, the government is unlikely to pass strong, effective environmental legislation and enforce it strictly before the Amazon is in very serious danger. Government financial incentives to multinational corporations for development remain attractive today, though they have been cut back somewhat in recent years in response to economic and political pressures. Perhaps the greatest Brazilian barrier to foreign investment in Amazon development is the Amazon jungle itself, its inaccessibility, and its exceedingly complex and fragile ecosystem.

II. REGIONAL AND INTERNATIONAL PERSPECTIVE

In recent decades, as the levels of world environmental awareness and social consciousness have risen, a number of regional and international organizations have addressed the problems of development of the tropical moist forest. International interest in the Amazon region was a natural reaction as people understood more about the extraterritorial effects of both environmental degradation and the poverty and lack of development in third world nations.

A. *Extraterritorial Effects*

The first and most obvious reason for interest in the development of the Amazon region is that the jungle extends beyond the borders of Brazil into seven other South American countries.¹²² Additionally, however, development or destruction of the Amazon will have

¹²⁰ IL&T, *supra* note 47, § 1.05.

¹²¹ Zalob, *Approaches to Enforcement of Environmental Law: An International Perspective*, 3 HASTINGS INT'L & COMP. L. REV. 299 (1980).

¹²² *Eight Amazon Nations Sign Accord on Development*, N.Y. Times, Oct. 30, 1980, at A5, col. 1. The other countries involved are Bolivia, Colombia, Ecuador, Guyana, Peru, Surinam, and Venezuela.

profound environmental, economic, and social effects on the rest of the world. World concern is further magnified by the fact that the destruction of Amazon jungle is typical of the kind of exploitation occurring in tropical moist forests (TMFs) around the world.¹²³

There will be a variety of concrete losses in the world's supply of goods if the Amazon and other TMFs continue to be severely degraded or destroyed. The supply of fuel woods,¹²⁴ fiber, and resin would diminish.¹²⁵ As evidenced by the depletion of the soil from controlled farming in Brazil, a valuable present and future agricultural source may be wasted.¹²⁶ TMFs are also a valuable source of drugs, and the potential for future discoveries is virtually unlimited.¹²⁷ Natural pesticides are another useful product developed by jungle species.¹²⁸

Other losses not as easily quantifiable are perhaps even more dramatic. Many ecologists are concerned to varying degrees over the so-called "greenhouse effect," a general warming of the earth's atmosphere because of the increase in carbon dioxide released and not reabsorbed.¹²⁹ There has been a steady increase in atmospheric carbon dioxide for many years, and it has recently become apparent that the widespread burning of TMFs is contributing significantly to this increase.¹³⁰ G.M. Woodwell, Director of the Ecosystem Center at the Marine Biological Laboratory in Woods Hole, Massachusetts, thinks that the destruction of TMFs is having an effect now, though "it may not be easily measured until 1990 or 2000."¹³¹ One disastrous scenario advanced by scientists predicts that a two degree rise in world temperature within seventy years will cause a melting of the polar ice caps, raising the sea level twenty-three feet and putting most coastal cities under water.¹³² A less speculative problem is that of water supply. Half of the rain that falls on the Amazon region is initially evaporated from the jungle, the other half from the oceans.¹³³ Extensive work by Eneas Salati, head of Brazil's National Institute for Amazon Research

¹²³ 2 GLOBAL 2000 REPORT, *supra* note 32, at 125-33.

¹²⁴ *Id.* at 133.

¹²⁵ *Governments Move to Stem Amazon Destruction*, N.Y. Times, Nov. 20, 1979, at C3, col. 1.

¹²⁶ 2 GLOBAL 2000 REPORT, *supra* note 32, at 32.

¹²⁷ *Governments Move to Stem Amazon Destruction*, N.Y. Times, *supra* note 125. The jungle has been called a "huge pharmaceutical factory" by Thomas Lovejoy, Director of the World Wildlife Fund. *Development is Eating Up the World's Rain Forests*, N.Y. Times, Aug. 31, 1980, at E16, col. 5.

¹²⁸ 2 GLOBAL 2000 REPORT, *supra* note 32, at 133.

¹²⁹ Kelly & London, *Science Racing Time in Amazon*, *supra* note 78.

¹³⁰ 2 GLOBAL 2000 REPORT, *supra* note 32, at 327.

¹³¹ Kelly & London, *Science Racing Time in Amazon*, *supra* note 78.

¹³² *Development is Eating Up the World's Rain Forests*, *supra* note 127, at E16, col. 4.

¹³³ Kelly & London, *Science Racing Time in Amazon*, *supra* note 78.

(INPA), has shown that deforesting large areas of the jungle could reduce rainfall and lengthen the drying season in the Amazon, in other parts of South America, and possibly even in North America, contributing to a widespread drying trend.¹³⁴

The jungle is the richest source of genetic variety on earth. However, once a species of plants or animals is lost, the process is irreversible and any potential contribution of that species is lost forever.¹³⁵ The destruction of a species' habitat through deforestation is usually sufficient to kill it in the TMF's finely tuned ecosystem.¹³⁶ Dr. Lovejoy, of the World Wildlife Fund, estimates that efforts to meet basic human needs and rising expectations will lead to the extinction of one-seventh to one-fifth of all plant and animal species over the next twenty years.¹³⁷ The vast potential of this huge stock of "biological capital" includes sources of building materials, fuel, medicines, nuts, fruits, and insecticides,¹³⁸ and it could be devastating to lose it. Some think that the most important "species" being lost is the Indians of the jungle, who know how to live with and use the jungle, and could teach others how to do so.¹³⁹ Industrial and chemical pollution is also likely to increase with unrestrained development of the Amazon.¹⁴⁰ Further, the jungle is the source of exotic and unpredictable diseases.¹⁴¹ Careful study of the jungle and of the Indians who have lived there their entire lives could be helpful in preventing illness, deaths, or even epidemics.

One further potential problem receiving increasing worldwide attention is the deepening of human poverty and misery because of flooding, the loss of cropland, and the scarcity of fuel wood resulting from extensive deforestation.¹⁴² These problems would add to the pressures for massive migration and foster political instability.¹⁴³ They would

¹³⁴ *Id.*

¹³⁵ 2 GLOBAL 2000 REPORT, *supra* note 32, at 327.

¹³⁶ *Id.* at 328-31.

¹³⁷ *Id.* at 328.

¹³⁸ *Id.* at 329-30.

¹³⁹ Kelly & London, *Science Racing Time in Amazon*, *supra* note 78. Roger Shrimeton, head of INPA's medical section, voices this opinion. *Id.* While Indians are not being massacred, they do face a subtle and more pervasive form of extinction. They are in the way of progress and must be moved. Every time they move, more die. As noted by Charles Wagley, a renowned Amazon scholar at the University of Florida: "There will be no Indian problem in twenty years because there will be no Indians." Kelly & London, *The Parakana—as Endangered as the Wilderness They're Part of*, Chicago Sun-Times, Feb. 25, 1981, at 8, col. 1.

¹⁴⁰ See generally *infra* note 217 (efforts to preserve land, water, and air are essential).

¹⁴¹ Kelly & London, *Science Racing Time in Amazon*, *supra* note 78.

¹⁴² COUNCIL ON ENVIRONMENTAL QUALITY & U.S. STATE DEP'T., GLOBAL FUTURE: TIME TO ACT 67 (1981) [hereinafter cited as GLOBAL FUTURE].

¹⁴³ *Id.*

also lead to increased demand for aid and suppression of less developed countries' (LDCs') economies, causing a reduction in the market for products of industrial economies.¹⁴⁴

B. Regional and International Action

The United Nations Declaration on the Human Environment at Stockholm in 1972 forms a basis for current international thought on environmental problems.¹⁴⁵ The Stockholm Declaration is an enlightened document essentially setting up a balancing process between the need to protect the environment and the needs of developing countries.¹⁴⁶ Among other things, the Declaration emphasizes a responsibility to safeguard the natural resources of the earth for the benefit of present and future generations. For example, the Declaration emphasizes maintaining renewable resources, guarding against the exhaustion of non-renewable resources, and safeguarding imperiled wildlife.¹⁴⁷ However, the Declaration draws a distinction between LDCs and developed countries in proclamation 4:

In the developing countries most of the environmental problems are caused by underdevelopment. Millions continue to live far below the minimum levels required for a decent human existence, deprived of adequate food and clothing, shelter and education, health and sanitation. Therefore, the developing countries must direct their efforts to development, bearing in mind their priorities and the need to safeguard and improve the environment.¹⁴⁸

The tone set by this statement seems to pervade the rest of the document. Principle 8 speaks of economic and social development as essential for improving the quality of life.¹⁴⁹ Principle 9 states that "environmental deficiencies generated by the conditions of underdevelopment . . . can best be remedied by accelerated development."¹⁵⁰ Principle 21 adds that states have the sovereign right to

¹⁴⁴ 2 GLOBAL 2000 REPORT, *supra* note 32, at 133. Increasing population coupled with decreasing energy supplies could mean that the rural poor would have to spend more time, and the urban poor, more money, acquiring fuel. This would erode levels of productivity in an LDC, weakening the LDC's economy, and making the country less able to purchase the products of industrial economies. *Id.*

¹⁴⁵ Declaration on the Human Environment, June 16, 1972, Report of the U.N. Conference on the Human Environment, Stockholm, Sweden, 15-16 June, 1972, U.N. Sales No. E-73-II-A-14 (1973), reprinted in 67 DEPT. STATE BULL. 116 (1972) [hereinafter cited as Stockholm Declaration].

¹⁴⁶ Almond, *The Extraterritorial Reach of United States Regulatory Authority over the Environmental Impacts of its Activities*, 44 ALBANY L. REV. 739 (1980).

¹⁴⁷ Stockholm Declaration, *supra* note 145, principles 2-5.

¹⁴⁸ Stockholm Declaration, *supra* note 145.

¹⁴⁹ *Id.*

¹⁵⁰ *Id.*

exploit their own resources pursuant to their own environmental policies, so long as they do not cause harm beyond their borders.¹⁵¹ Finally, principle 23 notes that it is "essential in all cases to consider the systems of values prevailing in each country" and "standards which are valid for the most advanced countries . . . may be inappropriate and of unwarranted social cost for the developing countries."¹⁵² Though the Stockholm principles are not legally binding, they do reflect a shared fundamental policy as a basis for international law.¹⁵³ The tone set by the Stockholm Declaration, allowing LDCs to favor development over environmental preservation, has basically been followed in regional agreements applicable to the Amazon basin. Two such agreements deserve mention: the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere, adopted in 1940¹⁵⁴ and reactivated in 1976 and 1977 by the Organization of American States (OAS),¹⁵⁵ and the Treaty for Amazonian Cooperation of 1978, signed by eight South American nations.¹⁵⁶

The OAS Convention calls for contracting states to "explore at once the possibility of establishing in their territories national parks, national reserves . . . and strict wilderness reserves . . . where such establishment is feasible, the creation thereof shall be begun as soon as possible."¹⁵⁷ The Convention also limits the alteration of national park boundaries, "except by the competent legislative authority," and states that resources of reserves "shall not be subject to exploitation for commercial profit."¹⁵⁸ The Convention forbids the hunting, killing, capturing, or taking of certain species of animals and plants listed in an annex to the Convention.¹⁵⁹ However, the OAS Convention is silent about the destruction of a species' habitat resulting in the indirect killing of the species. Because of this omission and the fact that national legislatures can establish or rearrange national reserves as they desire, the

¹⁵¹ *Id.*

¹⁵² *Id.*

¹⁵³ Almond, *supra* note 146, at 759.

¹⁵⁴ Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere, signed Oct. 12, 1940, 56 Stat. 1354, T.S. No. 981, 161 U.N.T.S. 193 [hereinafter cited as OAS Convention].

¹⁵⁵ Comment, *Legal Protection for Rare Plants*, 29 AM. U. L. REV. 515 (1980). Both Brazil and the United States are members of the OAS.

¹⁵⁶ Treaty for Amazonian Cooperation, done on July 3, 1978, 17 I.L.M. 1045 (1978) [hereinafter cited as Amazon Treaty].

¹⁵⁷ OAS Convention, art. 2, *supra* note 154. Interestingly, the Portuguese translation substitutes the phrase "as soon as convenient" here—perhaps a further reflection of the difference in attitude of developed countries and LDCs.

¹⁵⁸ *Id.* art. 3.

¹⁵⁹ *Id.*

OAS Convention appears to be no impediment to a development-minded country or to the TNCs operating therein.

The Amazon Treaty, signed by South American countries with a part of the Amazon region in their territory, is an agreement for the rational development of each nation's respective portion of the Amazon.¹⁶⁰ Following the lead of the Stockholm Declaration, the Amazon Treaty cites as its common aim the development and incorporation of the Amazon region into each nation's economy to permit a more equitable distribution of the benefits and to raise the standard of living.¹⁶¹ The Treaty also mentions the need to maintain a balance between economic growth and conservation of the environment.¹⁶² Article IV stresses the sovereign right of each state to utilize its own portion of the Amazon region, while article VII calls for research and an exchange of information between the parties.¹⁶³ Article IX also calls for close cooperation in science and technological research in order to accelerate economic and social development of the region. Pursuant to article XXI, calling for an annual meeting of top level diplomatic representatives from each country, the Belem Declaration was signed October 24, 1978, after two days of meetings at Belem, Brazil.¹⁶⁴ This document reiterated the inseparability of the Amazon basin development and the preservation of its ecology. The document also stressed the sovereignty of each nation, labeling this an "asset and guarantee of the development of the Amazonian territory."¹⁶⁵

While each of the aforementioned regional agreements is binding on the parties, they are nonetheless carefully constructed to avoid limiting development in any significant way, leaving total discretion in the hands of the sovereign national government. National governments have a tendency to adopt rather narrow views of environmental protection, taking action only when their own economic interests are directly threatened.¹⁶⁶ Nevertheless, the policy implications of such regional accords cannot be overlooked. Today's policy statement is often tomorrow's course of action.

C. Proposed Future Agreements

Two proposals to develop codes of conduct are currently under

¹⁶⁰ Amazon Treaty, *supra* note 156.

¹⁶¹ *Id.* Preamble to the Declaration.

¹⁶² *Id.*

¹⁶³ *Id.* arts. IV, VII.

¹⁶⁴ *Eight Amazon Nations Sign Accord on Development*, N.Y. Times, Oct. 30, 1980, at A5, col. 2.

¹⁶⁵ *Id.*

¹⁶⁶ Gross & Scott, *supra* note 44, at 630.

consideration at the United Nations: one for states with shared natural resources, the other for transnational corporations. In 1978, the United Nations Environmental Program (UNEP) adopted the final report of an Intergovernmental Working Group for an environmental code of conduct for states with shared natural resources.¹⁶⁷ The Amazon jungle fits the definition of shared natural resource.¹⁶⁸ Two events could make this code a factor for TNCs in the Amazon region. The incorporation of the code into a binding international instrument would create legal obligations for signatory states. If the extraterritorial effects of deforestation in the Amazon were to be recognized by other nations as the cause of significant, measurable environmental harm in their territories, Brazil and the TNCs operating therein would have a duty to control, prevent, reduce, or eliminate the adverse environmental effects.¹⁶⁹ Brazil could also be liable for the damage caused,¹⁷⁰ for failure to make a prior environmental assessment, for failure to urgently inform the other states,¹⁷¹ and for failure to take into account the possible adverse effects of an action regardless of where these effects would be felt.¹⁷² Even if Brazil did not hold TNCs personally liable for the damage, the resultant international embarrassment for Brazil would likely lead to strained relations with the TNCs and strict regulation or even expulsion of the corporations.

The second United Nations effort, to develop a code of conduct for transnational corporations, could have a more immediate and direct effect on United States investors in the Amazon region. The code, being developed by a group of eminent individuals acquainted with international economics, trade, and social problems,¹⁷³ is designed to aid less developed countries in regulating and monitoring TNC activities to ensure TNC behavior in accordance with the development goals of the host country.¹⁷⁴ Another purpose is the harmonization of national laws,

¹⁶⁷ Draft Principles of Conduct in the Field of the Environment for the Guidance of States in the Conservation and Harmonious Utilization of Natural Resources Shared by Two or More States, 6 U.N. Env't Program (Agenda Item 11) 9, U.N. Doc. UNEP/IG.12/2 (1978). Brazil and the United States both had representatives in this group.

¹⁶⁸ A shared natural resource is an element of the natural environment used by man which constitutes a biogeophysical unit and is located in the territory of two or more countries. *Id.*

¹⁶⁹ Adede, *United Nations Efforts Toward the Development of an Environmental Code of Conduct for States Concerning Harmonious Utilization of Shared Natural Resources*, 43 ALBANY L. REV. 488, 494 (1979) (principle 1).

¹⁷⁰ *Id.* at 505 (principle 12). Damages would be awarded in accordance with the applicable international laws for environmental damage.

¹⁷¹ *Id.* at 502 (principle 9).

¹⁷² *Id.* at 507 (principle 14).

¹⁷³ The group includes members from Brazil and the United States.

¹⁷⁴ Comment, *Transnational Corporations: The United Nations Code of Conduct*, 5 BROOKLYN

which would benefit both the home country and the host country.¹⁷⁵ It would prevent the TNC from shopping for the most advantageous environment to exploit, while raising standards worldwide, giving TNCs less incentive to flee the stricter regulations of the developed nations.¹⁷⁶

Dealing with general political, economic, financial, and social areas, the code has two principles which would directly affect TNCs from an environmental perspective.¹⁷⁷ The first principle (principle F) states that TNCs should cooperate with governments regarding the protection, preservation, and improvement of host nation environments. This principle requires TNCs to provide information about the environmental impacts of their production processes, and inhibits TNCs from seeking "pollution havens" to evade strict pollution controls in the home country. This principle also envisions minimum environmental standards to prevent host countries from adopting extremely lenient standards in order to induce TNCs to locate in their country.¹⁷⁸

The second key principle (principle 8) calls for TNCs to disclose information of their activities to the public,¹⁷⁹ enabling host countries to evaluate whether TNC activity conforms to their legislation, social objectives, and economic and environmental goals. In response to TNCs' concerns about the confidentiality of their operations and the cost of compiling such information, the working group suggests limiting such information to financial statements, TNC structure, sources and use of funds, employment and investment policies, and accounting principles.¹⁸⁰ The code may also require a statement of a TNC's environmental impact on the area, such as an assessment of the amount of damage caused and the regeneration time for a forest after a logging operation.¹⁸¹ The United Nations Code of Conduct for TNCs would increase the cost of doing business in the Amazon because of both the cost of compiling information for disclosure and the costs necessary to upgrade facilities or processes to meet the minimum environmental standards. However, it is not clear whether such an increase in disclosure and environmental standards would be consistent with Brazilian goals for Amazon development. Although Brazil has not attracted for-

J. INT'L L. 129, 134-35 (1979). Home nations of the TNCs would prefer a code addressed to the governments of host countries as well, in order to protect investors from arbitrary regulation or expropriation of TNCs' interests by the host government.

¹⁷⁵ *Id.* at 135.

¹⁷⁶ *Id.* at 134.

¹⁷⁷ *Id.* at 136.

¹⁷⁸ *Id.* at 149-50.

¹⁷⁹ *Id.* at 150.

¹⁸⁰ *Id.* at 151.

¹⁸¹ Myers, *supra* note 29, at 13.

eign investment through lax pollution standards, but rather through financial incentives making it worthwhile for a TNC to exploit Amazonian resources,¹⁸² the code of conduct might impose stricter environmental standards on TNCs in Brazil than the government economically desires. Thus, the crucial question becomes whether the code would be merely a set of non-compulsory recommendations dependent on moral persuasion, the authority of international organizations, and the support of public opinion to promote the adherence to its principles, or whether it would have the binding force of an international treaty.

III. UNITED STATES PERSPECTIVE

A. *United States Interests*

The United States government has perhaps the greatest opportunity to control the actions of United States-based TNCs in regard to the environmental consequences of TNC behavior.¹⁸³ However, it may be in the best interests of the United States to allow subsidiaries of TNCs maximum freedom in other countries, and to sit back and reap both the economic and developmental benefits without incurring the costs usually associated with such benefits.¹⁸⁴ Of course, moral and humanitarian concerns, as well as the establishment of a good world image of the United States, carry some weight in arguing for action by the United States to help protect the earth's resources for future generations and prevent the catastrophic economic and social effects of severe environmental degradation.¹⁸⁵ But such concerns rarely mobilize government and public interest to the point where action takes the place of rhetoric.

A recent conservative projection compiled by twelve federal agencies and presented to the President predicted a world environmental crisis within twenty years that would threaten world-wide political stability and American economic security.¹⁸⁶ The United States Department of State and the Council on Environmental Quality (CEQ) prepared a follow-up report intended to prompt public discussion and the development of government policy.¹⁸⁷ This report details nine political and economic security reasons that support the position that it would be in the best interests of the United States to take action to

¹⁸² See *supra* notes 51-71 and accompanying text.

¹⁸³ See *infra* notes 200-01 and accompanying text.

¹⁸⁴ See *infra* notes 212-13 and accompanying text.

¹⁸⁵ GLOBAL FUTURE, *supra* note 142, at xiii-xiv.

¹⁸⁶ 2 GLOBAL 2000 REPORT, *supra* note 32, at iii.

¹⁸⁷ GLOBAL FUTURE, *supra* note 142.

encourage environmental responsibility in the Amazon region and worldwide. These are:

1. Availability and prices of renewable natural resources. The United States supplies much of its own needs, but it is likely that soaring prices of food, fuel wood, building materials, and paper would affect the United States if rapid deforestation continues.¹⁸⁸
2. Conservation of the United States renewable resource base. With world food production likely to drop, pressures would increase to both overuse and abuse the United States agricultural resources to the point of depletion of the ground water and desertification in many areas.¹⁸⁹
3. Migration from areas of resource impoverishment. Ecological refugees from worn-out cropland, barren rangeland, and degraded forest land could pour into the United States¹⁹⁰ (e.g., Haitian refugees of recent years¹⁹¹).
4. Disputes over water and other resources. As the amount of fresh water, fisheries, and other resources diminishes, competing demands could lead to disputes.¹⁹²
5. Political instability. Increasing poverty and rich-poor disparities could lead to frustration, resentment, instability, and violence.¹⁹³
6. Energy availability. LDCs' (including Brazil's) conservation and replanting of forests for fuel wood aids economic development, lessens the demand on world oil markets, and reduces the amount of financial aid needed to buy oil.¹⁹⁴
7. Trade. LDCs purchase more than one-third of United States exports and more than half of our agriculture exports. The success of LDC development could be vital to the future success of United States trade.¹⁹⁵
8. Conservation of genetic resources. Medicines, crop varieties, food, fibers, fuels, building materials, biological control of pests, and

¹⁸⁸ *Id.* at xiv.

¹⁸⁹ *Id.* at xv.

¹⁹⁰ *Id.*

¹⁹¹ Many of the Haitians flocking to United States shores in the 1980s are economic rather than political refugees, seeking to escape the grinding poverty of a land that has been stripped bare, especially in the Northwest where the land will not even support subsistence farming. Thomas, *In Northwestern Haiti, People are Principal Export*, N.Y. Times, Sept. 26, 1980, at A22, col. 1. See also Treaster, *Civil Suit Pursuing Asylum for Haitians*, N.Y. Times, May 8, 1980, at 13, col. 1.

¹⁹² GLOBAL FUTURE, *supra* note 142, at xvi.

¹⁹³ *Id.* at xiv.

¹⁹⁴ *Id.* at xvi.

¹⁹⁵ *Id.* at xvii.

other benefits have been drawn from wild species over the years.¹⁹⁶

9. Climate change and pollution. Rising carbon dioxide levels in the earth's atmosphere could have a global effect in years to come.¹⁹⁷ With such substantial interests involved, the next inquiry is what steps the United States has taken, and might take in the future, with regard to the environmental activities of TNCs.

B. Unilateral State Action

The United States has a substantial amount of environmental protection machinery already in place. The National Environmental Policy Act of 1970 (NEPA) is a strong statement of the broad environmental concerns of the United States.¹⁹⁸ This act prescribes environmental standards for federal agencies and sets up the Council on Environmental Quality (CEQ) to monitor the environment and to formulate environmental policy, a task the CEQ has performed diligently since its creation.¹⁹⁹ The Environmental Protection Agency (EPA) carries out the CEQ policies.²⁰⁰ The actions of the United States carry much weight both as a model for domestic programs and as a leader in stimulating an international attack on the problem.²⁰¹ But this may not be enough. Cooperative multilateral action, where attainable, seems preferable to independent unilateral state action, unless, of course, the only alternative is inaction.²⁰²

Unilateral state action in the international environmental area may be a concept whose time is coming. States traditionally have relied on territorial principles for exercising jurisdiction, but trends in environmental law reveal a movement away from these principles, relying instead on shared interests and policies to protect the common environment.²⁰³ Today, the interdependence of countries because of increased mobility, communications, and trade, together with a growing awareness of present and future responsibility to those who share the planet, has led countries, especially those with overseas interests, to

¹⁹⁶ *Id.*

¹⁹⁷ *Id.* at xviii.

¹⁹⁸ 42 U.S.C. §§ 4321-4395 (1976).

¹⁹⁹ Zalob, *supra* note 121, at 301.

²⁰⁰ *Id.*

²⁰¹ GLOBAL FUTURE, *supra* note 142, at 68. One benefit of requiring environmental impact statements (EISs) from federal agencies for any significant international project has been the growth of EIS procedures in other countries. Yost, *American Governmental Responsibility for the Environmental Effects of Actions Abroad*, 43 ALBANY L. REV. 528, 531 (1979).

²⁰² Bilder, *The Role of Unilateral State Action in Preventing International Environmental Injury*, 14 VAND. J. TRANSNAT'L L. 51, 95 (1981).

²⁰³ Almond, *supra* note 146, at 759.

attempt to protect such interests,²⁰⁴ as well as the common environment,²⁰⁵ by projecting their policies overseas. Unilateral state action is already a fact of life in the environmental area.²⁰⁶ The "nationality principle" of the Restatement (Second) of Foreign Relations Law of the United States allows states to unilaterally establish regulations controlling the extraterritorial activities of their own nationals or corporations based in their country.²⁰⁷ Thus, while the United States could probably establish environmental regulations for its TNCs operating in the Amazon region,²⁰⁸ it would be wise to consider the potential advantages and disadvantages of such action before discussing the United States present and future courses of action in this area.

Because a great majority of the TNCs are based in a handful of developed countries, any unilateral regulation of TNC environmental activity abroad by the United States could have a wider reaching effect.²⁰⁹ Besides serving as a model and a precedent for other states to consider, the extraterritorial establishment of minimum environmental standards and standards of disclosure could have positive environmental benefits for the host country, its region, or even the world. Such regulations might promote international agreements if the minimum standards prove successful.²¹⁰ Further, according to Nicholas Yost, General Counsel for the CEQ, requiring environmental impact statements (EISs) of TNCs would evidence a respect for the sovereignty of host countries, rather than vice versa, by respecting their right to know if TNCs might cause serious health or environmental problems. Of course, the host country could then use the information as it sees fit.²¹¹ Extraterritorial regulation could also further a subtle United States security interest. When other states defer to American standards, they are accepting standards and a system designed to meet the require-

²⁰⁴ *Id.* at 739.

²⁰⁵ Bilder, *supra* note 202, at 73.

²⁰⁶ *Id.* at 52. Comment b to section 20 of the RESTATEMENT (SECOND) OF FOREIGN RELATIONS OF THE UNITED STATES says that a state has jurisdiction to regulate conduct that occurs outside of its territory and causes effects within its territory if the effect within the territory is a direct and foreseeable result of the action.

²⁰⁷ Bilder, *supra* note 202, at 68. Section 30 of the RESTATEMENT (SECOND) OF FOREIGN RELATIONS OF THE UNITED STATES says that a "state has jurisdiction to prescribe a rule of law (a) attaching legal consequences to conduct of a national of the state wherever the conduct occurs." Comment f states that this rule is applicable to corporations as well as individuals.

²⁰⁸ Bilder, *supra* note 202, at 76-77.

²⁰⁹ Myers, *supra* note 29. Besides Ludwig's Jari project, Georgia Pacific, Xerox, and Heublein are examples of giant United States corporations engaged in extensive deforestation of the Amazon. *Id.*

²¹⁰ Bilder, *supra* note 202, at 81.

²¹¹ Yost, *supra* note 201, at 535.

ments of the United States.²¹²

The disadvantages of such regulation are not insubstantial. Independent state action might tend to discourage the growth of an international environmental order based on mutual accommodation, cooperation, and international law. There may be a disproportionate interference with international trade and other transnational activity. Inconsistent or conflicting regulations from the home and host states could make TNC compliance very difficult and costly.²¹³ Moreover, there is the possibility of a substantial competitive risk for the home state and its TNCs.²¹⁴ By raising the cost of doing business for its TNCs, a home country can put them at a competitive disadvantage in their efforts to operate effectively and to develop new technology in undeveloped areas. Finally, given the differing perspectives of development-minded LDCs like Brazil, and environmentally conscious developed countries like the United States, it is conceivable that the LDC could view home country regulation as contrary to its developmental goals and a threat to its national sovereignty. With Brazil trying to minimize controls on those environmental harms which it sees as unavoidable by-products of economic development,²¹⁵ a more highly industrialized and concentrated society like the United States might set minimum standards above those desired by the Brazilian government, preventing certain projects from going to Brazil.

While both sides have a host of ardent and intelligent supporters in this country,²¹⁶ it appears that the United States is not yet ready unilaterally to expand its environmental regulations overseas. Foreign policy considerations aside, the political mood within America is presently believed to be going against environmentalist growth. Malcolm Baldrige of the CEQ notes that "[the] perception in this Administration [is] that environmentalism is hostile to the marketplace."²¹⁷ The CEQ, an effective and successful environmental watchdog since 1970, is

²¹² Almond, *supra* note 146, at 740.

²¹³ Bilder, *supra* note 202, at 83.

²¹⁴ *Id.* at 86.

²¹⁵ The industrial city of Cubatao is a case in point. With virtually all industry deemed to be in the national interest, expensive antipollution regulation is almost non-existent. The city has been compared to Los Angeles under a constant full-scale smog alert. Frook, *The Most Polluted Place on Earth*, PARADE, Dec. 13, 1981, at 42.

²¹⁶ 40 Fed. Reg. 51,657-58 (1975).

²¹⁷ *Reagan is not Killing Environmental Council, but Some Fear He Is Crippling It*, N.Y. Times, Apr. 18, 1981, at 8, col. 1. Baldrige appears to be in a minority with his further comment that a strong environmental program can be justified as good, conservative economics. He believes the United States cannot have a healthy economy unless long range efforts are made to preserve land, air, and water. The market is not likely to address these concerns.

losing sixty-eight percent of its staff and at least one-third of its professionals because of budget cuts (as of April, 1981).²¹⁸

The United States should continue, however, promoting international awareness of the deforestation problem and supporting key international organizations, thereby remaining a key factor in the growth of international principles. The United States Interagency Task Force on Tropical Forests, working with representatives of industry, conservation groups, and universities, has analyzed tropical deforestation, defining the United States interests involved and recommending efforts to develop a new international program, as well as to strengthen forest management capabilities in tropical countries.²¹⁹ Another study by the CEQ and the Department of State, noting the leading role of the United States in this area during the past few years, arrived at a similar conclusion. This report urged the United States to continue pressing for adoption of an international tropical forest plan, strengthening of the United Nations Food and Agricultural Organization (FAO), funding for the United States Associate Experts Program,²²⁰ and continued United States support for other international programs, including agroforestry²²¹ and the protection of critical areas.²²² While achieving effective and timely international action is often a difficult task, the advantages to the United States and its TNCs would be substantial. International action would likely serve economic and security interests of the United States endangered by tropical deforestation with none of the disadvantages of unilateral state action. Most notably, international standards would be more likely to balance effectively the goals of environmental preservation and LDC development, and would not result in a competitive disadvantage for United States-based TNCs operating under minimum standards worldwide.

C. Environmental Impact Statement

One of the most promising options for environmental regulation of TNCs was thought by many to be a requirement that corporations file

²¹⁸ *Id.*

²¹⁹ GLOBAL FUTURE, *supra* note 142, at 68-70.

²²⁰ The United States and other countries' professionals in forestry and resource conservation lend their expertise to the FAO to help develop the skills and understanding of LDCs.

²²¹ This involves a non-destructive use of tropical lands through the interspersing of tree stands and crop growing areas.

²²² GLOBAL FUTURE, *supra* note 142, at 70-72, 76, 78-82. Certain unique tropical forest ecosystems that are threatened with extinction are set aside as environmental reserves and parks.

an EIS with the Securities and Exchange Commission (SEC).²²³ However, efforts by environmental organizations to compel the SEC to promulgate environmental disclosure regulations were turned back by the Court of Appeals for the Fifth Circuit following seven years of court battles and SEC proceedings.²²⁴ The SEC considered five alternative EIS proposals: (1) comprehensive disclosures of the environmental effects of corporate activities; (2) disclosure of corporate noncompliance with applicable environmental standards; (3) disclosure of all pending environmental litigation; (4) disclosure of general corporate environmental policy; and (5) disclosure of all capital expenditures and expenses for environmental purposes.²²⁵

Environmental organizations argued that the greater disclosure of information in the EIS was "essential both to sound voting on corporate policies and to informed consideration of corporate financial positions, in light of what the disclosed information would show with respect to environment . . . costs, and . . . the quality of the corporate management [generally]." ²²⁶ On the other hand, corporations argued that the cost of gathering the information was excessive, especially when compared to the minimal benefits, since few shareholders were seriously interested in the information anyway.²²⁷ While the benefit of environmental disclosure to the investor is debatable, commentators and the SEC agree that disclosure is an effective regulatory tool and would benefit the environment. There is a certain amount of interest among investors regarding corporate environmental practices, and shareholder proposals often cause corporations to alter their behavior even though the proposals are defeated by a wide margin.²²⁸ EIS requirements may focus management's attention on environmental issues, making it more aware of the future costs and legal problems associated with environmental degradation. Disclosure may tend to deter questionable practices and elevate the standards of business conduct.²²⁹

Against this backdrop, the District Court for the District of Columbia agreed with environmentalists that the National Environmental

²²³ Cunningham, *Environmental Disclosure in Corporate Securities Reporting*, 8 B.C. ENVTL. AFF. L. REV. 541, 591 (1980).

²²⁴ 40 Fed. Reg. 51,662 (1975) (record of SEC proceedings on proposed security regulations regarding corporate environmental impact statements).

²²⁵ National Resources Defense Council, Inc. v. SEC, 606 F.2d 1031, 1039 (D.C. Cir. 1979).

²²⁶ *Id.* at 1038.

²²⁷ *Id.*

²²⁸ 40 Fed. Reg. 51,665 (1975) (statement by the SEC in proceedings on proposed environmental security regulations).

²²⁹ Cunningham, *supra* note 223, at 589.

Policy Act of 1970²³⁰ required the SEC to promulgate internal environmental protection regulations.²³¹ The SEC, considering the aforementioned arguments and its role in corporate regulation, adopted two compromise disclosure regulations. The first requires the disclosure of any "material" effects of compliance with environmental laws on the earnings and competitive position of the corporation, while the second requires disclosure of any administrative or judicial proceedings against the corporation arising under environmental laws.²³² The NRDC and other complainants were not satisfied, claiming that the SEC did not go far enough to discharge its statutory duty under NEPA.²³³ The District Court again agreed, and ordered further rule-making proceedings by the SEC.²³⁴

On appeal, the appellate court reversed and upheld the SEC's refusal to promulgate further rules.²³⁵ Although the SEC record of the rulemaking proceedings failed to establish either the benefits and extent of investor interest or the cost of disclosure to the corporation (as the District Court had mandated in *NRDC I*), the appellate court deferred to the SEC's expertise. Using a minimum standard of review,²³⁶ the court accepted the SEC's "quasi-legislative" conclusion that the cost of additional environmental disclosure regulations would be excessive both to corporations and to the administrative agency.²³⁷

While the court's decision appears susceptible to criticism on both administrative and substantive matters,²³⁸ it clearly indicates the SEC's view that environmental regulation of corporations is largely beyond the scope of the agency's desires or capabilities. Still, the door remains open for this kind of regulation in the future by both the SEC and the court. The SEC is not adverse to socially beneficial regulation. It considers political contributions by corporations "material" for purposes of

²³⁰ 42 U.S.C. § 4321 (1976). Section 4333 requires all agencies of the federal government to "review their present statutory authority, administrative regulations, and current policies and procedures for the purpose of determining whether there are any deficiencies or inconsistencies therein which prohibit full compliance with the purposes and provisions of this chapter." *Id.* § 4333 (1976 & West Supp. 1981).

²³¹ *National Resources Defense Council, Inc. v. SEC*, 389 F. Supp. 689 (D.D.C. 1974) (NRDC I).

²³² *Cunningham*, *supra* note 223, at 561.

²³³ *National Resources Defense Council, Inc. v. SEC*, 606 F.2d 1031, 1939 (D.C. Cir. 1979).

²³⁴ *National Resources Defense Council, Inc. v. SEC*, 432 F. Supp. 1190 (D.D.C. 1977) (NRDC II).

²³⁵ *National Resources Defense Council, Inc. v. SEC*, 606 F.2d 1031, 1031 (D.C. Cir. 1979).

²³⁶ *Id.* at 1045, 1049. The standard of review was whether the SEC's action could be said to be arbitrary and capricious, or, in other words, wholly unsubstantiated by the record.

²³⁷ *Id.* at 1058-59.

²³⁸ *See Cunningham*, *supra* note 223.

disclosure.²³⁹ Further, the SEC indicated its willingness to continue re-evaluating the need for new disclosure requirements.²⁴⁰ The court expressed no doubt that the SEC would adopt any environmental disclosure rules it thought necessary, limited only by the broad guidelines of "necessary or appropriate in the public interest or for the protection of investors."²⁴¹ However, in spite of these glimmers of hope for the environmentalist, at present, "an investor has no right to know how other people are using his dollars to degrade his environment."²⁴² Further, while the potential for United States regulation of the environmental effects of TNCs abroad grows greater and the world grows "smaller," the United States has yet to take any action in this regard.

However, while government action lags behind, private industry has manifested a willingness to cooperate toward the development of tropical forest management. Industrial research and development can be vital to underbudgeted, understaffed government agencies in an LDC. Weyerhaeuser Company, for instance, is collaborating with other United States forestry firms in Southeast Asia on a demonstration reforestation program.²⁴³ Daniel Ludwig's Jari project, once the target of vocal criticism by Brazilian environmentalists, has more recently been hailed as a thoughtful and remarkable social and economic undertaking.²⁴⁴ In contrast with other TNCs that have deforested and ravaged large tracts of jungle, Ludwig replanted every felled stand of timber. In light of this, it appears that at least some TNCs are taking better care of LDCs' environments than are the countries themselves.

Optimism over this development, however, must be tempered with the sobering conclusion of the *Global 2000 Report*.²⁴⁵ Government-controlled tropical forest management tends to suffer from inefficiency and the problem of "who will watch the watchman."²⁴⁶ Private enterprise, however, is equally unheralded as a solution. Forests are long-term resources, and economic considerations tend to encourage short-term thinking. In the words of economics and biotic resource observer Aldo Leopold:

A system of conservation based solely on economic self-interest is hopelessly lopsided. It tends to ignore, and thus eventually to eliminate,

²³⁹ *Id.* at 587.

²⁴⁰ National Resources Defense Council, Inc. v. SEC, 606 F.2d 1031, 1062 (D.C. Cir. 1979).

²⁴¹ Cunningham, *supra* note 223, at 585-86.

²⁴² *Id.* at 591.

²⁴³ GLOBAL FUTURE, *supra* note 142, at 77.

²⁴⁴ Hoge, *U.S. Magnate, Once Assailed, Is Hailed for Amazon Project*, N.Y. Times, Nov. 30, 1979, at A2, col. 3. *But see supra* note 117.

²⁴⁵ 2 GLOBAL 2000 REPORT, *supra* note 32, at 332-33.

²⁴⁶ *Id.* at 332.

many elements in the land community that lack commercial value, but that are (as far as we know) essential to its healthy functioning. It assumes, falsely, I think, that economic parts of the biotic clock will function without the uneconomic parts.²⁴⁷

A number of economists agree, and according to Scott Overton and Larry Hunt of the University of Oregon, conventional economic analysis, which ignores the external benefits of forests to society, as well as the external cost of deforestation,

must lead to a pattern of high cuts now and lower cuts later . . . to shorter and shorter rotations to the point of depletion of the resource, and to the conversion of forest lands to other uses until the relative price of forest products rises sufficiently high that the *economic* system is in equilibrium.²⁴⁸

IV. CONCLUSION

The United States and most of the world, including LDCs like Brazil, are becoming increasingly aware of the global and local dangers of massive deforestation. Agreements, studies, policy statements, and even legislation expressing these environmental concerns have begun to flow in a steady stream from authorities interested in the Amazon jungle. Yet, scientists and environmentalists feel that they are losing the race against time to save the jungle's resources, while entrepreneurs, with the courage, foresight, and money, still look upon the Amazon as the promised land where tremendous gains can be realized.

Brazil finds itself torn by valid but conflicting interests. It needs to preserve the Amazon region as a continuing resource far beyond the twenty or thirty years it may take to deforest the jungle. However, rapid development of the Amazon is seen to be essential to saving Brazil's faltering economy. Thus far, the country's system of regulation through fiscal incentives has been more effective in promoting development than preserving the environment. But technological development alone is not the solution for the social, economic, and environmental problems of Brazil. Current proposed legislation seeks to redress this imbalance. In the near future, any real hope for informed management of the Amazon's resources will likely come from Brazil.

The future, however, also holds a promise of increased international action relating to tropical deforestation. Though regional and international accords have generally been mere policy statements, advocating a genuine concern for the environment while realizing the need for LDC development, current code proposals in the United Na-

²⁴⁷ *Id.*

²⁴⁸ *Id.* at 333 (emphasis at original).

tions could establish global standards for TNC and governmental environmental behavior.

The United States plays a significant role in encouraging international growth in this area, as well as serving as a model for other countries' environmental programs. The United States could also take prompt and effective unilateral action to regulate the behavior of its TNCs abroad. Thus far, however, the United States has declined to take this step. Until the societal benefits of the forest are taken into consideration, the jungle and its benefits will continue to slip away and will be sadly reduced in size and quality by the end of the century. So while international accords wait for passage or national legislation to implement their policies, and national environmental legislation goes unpassed or unenforced, unchecked development brings us closer to the total destruction of an invaluable resource, the Amazon jungle.

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