Hemisphere

Volume 8
Issue 1 *Fall*

Article 1

1997

Hemisphere Volume 8 Number 1, Fall 1997

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A MAGAZINE OF THE AMERICAS

Hemisphere

Volume 8 • Number 1 • $7
Fall 1997
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ON THE COVER

A satellite image of Hurricane Andrew churning in the Gulf of Mexico. Photo: NASA Goddard Space Flight Center, Laboratory for Atmospheres.

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A MAGAZINE OF THE AMERICAS

Hemisphere

Hemisphere (ISSN 08983038) is published three times a year by the Latin American and Caribbean Center at Florida International University.

Hemisphere is dedicated to provoking debate on the problems, initiatives, and achievements of the Americas. Responsibility for the views expressed lies solely with the authors.

Editorial, Circulation, and Advertising Offices: Latin American and Caribbean Center, Florida International University, University Park, Miami, Florida 33199. Tel.: (305) 348-2894/Fax: (305) 348-3593/E-mail: gamarrae@servax.fiu.edu Website: http://www.fiu.edu/~lacc/hemisphere/hemisphere.html

Regular Subscription Rates: US, USVI, PR and Canada: $20 a year; $36 for two years. Elsewhere: $27 a year; $50 for two years. Please make check payable to *Hemisphere*. Credit card orders (MasterCard/VISA only) are also accepted.

FROM THE EDITOR

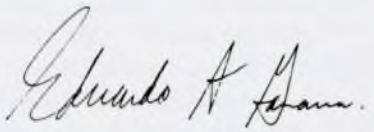
A decade ago, the faculty associated with the Latin American and Caribbean Center at Florida International University embarked on a magazine project, entitled *Hemisphere.* Eight volumes and ten years later, *Hemisphere* has attracted a loyal group of subscribers, readers, and friends. We are greatly encouraged when *Hemisphere* receives requests for reprints or permission to reproduce articles for use in a number of different fora. Our intent is to be around for decades to come, and to create an even better magazine.

We are delighted to have a dedicated group of people working in the production of *Hemisphere.* The staff of *Hemisphere* has worked persistently to improve the style and content of the magazine. The magazine's graphics and design can be attributed to the talent of Pedro Botta, *Hemisphere*'s art editor. Our managing editor, Mercedes Ponce, has devoted long hours to making the issue readable, working alongside the authors to produce a high-caliber magazine. In addition, Antoinette Herrera, *Hemisphere*'s editorial assistant, has contributed significantly to the magazine. It would take too long to mention the names of all who have worked on *Hemisphere* over the years, but the support, effort, and time devoted to the magazine by Janet Chernela, Anthony Maingot, Mark Rosenberg, and Richard Tardanico are greatly appreciated. We are also indebted to our editorial board members, who have provided guidance to our efforts.

In this issue, we have opted to address a topic that merits serious, in-depth discussion: sustainable development. Beginning with the Rio Earth Summit in 1992, continuing with the 1996 Santa Cruz Summit of the Americas on Sustainable Development, and culminating, this Summer, in the Rio plus five Earth Summit in New York, sustainable development has become a pivotal concern for every country in the hemisphere. Moreover, we are particularly interested in exploring the linkage between natural disasters—which have affected nearly every country of the Americas—and sustainable development.

At our request, Walt Peacock, associate director for Research at the International Hurricane Center, accepted the invitation to serve as guest editor of this issue: in this capacity, he engaged a group of contributors to provide provocative insights on the topic. (Peacock was the apt organizer of a major congress on sustainable development held at Florida International University in October 1996; thus, he was able to draw on a number of the congress' participants to help us put this issue together.) We are grateful for his efforts and those of the rest of the contributors—an important series of articles on the topic have been assembled.

We welcome your comments regarding both the magazine and any topic that may spark your interest (either related to this issue or suggestions for the future). To those who have read *Hemisphere* over the years, thank you for continuing to support our venture. If you are a new reader or subscriber, we hope you find this magazine thought-provoking and noteworthy.



Eduardo A. Gamarra

A Call for Action

Andrew Maskrey and Walter Gillis Peacock

Browse through a national newspaper in almost any part of the world; several times a year, you will find reports of yet another major natural disaster that has destroyed the lives and livelihoods of thousands—if not hundreds of thousands—of individuals. While not reported in the world's headlines, accompanying these major events will be hundreds of medium to small disasters that are no less destructive and devastating for the local areas impacted. Even more unfortunate than their failure to be reported is the inability to recognize that the cumulative effects of these smaller disasters may prove more devastating and debilitating for the economic viability and health of many nations and regions of the world.

There is a tendency to consider both major and minor disasters as unfortunate but isolated, irregular events that, like so many other ills, are encountered more often in developing regions of the world. Evidence suggests, however, that natural disasters are occurring with alarming frequency and their impacts—particularly their economic impacts—are also reverberating throughout the world. The evidence from disasters, such as the Kobe Earthquake and Hurricane Andrew, suggests that development does not necessarily reduce vulnerability, nor does it ensure rapid recovery with few ramifications. Despite the fact that it occurred five years ago, the consequences of Hurricane Andrew are still being borne by the insurance markets of the United States and the reinsurance markets of the world. In less-developed areas of Latin America and the Caribbean, the social and economic consequences of disaster losses can be even higher, in relative terms, and longer lasting.

Disaster research has demonstrated that increasing hazard and vulnerability patterns throughout the world are related, not necessarily to increased frequency of events, but rather to the nature of—and failures in—development itself. Many hazards, such as floods, landslides, and drought are intimately related to patterns of human use—and abuse—of the natural environment.

Andrew Maskrey is general coordinator of the Network for Social Studies on Disaster Prevention in Latin America (LA RED), international disaster manager of the British-based Intermediate Technology Development Group (ITDG), and member of the Scientific and Technical Committee of the UN International Decade for Natural Disaster Reduction (IDNDR). Walter Gillis Peacock is associate director for Research at the International Hurricane Center (IHC) at Florida International University. He is the coauthor, with Frederick L. Bates, of Living Conditions, Disasters, and Development, *and coeditor, with Betty Hearn Morrow and Hugh Gladwin, of* Hurricane Andrew: Ethnicity, Gender and the Sociology of Disasters.

Natural Disasters and Development

Natural disasters cannot be understood by merely focusing on their physical properties. Rather, disasters represent complex combinations of natural hazard agents and human action. Disaster research has demonstrated that increasing hazard and vulnerability patterns throughout the world are related, not necessarily to increased frequency of events, but rather to the nature of—and failures in—development itself. Many hazards, such as floods, landslides, and drought are intimately related to patterns of human use—and abuse—of the natural environment. Still other disasters, associated with earthquakes and hurricanes, are related to how our communities are built, as well as settlement and land use patterns. Researchers are also exploring the social and economic mechanisms that produce different levels of vulnerability within our communities and societies. Here again it is often processes associated with development, generating different levels of vulnerability, that culminate in certain populations suffering higher impacts and experiencing greater difficulties in recovering. In short, to understand natural disasters, we also need to understand how our communities develop and how implementing ideas and plans for development can aggravate vulnerability.

In recent years, traditional notions of development have increasingly been challenged, particularly those concerning the relationship

The Hemispheric Congress speaks on disaster reduction and sustainable development

between human systems and the natural environment. Issues of resource depletion and environmental degradation have, in some circles, been moved to the forefront of development agenda discussions throughout the hemisphere. No longer is it sufficient to justify investments, programs, or policy initiatives because of their profit potential; increasingly, the only justification is whether or not such initiatives ensure sustainable development. To fully accomplish the goals of sustainable development, however, disaster reduction must be inextricably linked to sustainable development initiatives.

Disaster reduction and sustainable development are mutually supportive goals. Inappropriate development patterns increase risk and vulnerability, which in turn erode human health, welfare, social and economic infrastructures, reducing economic performance and prospects for longer term social and economic development. Economic development models and projects have not factored in hazards or vulnerability. Consequently, these shortcomings have contributed to increased susceptibility to disasters, the potential for increased degradation of the natural resource base, and have endangered overall economic sustainability. Often development funds are wasted, as projects must be rebuilt after a natural disaster that should have been anticipated. Investment in disaster reduction, conversely, can help to provide a secure environment, reducing insurance losses and avoiding the need to divert scarce public funds from social development to emergency relief.

The Hemispheric Congress

Despite the United Nations declaration of the 1990s as the International Decade of Natural Disaster Reduction (IDNDR), commitment to sustainable development and disaster reduction remains elusive. Drawing on the Plan of Action adopted by the Summit of the Americas in 1994, the recommendations of the 1994 Cartagena Inter-American Conference on Natural Disaster Reduction, and the 1994 IDNDR Yokohama Strategy and Plan of Action for a Safer World, a Hemispheric Congress on Disaster Reduction and Sustainable Development was held in Miami, Florida, in the Fall of 1996.[1] The goal of the Congress was to focus and sharpen attention on the critical linkage between disaster risk and social and economic development.

The Congress emphasized that sustainable development in the Americas was impossible, if existing risk levels were not reduced. Development planning and policy must seriously take into account changing hazard and vulnerability patterns in the hemisphere, if future social and economic losses are to be avoided. Concerted action between governmental, nongovernmental, and other organizations of civil society, such as the private sector, universities, and international organizations, is required to reduce risk and vulnerability. Moreover, recognizing that problems and solutions in the Americas are increasingly interrelated, the Congress also called for hemispheric-wide policy initiatives.

Strategic Areas for Policy Initiatives

Incorporating disaster reduction into ongoing development demands comprehensive reformulation of policy and process. The Congress targeted 13 strategic areas for policy creation, initiating the process of redefining the development agenda. These strategic areas concentrated on modifying development and emergency programs, altering procedures for policy formulation, accounting, and participation, reorienting research and information agendas, and promoting coordination among governmental and private sectors.

1. Disaster Reduction and Humanitarian Assistance. International humanitarian aid organizations dedicate the vast majority of their budgets—90 percent or more—to addressing emergency situations, while the remainder is devoted to disaster reduction. Taking into account not only the high level of disaster risk in the hemisphere, but also the relatively few large-scale emergencies that arise, it is necessary to transform policy and programmatic emphasis from emergency response to disaster reduction.

2. "Green" Accounting and Development. National governments must develop accounting procedures whereby the costs of disasters, including loss of life, property, and ecological function, are explicitly shown in current and capital accounts. Furthermore, concerns with the loss of economic and natural capital should be extended to include the loss of cultural capital. Until such accounting procedures are developed, the true costs of the

cumulative effects of natural disasters can neither be appreciated nor realized.

3. Organizational and Institutional Systems. All countries in the hemisphere have national agencies responsible for both emergency management and disaster reduction. In some countries, these agencies cooperate with public, private, nongovernmental, educational, and local organizations. In other countries, such is not the case. Greater emphasis on disaster reduction and mitigation, ensuring the delivery of relevant, effective, and efficient disaster reduction programs, is imperative.

4. Local and Community Participation. The participation of local communities and organizations in formulating disaster reduction and sustainable development policies and programs is essential to ensure their relevance, effectiveness, and efficiency. Reducing risks and promoting sustainable development initiatives depend on coordination among national, regional, and local governments, not to mention between these governmental structures and nongovernmental, private, and community organizations. Unfortunately, in many countries, the participation of local communities and organizations is tenuous, at best.

5. Disaster Inventories. Comprehensive, comparable national data inventories on disasters and losses do not currently exist in the Americas. International disaster inventories tend to focus on large-scale disasters. The development of comprehensive disaster data inventories is key to emergency preparedness and disaster reduction planning, policy making, program implementation, and research. These data will enhance and facilitate the development of appropriate national accounts for sustainable development planning.

Despite the United Nations declaration of the 1990s as the International Decade of Natural Disaster Reduction (IDNDR), commitment to sustainable development and disaster reduction remains elusive.

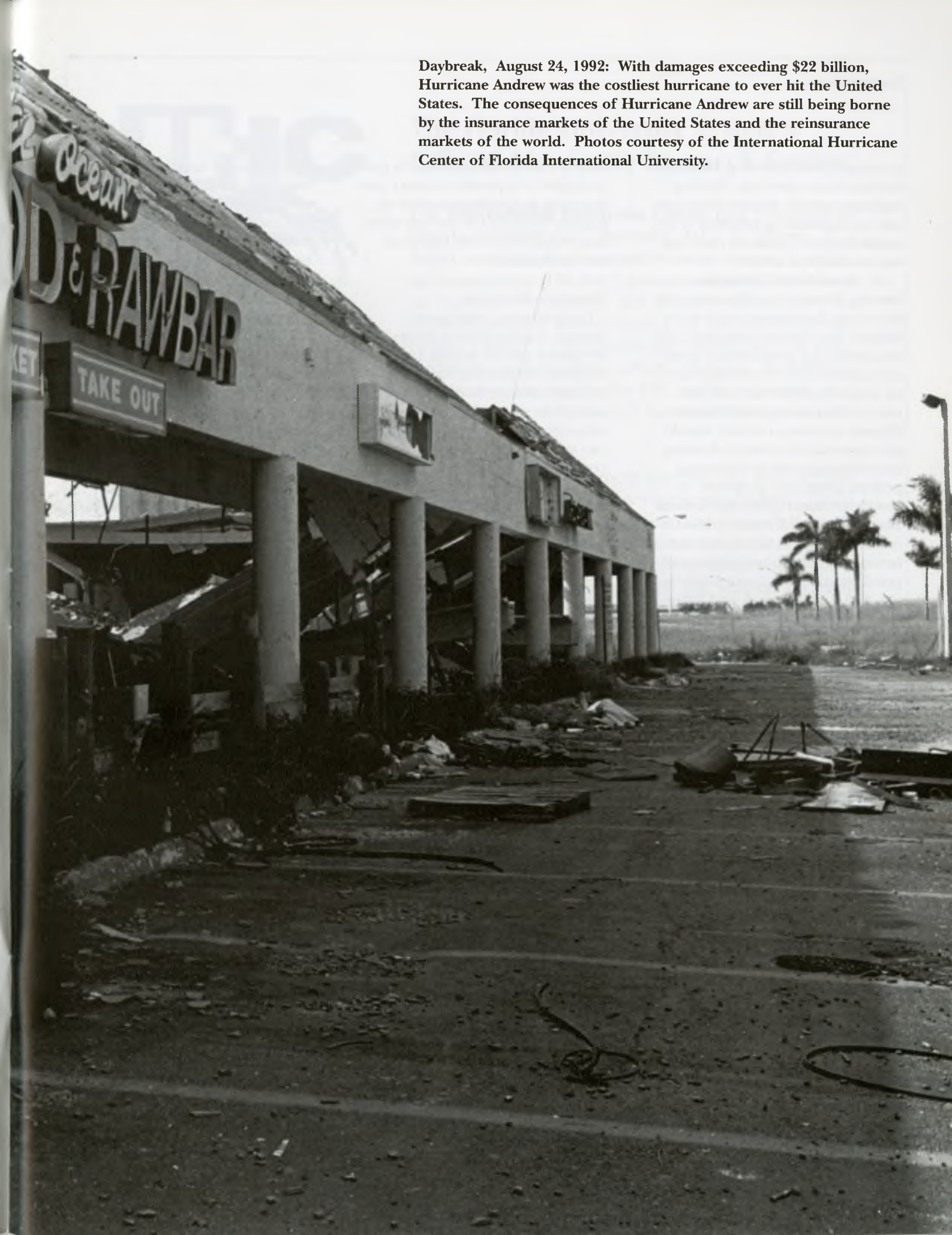
6. Vulnerability Analysis and Mapping. Information on vulnerability is a necessary complement to information on hazards. Comprehensive risk assessments must be produced to develop disaster reduction and sustainable development policies and programs. While considerable effort has been devoted (during the IDNDR) to improving the quality and coverage of scientific data on different hazards and techniques for displaying these data, more attention must be given to mapping social and economic vulnerabilities of populations and infrastructures exposed to hazards.

7. Housing and Land Markets. Housing and land markets rarely contribute to the objectives of disaster reduction and sustainable development. Conventional regulatory mechanisms, such as land use planning, zoning, and building regulations, are infrequently modified by vulnerability and risk analysis, and tend to be coercive in nature. As a result, their formation has been politicized, implementation rendered difficult, and effectiveness compromised. At the same time, the private sector has shown little interest in ensuring that risk is fully factored into urban development and housing projects, loans, and finance. Alternative mechanisms, such as incentive- and disincentive-based policies and greater coordination between public and private sectors, must be explored.

8. Insurance Markets. Insurance and reinsurance markets have not contributed to disaster reduction and sustainable development—despite the fact that these markets have been shaken by recent major events, threatening their ability to absorb losses from large-scale disasters. Information on hazards, vulnerability, and risks must be systematically and appropriately factored into premium schedules. Access to insurance throughout the hemisphere must also be increased.

9. Urban Environmental Management. The majority of the hemisphere's population resides in urban areas. Yet persistent environmental degradation of urban areas—caused by mismanaged growth and inappropriate resource utilization for basic necessities of food, shelter, water, and fuel—undermines the achievement of sustainability, while increasing the potential and severity of disasters. New urban environmental management policies that account for urban complexities must be developed, due not only to the multiple hazards and vulnerabilities in cities, but also to the presence of different and overlapping levels of government, as well as public, private, nongovernmental, local, and community organizations.

10. Education and Training in Disaster Reduction. While training programs in emergency management have a relatively long history in the hemisphere, both training and formal professional education in disaster reduction are relatively new. Few professionals working in disaster reduction and management have received specialized education and training. Recently, diploma and graduate programs specializing in disaster reduction have been developed at a number of universities in different countries. These programs, however, have emerged



Daybreak, August 24, 1992: With damages exceeding $22 billion, Hurricane Andrew was the costliest hurricane to ever hit the United States. The consequences of Hurricane Andrew are still being borne by the insurance markets of the United States and the reinsurance markets of the world. Photos courtesy of the International Hurricane Center of Florida International University.

in isolation, with differing curricula and academic standards. Shifting emphasis towards disaster reduction and management, in addition to the establishment of uniform curricula and standards, is a must.

11. Research and Information Sharing. Research on disaster reduction in the hemisphere is still in its infancy. Few disaster reduction policies, plans, and programs are properly influenced by locally appropriate research, impeding their relevance, effectiveness, and efficiency. Disaster reduction research should play a pivotal role, both in forming new paradigms and in improving policies, plans, and programs. A specific problem area is the dissemination of research results and information in general, due to barriers between countries, researchers and practitioners, the natural, engineering, and social sciences, and different organizations.

12. Incorporating Disaster Reduction into Development Projects. Disaster mitigation is rarely addressed in development and infrastructure projects. Consequently, a sizable portion of the hemisphere's productive and social infrastructure is vulnerable. Annual losses, incurred by disasters, may indicate that many development projects are actually rehabilitation or reconstruction projects in disguise. The problem is complicated, since national disaster reduction and management agencies operate in isolation from community and regional development agencies. Disaster reduction must, therefore, be integrated into all development projects.

13. Highly Vulnerable Populations. Policy formulation and implementation activities are often guided and promoted by powerful political and economic interests, to the exclusion of a nation's most vulnerable sectors. In particular, vulnerability tends to impact those with limited access to scarce resources, such as the poor, the elderly, youth, and women. Sustained attention by policy makers is required, to ensure participation and implementation of policies which do not exclude those most vulnerable to the impact of natural disasters.

Towards a Dialogue

Congressional participants, through a series of work groups, developed over 63 specific policy initiatives designed to address problems and shortcomings identified in each of the 13 strategic areas. These initiatives target specific constituencies and entities, identifying concrete policy recommendations for action that take into account the mutually supportive goals of disaster reduction and sustainable development.

We encourage all interested parties to review, modify, and utilize these policy initiatives.[2] Given the magnitude, however, of the problems facing the hemisphere in reducing disaster risk, the broader issue of sustainable development, and the inertia associated with traditional notions and processes of development, congressional participants also realize that their work is a tentative step towards addressing these important issues. An ongoing dialogue is needed—an inter-American dialogue—to ensure that the mutually supportive goals of disaster reduction and sustainable development become integral to the developmental agenda of the Americas. Each of us must contribute to this important endeavor. This issue of *Hemisphere* represents a continuation of this process, begun by the Hemispheric Congress. ■

[1] The Hemispheric Congress on Disaster Reduction and Sustainable Development was hosted by Florida International University, organized and sponsored by the International Hurricane Center (IHC), the Network for Social Studies on Disaster Prevention in Latin America (LA RED), the Organization of American States (OAS), the Latin American and Caribbean Center (LACC), and the Summit of the Americas Center (SOAC), with additional support from the Office of Foreign Disaster Assistance (OFDA) and the Center for Coordination for Disaster Prevention in Central America (CEPREDENAC).

[2] Copies of the Congress' proceedings, *Linking Disaster Reduction and Sustainable Development*, edited by Andrew Maskrey, Walter Gillis Peacock, and Stephen Bender, can be downloaded from the IHC website (http://www.fiu.edu/~hurrican/), or are available by writing the International Hurricane Center, Florida International University, Miami, Florida, 33199.

The Florida University System's Official Hurricane Research Center

The **International Hurricane Center** (IHC), located at Florida International University (FIU) in Miami, is a Type I interdisciplinary research center serving Florida's ten universities. The IHC's primary objective is to focus on hurricane mitigation and disaster vulnerability, to promote research aimed at reducing the impact caused by hurricanes. By integrating disciplines such as engineering, architecture, sociology, psychology, anthropology, urban planning, economics, business, finance, insurance, geography, and public health, the IHC assists in creating and supporting a disaster research agenda to aid in the mitigation of hurricane damage to people, built and natural environments, and the economy.

The IHC was established in 1996 with a $1 million endowment from the We Will Rebuild Foundation, a private sector response organization formed after Hurricane Andrew. Since its inception, the IHC has stimulated interest in hurricane mitigation and research through events and collaborative ventures, such as: the Hemispheric Congress on Disaster Reduction and Sustainable Development; the Florida Workshop for Hurricane Researchers; coordinating a Disaster Researchers Meeting held in conjunction with the Natural Hazards Workshop; and cosponsoring the *International Journal of Mass Emergencies and Disasters'* special methodological issue.

In addition to serving the State University System of Florida, the IHC is also the formal liaison to NOAA's National Hurricane Center/Tropical Prediction Center (NHC) located at FIU. In this capacity, the IHC conducts joint hurricane-related research projects with the NHC to assist its staff in fulfilling their research objectives.

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IHC IS ON THE WEB

The IHC's new website at **http://www.fiu.edu/~hurrican** includes complete information about the Center, as well as links to other disaster-related websites.

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Quest for Power Saves Trees, Too

Joseph J. Domask

At the foreign policy level, the government reversed its xenophobic position with respect to the Amazon region and its domestic affairs in general. Instead of maintaining an isolationist stance as a strategy to preserve its territorial and political "sovereignty," the government embraced international cooperation to protect the country's environment.

Brazil has a long history of sophisticated foreign policy at the regional and global levels yet a relatively short history of significant domestic environmental policy. Since the late 1980s, with the international outcry in response to the burning of the Amazonian rainforest, Brazil's foreign and environmental policies have become deeply interrelated. Prior to 1990, these two policy areas were incongruent and often antagonistic, but since then they have generally been carried out in a well-coordinated and mutually reinforcing manner.

The early history of the relationship between Brazilian foreign and environmental policies began nearly two-and-a-half decades ago during the preparations and proceedings of the 1972 United Nations Conference on the Human Environment (UNCHE) in Stockholm—the first Earth Summit. At this summit and at the 1992 Earth Summit, the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, Brazil played highly active roles in setting the agendas and influencing the final agreements. In both cases, Brazil strongly fought for the transfer of financial resources from richer countries to poorer countries (North to South) to help the latter in their efforts to protect the environment, while allowing for human and economic development, or "sustainable development."

Certainly, Brazil's position at the UNCHE was far more nationalistic and far less accommodating than its position at the UNCED. The difference in posture does not reflect a change of goals but a change of strategy. The goals of the government have consistently been to achieve strong economic growth and stability to secure Brazil's "destiny" as a major global power. The strategic change that took place was not a minor one; under the presidency of Fernando Collor de Mello (1989-92), the first popularly elected president since before the military rule (1964-85), the Brazilian government began to undo decades of past development policies that were clearly environmentally destructive, especially in the Amazon region, and began to adopt new policies to reduce negative environmental impacts. This broad policy reversal was somewhat risky at the time but was partially insured by a pledge, in 1991, of $1.5 billion from the Group of Seven (G-7) governments to help implement policy changes and offset short-term costs.

At the foreign policy level, the government also reversed its xenophobic position with respect to the Amazon region and its domestic affairs in general. Instead of maintaining an isolationist stance as a strategy to preserve its territorial and political "sovereignty," the government embraced international cooperation to protect the country's environment. Brazil's earlier position is exemplified by former President José Sarney's response to a proposal for a debt-for-nature swap in 1988: "There is not enough money in the world to buy even a square meter of the Amazon." Currently, the official position is that the Brazilian government understands that there is no contradiction between the full exercise of sovereignty over tropical forests and international cooperation to make possible their rational use and conservation.

The change in attitude at the executive level of the federal government was not entirely welcome in other branches and at other levels of the government; but as time passed and the new strategy achieved success, even the most nationalistic state and local governments in the Amazon region began to soften their positions and accept "sustainable development"—at least, rhetorically. Although the most profound

Joseph J. Domask was a research assistant at the North-South Center of the University of Miami, while completing his doctorate in International Studies. He has served as rapporteur for the US Civil Society meeting on "Advancing Sustainable Development" in the Americas, a preparatory conference for the Santa Cruz Sustainable Development Summit of December 1996.

Brazil gains limelight

Charred trunks are all that remain of virgin rainforest north of Manaus, Brazil. Photo: Richard O. Bierregaard, Jr.

changes in Brazilian environmental policy have taken place in issues related to the Amazon, other environmental issues have also advanced significantly, as the government began pursuing new foreign policy strategies and externally oriented economic strategies.

Existing and New Policies

Brazil's current national environmental policy was created in 1981 by the military regime's Law 6938. Under this law the National Environmental System (SISNAMA) was created to provide an organizational framework within which environmental regulations of local, state, and federal agencies would be coordinated. The National Environmental Council (CONAMA) was also created to act as a consultative organ, involving federal, state, and municipal agencies, as well as nongovernmental organizations (NGOs) and private industry organizations. It was not until 1986, however, that CONAMA was able to introduce national guidelines for environmental impact assessments (EIAs).

One of the most important forces of change in national environmental policy was the country's new Constitution, adopted in 1988, which contained an entire chapter on the environment. Among other articles, the Constitution granted states and municipalities greater legislative autonomy on environmental matters than in the past. Most environmental monitoring and licensing activities now rest with state and local governments. The Constitution also assures citizens the right to an "ecologically balanced environment" and requires the federal government to help fulfill this obligation. Moreover, the federal government now has the mandate to promote education and public awareness of the need to preserve the environment.

Aside from these broad governmental obligations, the Constitution also obliges private entities to comply with certain duties, such as requirements for mining companies to recover the land degraded by mining activities and to reforest an area of land equal in size to that which was originally cleared. The concept of

"ecological crime" was also introduced in the Constitution and was put into effect in 1989 by an amendment in the national environmental policy. Since this modification, fines and imprisonment are the penalty for offenders who endanger human, animal, or plant life (or aggravate an existing dangerous situation), and for government officials who fail to act to prevent such conduct. Polluters or other offenders may now be subject to such penalties even if the accused party meets the established legal standards. Companies that do not meet existing standards, however, are more likely to be subjected to heavy fines. In October 1995, for example, one of Brazil's largest steel producers, Cosipa, was fined $940,000 by the São Paulo environmental protection agency for failing to meet pollution standards. Under the Green Protocol, a program established in 1995, over $108 million have been collected by the Brazilian Institute for the Environment and Natural Resources (IBAMA) from companies that failed to abide by environmental regulations related to logging, mining, fishing, and air and water pollution.

IBAMA, which itself was only established in 1989, is the nation's primary environmental agency at the national level and is responsible for enforcing federal environmental regulations and providing technical support to state and local government agencies. In 1992, IBAMA was combined with the Environment Secretary (created in 1990) and three other agencies under the authority of the newly created Ministry of Environment, Water Resources, and Legal Amazon (MMA)—now the highest environmental organ in the federal government. The combination of federal, state, and municipal environmental regulations places Brazil among the world's most advanced environmental legal systems. With regard to enforcement, however, Brazil lags far behind.

More recently, with greater amounts of foreign assistance and interest in environmental policy implementation, enforcement of the regulations has advanced significantly, especially with respect to fines and public finance for private industry. In November 1995, Brazil launched a "green" investment policy prohibiting the five federal banks from financing projects without first assessing their environmental impacts. This policy was put into practice in December 1995 when BNDES, one of the federal banks, was prohibited from releasing $350 million in financing for Brazil's largest steel mill, CSN, because of its unpaid pollution fines and its failure to meet new regulations. On the proactive side, BNDES has offered investment credits specifically for industrial pollution control since 1986. By 1994, BNDES was lending over $300 million (over 6 percent of its total lending) for environmental purposes.

Other federal financial contributions (approximately $300 million per year) for environmental purposes are channeled through *Financiadora de Estudos e Projetos* (FINEP), which primarily aims at assisting companies with technological innovation and technical assistance programs geared towards meeting ISO 14,000 standards—international environmental standards developed by the International Standards Organization. Other government initiatives are being taken to assist Brazilian companies to meet these standards. These initiatives include a new joint effort between the government and private industry through *Grupo de Apoio a Normalização Ambiental* (GANA) and the establishment of the National Center for Clean Technologies, a unique institution in the southern part of the country.

With all of these advances in recent years, it is apparent that Brazilian environmental policy is consolidating at a pace quicker than ever before in the nation's history. This observation is particularly true for the Amazon region, where environmental policy and foreign policy are intensely interrelated.

In the Amazon region, some positive policies, such as the suspension of fiscal incentives for agricultural and livestock development, were introduced during Sarney's administration. When Collor was elected, ecological zoning of the entire region was ambitiously undertaken. The export of hardwood logs was banned, and plans to asphalt BR-364 from Rio Branco to the Peruvian border were suspended. In the months prior to the 1992 Earth Summit in Rio de Janeiro, Collor established five extractive reserves (areas designated for nondestructive activities) in the Amazon forest and approved, in November 1991, the demarcation of 94,000 square kilometers of Indian reserves despite strong opposition from the military. In the same year, Collor also helped convince the governors of the states that make up the Legal Amazon to formally endorse a statement supporting the goal of sustainable development. By May 1992, under the presidency of Itamar Franco, the government of Brazil approved the first official debt-for-nature swap, a mechanism fiercely criticized by Sarney and most government officials a few years earlier. By 1995, the Brazilian government initiated the process of installing a high-tech $1.4 billion satellite monitoring system, *Sistema de Vigilância da Amazônia* (SIVAM), for the entire Amazon region to help control illegal extraction of minerals and other forest resources.

Various new forestry provisions were introduced in 1995 and 1996 under President Cardoso. The first of these provisions was that industries utilizing forestry resources should only use trees that come from planted and managed lands rather than from pristine areas. In response to the rising deforestation

rates of July 1996, the government took emergency action, including an immediate intensification of monitoring activities and the launching of a special program called Legal Amazon Environmental Control. As part of this program, new harvesting of mahogany and virola species—a $60-$70 million per year industry—was prohibited for the next two years, and the amount of land that was allowed to be clear cut on private property was reduced from 50 percent to 20 percent of its total surface area.

Changes in Foreign Policy Strategy

Among domestic trends that coincide with Brazil's environmentally friendly and internationally cooperative policies are democratic consolidation, economic liberalization and privatization, and increased social mobilization. The most important new trends in Brazil's foreign policy are: (1) a shift from playing a leading role in the promotion of Third World issues in North-South relations (e.g., the New International Economic Order of the 1970s) to playing the role of an emerging global power; (2) a greater emphasis on multilateralism and on strengthening international organizations; and (3) strategic economic integration at the regional (e.g., MERCOSUR) and global levels (e.g., MERCOSUR-European Union [EU]). All of these trends have provided an overall positive impetus for the continuation of environmentally friendly policies.

As far as asserting itself as a global power, Brazil seeks to make significant contributions to reform existing international structures (regulations and institutions)—such as the United Nations and particularly the UN Security Council, the International Monetary Fund (IMF), and the World Trade Organization (WTO)—and to establish new international regulations, particularly ISO 14,000. According to Brazil's Ambassador to Great Britain, Rubens Antonio Barbosa: "Brazil today has more impressive credentials than ever for taking part in the urgent reforms which various international regulations and institutions must undergo. We are one of the largest countries, with one of the largest populations and one of the largest economies in the world." With these credentials, Brazil sees itself among the top world candidates (including Germany, Japan, China, and India) to be nominated as a permanent member of the Security Council. In fact, Brazil is pursuing extensive diplomatic efforts with these other powers, and with some success, as evidenced by the recent endorsement of Brazil for Security Council membership by German Chancellor Helmut Kohl.

In 1989, one of Brazil's top environmental officials complained that "the rich nations are presenting Brazil as a country like Nazi Germany or Mussolini's Italy." Being perceived as a pariah in the international system placed significant restrictions on Brazil's diplomatic mobility, especially during an era of increasing multilateralism.

Top priority in Brazil's immediate future is the consolidation of MERCOSUR as a competitive free trade zone and customs union. According to Cardoso, it is through MERCOSUR that Brazil will seek any future economic cooperation and integration with other countries or trade blocs, including the EU and the North American Free Trade Agreement (NAFTA). MERCOSUR, as designed, is only one step in a greater scheme of integration, starting with other Latin American countries based on a GATT-plus principle. MERCOSUR's "second generation" agreements already extend to Chile and Bolivia as associate members, and are expected to extend next to Andean Community members. Such regional integration would allow Latin America to face the global community with a fairly united voice, thereby giving the bloc a strong position from which to set international agendas and acquire substantial bargaining power. This bargaining power could be used, first and foremost, to approach other regional blocs or global powers with possible biregional integration schemes, the beginnings of which are already underway with Europe but could also be extended to NAFTA.

Effects of Foreign Policy

Brazil's foreign policy strategy has a wide range of direct and indirect effects on its domestic environmental policies. Four broad types of foreign policy influences on domestic environmental policy are particularly important.

The first type of relationship between these two policy areas concerns Brazil's bid to assert its role as one of the primary players in the various global institutions, especially in the UN Security Council. In earlier decades, Brazil generally pursued a more isolationist stance towards such organizations and could therefore go its own way without too much concern for political backlash; this position began to prove too costly during the Sarney administration. In 1989, one of Brazil's top environmental officials complained that "the rich nations are presenting Brazil as a country like Nazi Germany or Mussolini's Italy." Being perceived as a pariah in the international system placed significant restrictions on Brazil's diplomatic mobility, especial-

ly during an era of increasing multilateralism. The most obvious path, at least to the Collor administration, was to embrace cooperation, reevaluate the concept of sovereignty, and improve environmental accountability with respect to one of the earth's most biologically diverse areas. As a result of these changes, Brazil enjoys improved relations with the current global powers, especially the United States, as well as with some of the European countries.

A second type of influence of foreign policy over environmental policy also pertains to the international community's perception of Brazil, either as an ecological pariah or as a cooperative partner. In this case, however, the relationship is a more direct one—a *quid pro quo* situation in which protection of the Amazon rainforest is exchanged for a continued flow of international financial assistance (through the World Bank, the Inter-American Development Bank, the Global Environmental Facility, etc.) for the region and for Brazil's national environmental infrastructure. Some of this financial assistance can be used to help offset forgone economic development in the region, while some of it can be used to generate alternative modes of development that are "sustainable," such as rubber tapping or nut and fruit harvesting. If the Brazilian government fails to provide "adequate" protection, then the international community becomes reluctant to provide additional funds and may even suspend funds that were already promised. With the end of the import substitution model of economic development and with the 1990s movement towards liberal markets and fiscal responsibility, these sources of external funds are particularly important for economic growth.

Apart from the Amazonian issue, the third type of foreign policy influence over environmental policy is a market-driven inducement—as opposed to the politically driven inducements discussed above. As the Brazilian government, in the pursuit of international economic integration, continues to lower tariffs and removes other barriers to competition within its borders, it must also support private industry efforts to become competitive at home and abroad by meeting or surpassing international standards. To a large extent, Brazilian private industry (in the southern region of the country) has succeeded in this endeavor, as is evidenced by the great number of companies receiving ISO 9,000 certification, as well as other international recognitions for quality. (ISO 9,000 certification is granted to companies around the world that meet the production and service quality standards established by the International Standards Organization.) Beyond general quality standards, the Brazilian government is assisting private industries in meeting international environmental standards for their goods as outlined in ISO 14,000. Unlike the environmental protection measures taken for the protection of the Amazon region, ISO 14,000 implementation is not rewarded by external financial assistance. Instead, it is rewarded by increasing the global competitiveness of Brazilian goods and services, thereby increasing Brazil's overall global economic power. There is therefore an internal incentive for the Brazilian government to continue supporting its "green" investment policy and similar programs that assist companies towards this end. Playing into this strategy, the Brazilian government was recently elected as a member of the ISO 14,000 council, which is largely dominated by wealthier countries, and is currently taking an active role in helping formulate ISO 14,000 criteria.

The fourth, and final, major type of influence of foreign policy on environmental policy is also related to international environmental standards, specifically with regard to trade integration and ecolabeling issues. The Brazilian government is dealing with these new challenges on two broad fronts. One way is to fight against ecolabeling and other environmental barriers through diplomatic channels, such as the measures taken when Brazil and Venezuela filed action against the United States—and won—in the WTO (when the US government imposed restrictions on oil from these countries based on environmental production criteria). However, this action does little to advance Brazilian environmental policy. The other way that the government is dealing with such issues is to encourage—or force—its own domestic industries to meet the standards required abroad; this development occurred when European environmental standards for the extraction and production of timber and pulp were applied to Brazilian goods. In this case, Brazil adopted new regulations requiring that such goods be derived from planted sources and not from original forests. Upward harmonization of environmental standards is taking on an ever-increasing importance as Brazil, through MERCOSUR, seeks to forge new economic agreements with the EU, NAFTA, and even the Asia Pacific Economic Community (APEC) regional blocs.

To advance geopolitical and geoeconomic goals, Brazilian foreign policy has incorporated the promotion of positive environmental policies at the domestic level. Fortunately, these environmental policies are not only furthering the country's foreign policy objectives and contributing to the protection of one of the most important ecosystems on earth, but they are also contributing to a long-term improvement in the quality of life of Brazilians. ■

La Liga de Defensa del Medio Ambiente

The *Liga de Defensa del Medio Ambiente* (LIDEMA) was founded on August 26, 1985.

MISSION

LIDEMA is a Bolivian organization, with 22 member institutions specializing in education and environmental training, research, management of protected areas, appropriate technologies, and ecotourism. LIDEMA's mission is to protect the environment and conserve natural resources, while promoting the population's equitable access to a better quality of life. Its role is that of advocator and promoter of national environmental movements. Prior to the December 1996 Santa Cruz summit, LIDEMA played a prominent role in organizing seminars and workshops on sustainable development.

TASKS

- Identifies problems, proposes solutions, recommends environmental policies, and monitors their compliance.
- Coordinates, supports, and evaluates research on the environment.
- Informs and educates to create awareness on environmental problems.
- Promotes citizen participation regarding the conservation of the environment.
- Supports social movements in their efforts to renew the environment.
- Advances its mission and that of its members, seeking and offering technical support and funding.

SCOPE

Through its members, LIDEMA carries out projects and monitors environmental impact assessments; conducts research on ecosystems, reserves, and national parks; and promotes the formulation of environmentally friendly policies. LIDEMA's efforts include:

- preparing documents and disseminating information on the environment, through its bulletin, *Hábitat*, and other media;
- publishing research findings;
- disseminating information and academic documents;
- conducting training programs, seminars, fora, and environmental conservation campaigns;
- coordinating and marketing the activities of its member institutions; and,
- supporting graduate programs in environmental studies.

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Sustaining Sustainable Development

Terry L. McCoy

As the hemisphere prepares for the next Summit of the Americas, scheduled for Santiago, Chile, in April 1998, it is clear that the reform movement has lost momentum.

The end of the Cold War and the deepening of economic globalization have spurred a transition in relations among the nations and peoples of the Western Hemisphere. Six trends have thus far defined this process: the reengagement of the United States within the Americas; the rise of multilateralism at the expense of unilateral and bilateral action; the restoration of the Organization of American States (OAS) and introduction of the United Nations as hemispheric "players"; an increasingly assertive Canada in hemispheric affairs—frequently in conflict with the United States; the growing influence of nonstate actors; and the emergence of nonsecurity issues as the focal point of hemispheric relations. The December 1994 Summit of the Americas in Miami sought to consolidate and deepen these changes. As the hemisphere prepares for the next Summit of the Americas, scheduled for Santiago, Chile, in April 1998, it is clear that the reform movement has lost momentum.

No issue is more emblematic of the potential for change in hemispheric relations than sustainable development. Not only is it a recent addition to the hemispheric agenda, but perhaps more than other major contemporary issues—regional security, free trade/regional integration, democracy/human rights, migration/refugees, and drugs/terrorism/crime—sustainable development captures all elements of the changing nature of relations in the Americas. Examination of its continuum sheds light on the prospects for achieving genuine transformation in hemispheric relations.

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Sustainable Development as a Regime

The evolution of sustainable development in the Western Hemisphere increasingly resembles what international relations specialists call a "regime." Using the widely recognized definition as the principles, norms, rules, and decision-making procedures around which actor expectations converge in a given issue area, the existence of international regimes signifies that subjective attitudinal phenomena explain, predict, and ultimately constrain the behavior of actors in an arena where there is no central authority. Regimes promote order, not through force or power, but because actors—most significantly, juridically sovereign nation-states—support and voluntarily comply with them. The emergence of international (or in this case, regional) regimes in the Americas would thus represent a departure from the hegemonic patterns that have historically characterized hemispheric relations.

In analyzing regimes, we look for the existence of hierarchically linked principles (beliefs of fact, causation, rectitude), norms (standards of behavior in terms of rights and obligation), rules (prescriptions or proscriptions for action), and procedures (practices for making and implementing collective decisions). These regime elements are present in the case of sustainable development in the hemisphere. In evaluating the prospects for regime maintenance, we look for crossnational alliances, patterns of compliance in the form of policy reform at the national level, and policy coordination across national borders. Here, the record in the hemisphere is mixed, which suggests caution in predicting the future of a hemispheric sustainable development regime.

Over the past decade, three conferences have taken place in the Western Hemisphere that have ranked sustainable development as an issue worthy of high-level attention, elaborated a corpus of regime concepts, and promoted formal compliance with the regime. The 1992 UN Conference on Environment and Development focused global attention on environmental protection, linking it directly to economic development. Agenda 21 of the "Earth Summit," held in Rio de Janeiro, was a blueprint for achieving sustainable development. The 1994 Summit of the Americas elevat-

A new hemispheric regime

ed sustainable development to the status of a hemispheric principle comparable to preserving and strengthening democracy, promoting prosperity through economic integration and free trade, and eradicating poverty and discrimination. Citing Agenda 21 and other international, regional, and subregional agreements, the Miami summit's Plan of Action promulgated a set of norms and rules for governments to achieve the goals of sustainable energy use ("promote increased access to reliable, clean and least cost energy services"), biodiversity ("ratify the Convention on Biological Diversity and pursue opportunities for collaboration under it"), and pollution prevention ("Develop and implement national action plans to phase out lead in gasoline."). The Miami plan concluded with a call for a sustainable development summit to be convened in Santa Cruz, Bolivia, in 1996, to evaluate progress on implementing these commitments.

Skeptics predicted that the Santa Cruz summit would either: a) never take place; b) fall victim to interest in more pressing problems; or c) be hindered by the Bolivian government's inability to organize a summit. When it did occur in early December 1996, the naysayers now stressed that only 14 of 33 heads of state (plus US Vice President Albert Gore) attended the meeting. On balance, however, the Santa Cruz summit advanced the hemisphere's sustainable development regime. To begin with, as the first presidential-level meeting following the Miami summit—focusing exclusively on sustainable development—the Santa Cruz summit reinforced the issue's importance in the hemisphere. Furthermore, at the meeting, the region's leaders considerably broadened and deepened hemispheric commitment to sustainable development. The Declaration of Santa Cruz reaffirmed, as a central principle of inter-American relations, that "human beings are entitled to a healthy and productive life in harmony with nature and, as such, are the focus of sustainable development concerns," while the Plan of Action for the Sustainable Development of the Americas committed the governments of the region to undertake—individually and collectively—65 separate initiatives, dealing with matters from making safe drinking water available to all inhabitants, to improving the quality and coverage of health and education in the hemisphere.

After the Miami and Santa Cruz summits, there now exist principles, norms, rules, and procedures for regulating behavior to foster sustainable development. There has been an attempt to give these components coherence and hierarchy, although the incorporation of a broad array of socioeconomic concerns has somewhat clouded the picture. What about compliance? Is behavior changing in the direction of national policy reform and regional cooperation, thus favoring sustainable development practices? Here the results are less impressive. Instead of holding governments and regional organizations accountable for what they have or have not accomplished, there has been a tendency to redraft blueprints for action, as happened at Santa Cruz. But progress has been uneven—not absent. Bolivia, for example, now has a Ministry for Sustainable Development, while other governments have presidential or subministerial agencies dedicated to promoting sustainable development. At the regional level, the Inter-American Development Bank (IDB) incorporated sustainable development goals into its programming as a part of its 1994 refunding policies. The OAS created a Unit for Sustainable Development and the Environment. Both the IDB and the OAS were active in organizing the Santa Cruz summit, and have major responsibilities in implementing the Plan of Action.

Prospects for Sustainable Development

The nations of the Western Hemisphere have taken significant steps towards creating a regional regime for sustainable development. It is apropos to caution that this regime is incomplete, especially in terms of national policy making to advance sustainable development. In assessing prospects for a fuller realization of a regional sustainable development regime—an accomplishment which could spill over into regime formation in other areas—it is insightful to consider the factors responsible for advancing the issue to its current status. In my opinion, there are four: the transnational and scientific character of the problem; the nature of US-Latin American interaction on sustainable development; the participation of civil society; and linkages to other hemispheric regimes.

Since threats to the sustainable use of natural environment do not respect political boundaries, it stands to reason that efforts to over-

come them must likewise transcend borders. The compelling case for crossnational and transnational collaboration has fostered regime development, as has the growing body of scientific research underpinning the urgency of the problem and outlining feasible courses of action. The hemisphere's sustainable development regime has an important epistemic dimension; universities and research institutes throughout the Americas can contribute by pursuing interdisciplinary, policy-oriented research relevant to sustainable development.

The fate of any hemispheric initiative ultimately depends on establishing a working consensus between the United States and Latin America. In the case of the Santa Cruz summit, the United States exercised leadership without imposing its will. The major trade-off came in balancing Washington's "green" agenda against the development agenda of the Latin Americans. The challenge now is to convert the ambitious Santa Cruz plan for sustainable development into meaningful action, and to keep Washington engaged in the process.

A loose coalition of diverse nongovernmental organizations (NGOs), operating locally, nationally, and transnationally has played a crucial role in advancing the cause of sustainable development in the Americas. Its efforts range from environmental education to major lobbying campaigns. Preparation for the Santa Cruz summit incorporated formal national civil society consultations (coordinated by the *Fundación Futuro Latinoamericano*), while the summit included a civil society forum. The Plan of Action clearly recognizes the legitimacy of civil society participation. For it to be effective in moving the sustainable regime towards greater compliance, NGOs must coordinate their efforts to maintain pressure on governmental organizations at all levels. United States-based NGOs must resist assuming a hegemonic posture *vis-à-vis* their less powerful counterparts.

Efforts to promote sustainable development cannot succeed if they are isolated and self-contained. They must penetrate all aspects of society and decision making. It is particularly important that the emerging sustainable development regime be linked to the evolving free trade/regional integration regime—and *vice versa*—since the latter is the motor driving hemispheric relations, as well as the major determinant of development in the hemisphere. Progress on this front will be difficult. The May 1997 Trade Ministerial and the Third Business Forum of the Americas, held in Brazil, made only the most innocuous of commitments to sustainable development.

If proponents of sustainable development are able to mobilize these forces in support of their cause, the Santiago Summit of the Americas will report continuing progress towards building an effective sustainable development regime. More importantly, further steps will be adopted for its full realization. If not, all resolutions may prove null and void. The pivotal component is civil society's pressure on government. ■

Fundación Futuro Latinoamericano

The UN Conference on Environment and Development (UNCED) is a landmark in the history of the concept of sustainable development. As Liaison Official for NGOs at the UNCED Secretariat, the founder and current President of *Fundación Futuro Latinoamericano* (FFLA), Yolanda Kakabadse, witnessed the process leading to Rio '92 firsthand. From this vantage position, she observed three worrisome problems:

- An *absence of leadership* in Latin America on sustainable development.
- A need for *long-term vision* among decision makers who determine the future of the region.
- The failure to manage *conflict*—as an element of development—appropriately.

With these concerns in mind, FFLA was created in 1993. The *Fundación* works with leaders in the region to achieve a sound understanding of sustainable development, and to promote responsible action for the future of Latin America. The FFLA has identified intersectoral consensus building as its specific field of action. Building bridges between sectors has engaged most of the organization's efforts. Three basic types of activities characterize FFLA's work:

- The identification of *conflicts and their resolution.* In 1994, for instance, the FFLA successfully managed a major dispute between the shrimp and banana industries of Ecuador over the use of certain pesticides, ending in agreements to sustainably manage the basin of the Guayas river.

- The identification of issues and convening of *policy dialogues.* The FFLA believes, for example, that the interface between trade and environment is a serious challenge confronting the region. Consequently, the FFLA has embarked on activities of capacity building and dialogue to allow the various sectors of society to effectively engage in this global discussion.

- The *promotion of participatory decision making in international fora.* For example, on the occasion of the 1996 Santa Cruz Presidential Summit on Sustainable Development held in Bolivia, the FFLA, at the request of the government of Bolivia, implemented a process of consultation with organizations of civil society in the Americas.

The *Fundación Futuro Latinoamericano* believes that to establish a strong and integrated Latin America, *dialogue, consensus building, participation,* and *conflict management* are essential.

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Ecotourism: Fad or Future?

Dennis J. Gayle

The tourism industry in the Caribbean has long been a vital source of income for the development of the region. Its expansion, however, has also been identified as a major threat to the region's environmental stability. The industry's improper disposal of solid and liquid waste, for example, has been a critical concern for environmentalists and others who regard its further expansion—if continued along traditional lines—as gravely debilitating the ecology of the Caribbean. As a result, an important debate has unfolded which will shape the role of tourism in the near future.

Some authors, such as Polly Patullo, argue that tourism has inflicted severe damage on the environment as a result of three factors: (1) the public sector's inability to restrict tourism development; (2) the financial interests of the region's elite in land development; and (3) the poor's struggle to survive within meager resources. As with any development debate, the conflict in the Caribbean involves regional, class, and more recently, nongovernmental organization (NGO) interests.

In a 1995 article published in the *Caribbean Studies Newsletter* entitled "The 'New Tourism' and Caribbean Development Imperatives," Dennis Conway asks: "Is tourism a blessing or a curse?" Moreover, he contends that the unknown, underexplored, and most probably undervalued dimension of tourism planning, environmental conservation, and marine resources management might generate multiplier effects. These could reasonably take the form of bundled policy mandates and practices. Conway concludes that the Caribbean appears to be mired in confusion over future paths for tourism. In short, the Caribbean requires sustainable tourism that balances short-term needs for the use of natural capital, while simultaneously ensuring its long-run supply.

Sustainable tourism is based on the understanding of the sectoral impact upon the natural, cultural, human, and economic environments, leading to the development of reliable methods of environmental accountability, inclusive consultation, and an equitable distribution of benefits, as well as costs. Such tourism implies an integrated, cross-sectoral approach to tourism planning and development, respecting the protection and appropriate economic uses of the natural and human environments in destination areas. Difficult political choices are inevitable, due to complex social, economic, and environmental tradeoffs. These choices require strategic vision, pragmatism, and the willingness of political leaders to balance immediate economic needs against medium- to long-term socioeconomic and environmental consequences.

This article examines recent efforts by two Caribbean islands to develop tourism in an environmentally responsible manner, albeit in distinctive ways. The first island is Jamaica, a major destination. (Among the countries of the Caribbean Commonwealth, Jamaica had the largest hotel room capacity in 1990, when the island was surpassed only by the Bahamas in the number of calling cruise ships, visiting tourists, and total visitor expenditure.) The second is Dominica, "the nature island of the Caribbean," a minor destination with limited room capacity and stayover tourist arrivals of less than 40,000 in 1990, when tourism proceeds equaled 16 percent of total import costs. Dominica has pursued a tourism development strategy based on ecotourism, which can be traced to the launching of the 1991-94 tourism sector plan. The experience of these two countries may prove instructive when considering the potential for sustainably developed tourism throughout the Caribbean.

Tourism and the Environment in Jamaica

During the early 19th century, Jamaica was regarded as one of the most undesirable locations in the Caribbean owing to malaria, yellow fever, cholera, and typhoid. By 1862, however, the island began to be touted as a health spa, as the origins of such tropical diseases were increasingly explored and understood. Since the establishment of the Tourist Trade Development Board in 1922, Jamaican government officials and private entrepreneurs have encouraged the maximum possible visitor arrivals each year. Its successor, the Jamaican Tourist Board, was established in 1954, under the auspices of the Ministry of Trade and Industry, with representatives from government, hoteliers, shipping, airline and ground transportation groups, and travel agents. By 1965, the Jamaican tourist industry had become the island's largest export

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Dilemma under the sun

industry, generating 45 percent of total export proceeds.

Jamaican tourist arrivals grew by an average 5.9 percent per year, from 1985-95. In 1995, gross tourism earnings amounted to $965 million—up from $917 million in 1994. Yet the impact of tourism development upon the environment has, only in recent years, become an issue in Jamaica. Notwithstanding, the Natural Resources Conservation Authority, which has spearheaded the drive for sustainable development, is underfunded. Conflicts between development and conservation interests have begun to intensify. Roughly 90 percent of Jamaica's 12,000+ hotel rooms are, however, locally owned, easing the task of environmental regulation—local owners are more sensitive to protecting the environment and stimulating the local economy. Local inputs increase the foreign exchange retention factor to perhaps 63 cents/dollar.

There are many Jamaican examples of conflict between short-term (economic) and long-term (ecological) imperatives. In 1991, after government approval had been given for the development of a new 198-acre hotel resort at Pear Tree Bottom, between Runaway and Discovery Bays, vocal opposition emerged. Despite private ownership, Pear Tree Beach had become a popular public beach. Moreover, the site had been identified as a potential national park, and was subject to classification as a protected area under the National Resource Conservation Act. Controversy arose. Similarly, in January 1992, when the Urban Development Corporation announced plans to open The Point, a 500-bedroom apartment hotel in Negril, the local Chamber of Commerce filed an injunction intended to prevent this project, until the town's sewage plant was upgraded. The Negril Coral Reef Preservation Society, a nonprofit NGO, also initiated a campaign to have Negril designated a protected area with a marine park, given the nutrient overload problem caused by untreated sewage, and the importance of protecting the area's 6,000 acres of wetlands, as well as its coral reef ecosystem. Prime Minister P. J. Patterson had, however, already made public his support for the Urban Development Corporation's project, and the Natural Resources Conservation Authority wished to oppose neither the government nor the developers (one of whom had been a former chairperson of the Jamaica Tourist Board). In each case, tourism development took precedence over environmental concerns.

Cliffs above the waters of Negril, Jamaica. Caribbean tourism is the one industry that damages that which it intends to sell—the natural environment.

During 1992, when Minister of Tourism John Junor proposed that ecotourism projects be developed in south St. Elizabeth and Westmoreland—targeted towards the upper end of the market, with a focus upon regional flora and fauna—there was widespread local support. Residents saw such projects as potentially lucrative supplements to their main income sources: small farming, fishing, artisan trades, and small-scale retailing. This project did not proceed for lack of funding. The Jamaica Attractions Development Company estimated that some $15 million in private sector funding would be required for project viability, not to mention major infrastructural work.

By contrast, in 1989, Jamaica opened the 200,000-acre Blue

Mountain/John Crow Mountain National Park, adopting sustainable land use policies to halt deforestation and soil erosion. This park has integrated local and tourist educational and recreational needs, while employing local residents. At the Park's Maya Lodge, the headquarters of the Jamaican Alternative Tourism, Camping, and Hiking Association, tourists pursue sports, interact with local farmers, and participate in environmental educational programs.

In late February 1996, Jamaica's Director of Tourism, Fay Pickersgill, executed a Memorandum of Cooperation with the US Agency for International Development (USAID), as well as the United Nations Environment Program. The purpose of this agreement was to launch the Caribbean Environmental Network Project, under which $700,000 would be directed towards regional efforts to develop sustainable tourism, by implementing environmentally sound management practices for the use of coastal and marine resources. The projected activities include:
1) recommendations to combat coastal degradation due to tourism activities, based on "best" international practices and public awareness programs to encourage behavioral changes by emphasizing the link between pollution and marine and coastal deterioration;
2) development and implementation of four public awareness pilot projects in Jamaica, Barbados, St. Lucia, and Dominica;
3) training programs for tourism planners, hotel managers, and government officials to obtain practical skills and knowledge in tourism development;
4) creation and implementation of awareness and information exchange systems for the general public, professionals, and local community leaders;
5) development of a regional plan of action for proposed adoption by Caribbean governments at the 1997 annual conference of the Caribbean Tourism Organization;
6) establishment of the Caribbean Ecotourism Support Network within the Caribbean Tourism Organization, to provide leadership on coastal and marine resources management within the tourism industry; and
7) follow-up contact with donors, such as the United Nations Development Program and the United Nations Environment Program, to secure continued financing for the Caribbean Environmental Network Project.

Despite past misgivings, this last initiative places Jamaica at the forefront of the Caribbean, in developing environmentally responsible tourism within the context of coastal and marine resources. Daunting gaps still remain between recommendation and implementation.

Tourism and the Environment in Dominica

The 1991-94 tourism sector plan reported that 67 percent of all visitors to Dominica were hosted by friends or relatives, and that some 500-600 jobs were attributable to tourism; this sector constituted approximately 7 percent of the island's GDP by the end of the 1980s. In terms of ecotourism or "green" tourism, the plan stated that "such tourism required strong linkages to local products, accompanied by an emphasis upon clean food, clean water, clean air, and the efficient use of renewable resources." The precise meaning—and specific implications—of ecotourism nevertheless remain an issue.

The consultants who authored this tourism sector plan asserted that there was a perfectly valid case for orienting Dominica's tourism development to attract special interest tourists, such as birdwatchers, nature lovers, science students, hikers, and divers. The market for ecotourism was considered to be smaller than commonly assumed. Identification and targeting of such highly specific market niches were thought likely to be a long-term process. Meanwhile, if the cruise passenger market segment were to be expanded from 1 percent of total visitor expenditure, parallel programs should be developed to attract ecotourists, minimizing the incompatibility of needs of these two distinct tourist groups.

Within this context, the plan projected that a comprehensive list of all scenic spots, waterfalls, cascades, rivers, and sensitive marine areas requiring conservation should be created, applying the 1975 National Parks and Protected Areas Act. A marine area management plan would also be developed, to ensure that tourism activity did not damage marine life and coral. Although sewage pollution was a major problem in coastal areas, the 1991 Roseau Sanitation Project was aimed at halting untreated effluent; new solid waste disposal systems at Mahaut and Portsmouth would eventually mitigate the problem. The consultants noted that by escaping the first wave—mass tourism—of Caribbean tourism development, Dominica would be able to learn from the mistakes of others, and capitalize upon its late entry into the tourism business.

The 1991-94 tourism sector plan is significant for three reasons. First, it dismissed ecotourism as a viable short-term strategy, arguing that most visitors to Dominica were not members of special interest groups. Second, this plan pointed out that cruise tourism and ecotourism were incompatible, unless visitors within each category could be accommodated separately. Finally, the quandary arose when the government of Dominica continued to promote the plan as the basis for its tourism development in 1996, and started to implement several recommendations—such as the provision of shopping facilities near cruise ship terminals—while declaring ecotourism to be of central importance.

Stayover tourist arrivals to Dominica have continued to rise,

from 21,453 visitors in 1985, to 60,471 in 1995. But the numbers of cruise arrivals have risen even more sharply, from 6,602 in 1985, to 132,088 in 1995. Almost all of Dominica's 17 hotels and 21 guesthouses are small (less than 50 rooms in size), and are owned by Dominicans. The nine-room Papillote Wilderness Retreat represents an example of sustainably developed tourism. All of the retreat's supplies are purchased locally, with the exceptions of linens and bath fixtures, and apart from certain food items such as bacon, butter, sugar, and flour. The staff come from the nearby village of Trafalgar, and regularly attend hotel management training programs. In 1994, this hotel won third prize from *Islands Magazine* for "combining a small, low-key resort with a program that highlights local flora and fauna on an island that is already well-known for nature tourism." Yet noise pollution from a new hydroelectric power station near the Papillote Wilderness Retreat has become a problem for visitors, whose enjoyment of Trafalgar Falls has been further diminished by a reduced flow of water due to the station's construction.

By June 1995, after general elections and the installation of Prime Minister Edison James, a controversial agreement for a $15.5 million five-star resort hotel development project in the Layou River area was negotiated, under Dominica's "economic citizenship" program. At the same time, a new cruise ship berth along the Roseau Bayfront was built by the Ministry of Communications and Works, with $5.5 million in funding from France's *Caisse Française du Développement.* This berth included a platform, 50 meters long and 12 meters wide, capable of accommodating the largest cruise ships.

In early 1995, Dominica made its first loan application to the Caribbean Development Bank, for the amount of $3.061 million, to finance sustainably developed tourism. This loan would be used to finance the development of five ecotourism sites: the Soufriere Hot Springs; the Freshwater Lakes; Morne Diablotin National Park; the Middleham Falls and nature trails; and the Carib Reserve. It was projected in each case that access roads, hiking trails, multilingual centers, vehicle parking, and assorted facilities for visitor comfort would be constructed. Questions remained as to whether the carrying capacity estimates provided were more than cursory. The increasing importance of tourism revenue in Dominica was brought into focus by the impact of Hurricanes Luis and Marilyn, during September 1995. These two hurricanes combined caused $66 million in damage to roads, bridges, ports, utilities, and especially agriculture, devastating the banana industry, which accounted for 51 percent of foreign currency earnings, as well as citrus and avocado crops.

The Upshot

Ecotourism may be simply defined as sustainably developed tourism, based on effective integration of ecological imperatives with the interests of specific tourist groups, such as ornithologists, botanists, photographers, hikers, and divers, who seek to enjoy the natural environment, rather than traditional "*sun, sea, and sand*" vacations. If measures of capacity and saturation control are warning indicators, to be applied to the control of carrying capacity, as suggested by the World Tourism Organization, one may surmise that several Caribbean destinations are approaching the crossroads between stagnation or renewal.

Much of the available evidence suggests that ecotourism is often treated, in practice, as either a fashionable, politically correct diversion (with little relevance in the real world), or as a potentially lucrative niche market. Across the Caribbean, the overriding concern of government and industry officials is to expand visitor arrivals, per capita expenditure and profit, taxation yield, and tourism-related employment. Neither governments nor advertisers take limits to growth—or sustainably developed tourism—into consideration.

In both the Jamaican and Dominican cases, obvious and increasing environmental concerns alternately coexist and clash with the financial interests of land developers, economic ministries, and the survival needs of the poor. Caribbean countries depend heavily upon tourism. It is likely that sustainably developed tourism will remain a marginal part of Caribbean tourism in the short- to medium-term. While such tourism may become crucial afterwards, implementation of this approach may come too late, and may prove marginally effective.

Examples—such as the defeat of the Negril Chamber of Commerce in Jamaica in 1995, and the tug of war to expand both cruise ship visitors and stayover ecotourists in Dominica—tend to support the view that tourism development will be driven mainly by economic imperatives; conservation groups will make minimal headway. Nevertheless, with the acceptance of "best" practice examples—such as Jamaica's Blue Mountain/John Crow Mountain National Park, and Dominica's Papillote Wilderness Retreat—there is some room for optimism. Pressure from local interest groups might ensure the integration of tourism planning and environmental conservation, and that increasing attention is given to the productivity, rather than the exploitation, of natural capital. Conservationists and community action and grassroots groups must pursue common, rather than divergent, interests. In the final analysis, the future of Caribbean tourism is inextricably linked to the level of attention accorded to ecotourism. ■

From Rubble to Reconstruction

Anthony Oliver-Smith

So enormous was the area affected, so devastated the infrastructure of the region, and so dire the needs of survivors, that it became impossible to think in terms of simple replacement. There was the awareness that reconstruction represented an opportunity—and an obligation—to improve the poverty-stricken lives of most people of the region.

The Great Peruvian Earthquake of May 31, 1970, occurred at 3:23 p.m. on a tranquil Sunday. A disaster often disrupts and divides time itself: everyone in Peru remembers where they were and what they were doing at that fateful moment. Disasters, in general, inflict awesome destruction and death upon people. In addition, disasters become historical markers, dividing time into *before* and *after* periods. The Great Peruvian Earthquake of 1970 played a similar role in the evolution of disaster research and policy in Latin America and elsewhere. The Peruvian earthquake established a link between the field of disaster relief and reconstruction and development in the Third World. This linkage was further reinforced during the Nicaraguan earthquake of 1972, the Guatemalan earthquake of 1976, and the cycle of catastrophic drought and development-linked famines in Africa.

Pre- and Post-Quake

The implications of disaster relief and reconstruction for sustainable development must be analyzed within the context of the challenges and problems that emerged in Peru in the aftermath of May 31, 1970. The disaster occurred in a period of expansion of both theories and funding of development in the Third World. Disaster research and practice, however, did not generally associate the linkage between disasters, vulnerability, and development; furthermore, an urban bias influenced both disaster theory and practice. Prior to 1970, the linkage between disasters and development had not been drawn—either conceptually or practically. From a socioscientific perspective, disaster research before 1970 focused largely on disaster responses in Europe and North America, with little attention paid to the Third World. The preoccupation of the First World—providing immediate material needs and replacing damaged or destroyed structures in large urban areas—shaped disaster relief and reconstruction in the Third World. Reconstruction, the rebuilding of communities, was fundamentally a material replacement problem for engineers, architects, planners, and administrators.

In the early 1960s, Peruvians had designed a disaster program to study post-impact conditions and to execute economic rehabilitation programs for disaster zones. Yet there was little socioscientific input incorporated into the program—no significant change was evident in the actual disaster policy. National organizations and ministries failed to make the linkage between disasters and development. The historic event of May 31, 1970, changed the scope of disaster relief and reconstruction: the link between disasters and development was finally forged.

Seconds Ring in Devastation

The earthquake affected an area of about 83,000 square kilometers, an area larger than Belgium and Holland combined, in the north central coast and the highlands. The earthquake was a system-wide disaster, impacting such a widespread area that the regional infrastructure of communications, commerce, and transportation was destroyed. At the same time, however, each village, town, and city constituted a disaster in its own right. Areas hard hit were the coastal towns and cities of Chimbote, Casma, Supe, and Huarmey; but the Andean valley known as the Callejón de Huaylas suffered the most intense and sweeping damage. Hardest hit, in particular, were the cities of Huaraz, where 10,000 residents died in the rubble of their homes, and Yungay, a provincial capital of 5,000 inhabitants, which was completely buried by an enormous avalanche from nearby Mount Huascarán, Peru's highest peak.

The disaster claimed approximately 60,000 lives, injured 140,000 people, and destroyed or damaged more

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The ruins of the central plaza in the town of Mancos. The Great Peruvian Earthquake of 1970 measured 7.80 on the Richter scale and claimed the lives of 60,000 people in 45 seconds. Photo: Steinbrugge Collection, Earthquake Engineering Research Center, University of California, Berkeley.

An aerial view of the city of Yungay, located at the foot of Mt. Huascarán. Before the earthquake, Yungay served as a provincial capital. Photo: Steinbrugge Collection, Earthquake Engineering Research Center, University of California, Berkeley.

than 160,000 buildings, roughly 85 percent of the structures in the area. Over 500,000 people were left homeless, and the lives of approximately three million others were affected. Economic losses surpassed half a billion dollars. One hundred and fifty-two provincial cities and towns and over 1,500 peasant villages were seriously damaged or destroyed. In addition to homes, industries, public buildings, and schools, electrical, water, sanitary, and communications facilities were also destroyed or seriously damaged. A 45-second earthquake obliterated much of the fragile infrastructure of this vast region.

"Let Us Not Reconstruct Underdevelopment"

So enormous was the area affected, so devastated the infrastructure of the region, and so dire the needs of survivors, that it became impossible to think in terms of simple replacement. Consistent with the rhetoric and policies of the reformist military government, reconstruction authorities encouraged the participation of local populations and implemented the process of disaster reconstruction, within an overall developmental framework. There was the awareness that reconstruction represented an opportunity—and an obligation—to improve the poverty-stricken lives of most people of the region. "Let us not reconstruct underdevelopment" was a popular slogan that appeared in speeches and on posters in the disaster zone. The initial housing plan stressed that the reconstruction process would not reestablish the existing conditions prior to May 31, 1970, but would create centers of economic and social development. In essence, Peruvians recognized fully that the destruction and misery were as much the result of underdevelopment as of the earthquake.

Development-Oriented Reconstruction

The reconstruction funds that became available after the disaster were far greater than any previous allocations for regional development. In 1971-72, the funds for reconstruction increased 1,468 percent over the previous biennium, and were largely obtained from multilateral international sources, the United States Agency for International Development (USAID), and Peru's treasury. In contrast to the past, the govern-

Aerial view of Yungay, at almost the same scale as the previous photo, taken after the earthquake. The town was completely buried by an avalanche that descended from Mt. Huascarán. Photo: Steinbrugge Collection, Earthquake Engineering Research Center, University of California, Berkeley.

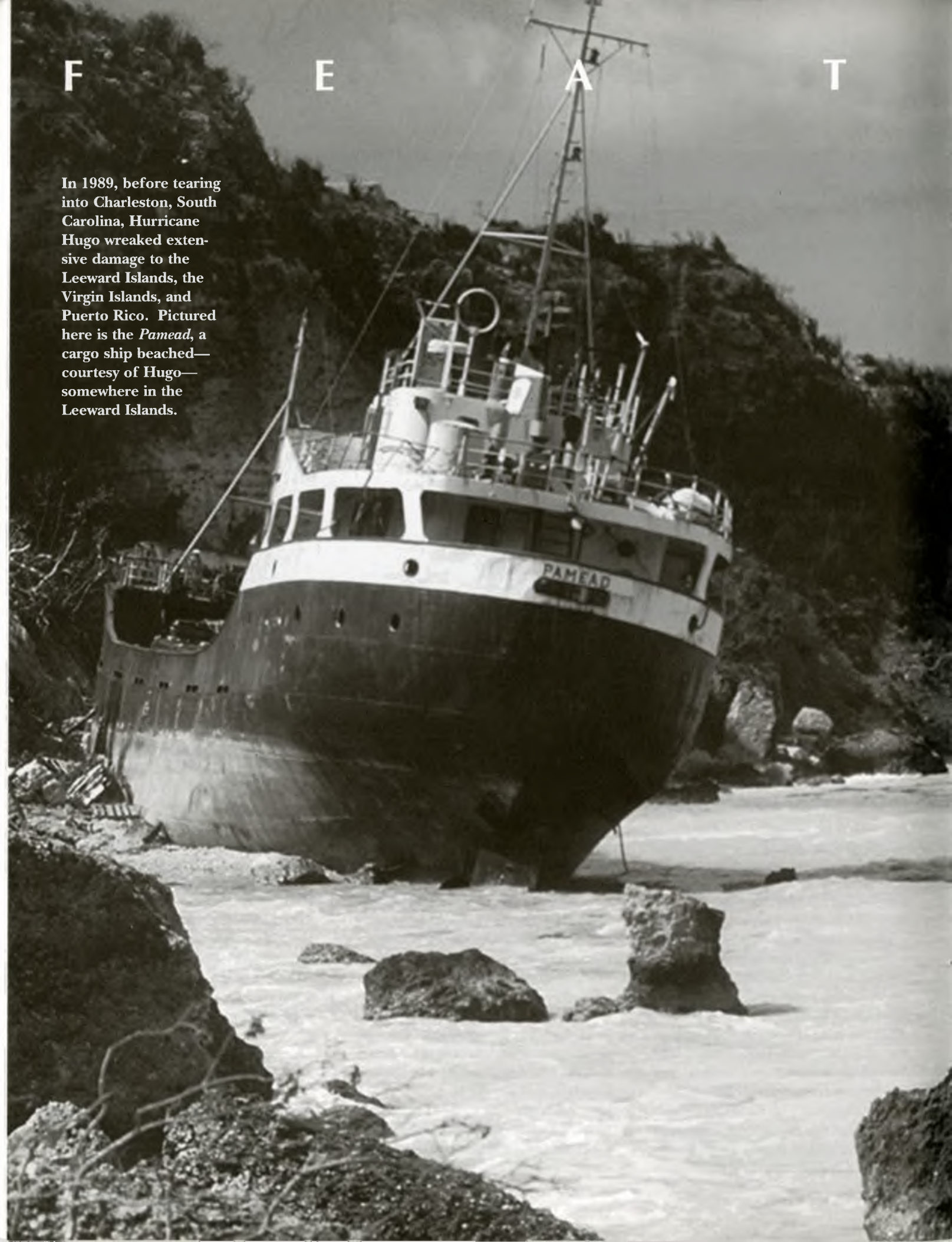
ment, faced with the enormity and complexity of the reconstruction task, began involving more social scientists in the research, design, and implementation of the reconstruction process. Thus, conceptually, organizationally, and financially, conditions in Peru were ripe for the linkage between disaster reconstruction and development.

The reconstruction program had a developmental focus in tune with the times. In the 1970s, models emphasizing regional development were in vogue; therefore, the post-disaster reconstruction program for the stricken area, a large interconnected coastal-mountain system, was largely conceptualized in regional systemic terms. The thrust of the plan was to create a regional urban/industrial society through a system of regulated population centers connected by a network of transportation routes.

Strides Despite Obstacles

Although Peruvian social scientists and government functionaries undoubtedly understood the linkage between reconstruction and development, there were enormous physical and organizational obstacles, accounting for errors, inefficiencies, and a waste of both effort and resources. Twenty-seven years later, the scars of the disaster are still visible in the region. Also evident, however, are changes of a developmental nature, despite the ravages of a decade of terrorism that followed ten years later. Moreover, the approach to reconstruction changed after the 1970s, incorporating the participation of local populations in the planning process and implementing disaster reconstruction within a developmental framework. To the modest extent that this objective was achieved, a major advancement was made—it has only been in recent years that this approach has been conceptualized elsewhere. In the United States, the assumption is that the nation struck by calamity is already developed; therefore, reconstruction is only aimed at replacement. A parallel can be drawn between the reconstruction/development challenges faced by Peruvians in the aftermath of the 1970 earthquake and the globalization of poverty and vulnerability that might confront any disaster-stricken nation, including the United States. ■

F E A T



In 1989, before tearing into Charleston, South Carolina, Hurricane Hugo wreaked extensive damage to the Leeward Islands, the Virgin Islands, and Puerto Rico. Pictured here is the *Pamead*, a cargo ship beached—courtesy of Hugo—somewhere in the Leeward Islands.

Reducing Vulnerability

Timothy Beatley and Philip R. Berke

The prevailing approach of aid and recovery programs has emphasized short-term relief, with little linkage to sustainable development, local roles and capacities, and diverse social, economic, and cultural conditions. This approach presumes that, without aid, communities and citizens are helpless; they are seen as having little ability to cope with losses, much less participate effectively in redevelopment initiatives. Every year, however, relief budgets climb, while multinational humanitarian organizations proliferate in response to media appeals to save yet another population of "helpless victims."

This article is the result of a three-year study (1989-92) concerned with local disaster recovery efforts, how such efforts influence prospects for enhancing sustainable development, and the way in which external donor organizations provide aid in developing countries. The focus is on the four island states of Antigua and Barbuda, Jamaica, Montserrat, and St. Kitts and Nevis, where there is widespread poverty, and where people and governments are engaged in a sustainable development process.

Using data gathered from in-depth local case studies and a household survey concerning two particularly destructive natural disasters—Hurricane Gilbert (1988) and Hurricane Hugo (1989)—we seek to answer the following questions: 1) How can disaster recovery strategies achieve natural hazard mitigation, while promoting economic development?; 2) How can all people, particularly the poor, be assured fair access to the benefits of mitigation and economic development?; 3) How can local people meaningfully participate in formulating aid distribution, mitigation, and economic development policies that affect them?; and 4) How can external aid organizations (government and nongovernmental) support local participatory initiatives?

A New Vision

Sustainable development represents a broad framework in which to consider disaster recovery and natural hazards management. While sustainable development's exact definition is debatable, the concept presents an extremely useful framework in which to evaluate the efforts of Caribbean nations, external donor organizations, and others in promoting long-term recovery from natural disasters. While disagreement exists about what sustainable development includes, or how it might be defined, achieving a pattern of human settlement, which generally keeps people and property out of harm's way, is increasingly vital. Land use patterns which fail to take into account the location of high risk areas (e.g., floodplains, high slope terrains, and shoreline erosion zones) are not sustainable. Moreover, housing ill-designed to withstand predictable physical forces (e.g., hurricane force winds) is also not sustainable.

Concepts of sustainability, and sustainable development, also offer a useful framework for integrating hazard reduction with other social and environmental goals. When considering the location of a new development project or public investment, the project should be evaluated simultaneously, using a number of sustainability criteria. Does it provide for a sustainable use of—and relationship towards—the environment and natural resources? For example, does the project minimize energy consumption, protect renewable resources, and preserve biodiversity? Does it address and provide for social needs, as well as a high degree of livability and quality of life? Does the project provide for the needs of all social, ethnic and income groups, with an equitable distribution of social resources? Sustainability offers an extremely useful framework for integrating these different concerns.

Sustainability and sustainable development, moreover, explicitly call for the adoption of an extensive time frame in our decision making. In developing countries, short-term needs and considerations are frequently given priority. Actions which satisfy a short-term goal or need—such as allowing deforestation and environmental degradation for the sake of agricultural expansion—may make little sense when long-term goals and needs come into play (e.g., the costs of soil ero-

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sion, increased flooding, and loss of fresh drinking water). Sustainable development requires the paying of substantial attention to natural hazards both *before* and *after* disaster events.

A New Role for External Donor Organizations

A sustainable development focus on disaster recovery and mitigation implies commitment to a broader developmental process. While aid provided in the aftermath of a devastating natural disaster can be helpful, its focus is often on providing a short-term fix, dealing with immediate needs in the absence of broader, longer term developmental strategies. While addressing short-term post-disaster needs (e.g., shelter and water), such aid could, at the same time, achieve broader sustainable development goals, and reduce long-term exposure to natural hazards.

Evidence suggests that external donor organizations must expand their focus in several fundamental ways. Outside developmental agencies, such as the United States Agency for International Development (USAID) and the World Bank (WB), must incorporate natural disasters and hazards into the projects and programs funded. Their projects sometimes fail to address the issue of disaster vulnerability, and may instead serve to increase exposure and vulnerability. International disaster assistance organizations, like the International Red Cross or Red Crescent, must take a more proactive view of disasters—promoting projects, programs, and aid distribution which do not merely treat the symptoms (i.e, immediate response and recovery needs) but also address the underlying causes of disasters. Both types of organizations need to redirect their emphases towards nurturing and expanding long-term community development, and helping communities build the institutions and capabilities to reduce vulnerability.

Criteria and procedures for damage assessment and allocation of short- and long-term disaster assistance should treat in an equitable fashion all regions, communities, and socioeconomic groups, unless there are clear and compelling reasons to do otherwise. Indeed, resource needs may be greatest in poorer communities where the ability of residents to recover on their own may be much lower. Any disaster plan or recovery framework must explicitly address the issue of equity—and strive to achieve it.

Promoting Bottom-Up Recovery

A primary conclusion of our study is that bottom-up, community-based approaches to recovery will frequently be more effective and equitable than traditional top-down approaches (as occurred in Saddler's Village in St. Kitts and Nevis). The definitive characteristic of bottom-up approaches documented in our case studies (e.g., Streatham Village of Montserrat) was the leadership role played by a community-based organization. Because community-based nongovernmental organizations (NGOs) are deeply rooted in the society and culture of a locality, they enable people to address their real needs and priorities, allowing problems to be correctly defined, and responsive aid and development programs to be designed.

The presence of community-based NGOs also allowed people to respond to disaster situations in a timely and effective manner. In various instances, such as the Streatham Village of Montserrat and Christian Children's Fund (CCF) projects in Antigua, the distribution of assistance by community-based NGOs was efficient and just, eliminating bureaucratic delays and politically driven corruption. In the Streatham Village program, a community-based participant actually was sent to explain to donors in Canada that long-term disaster recovery is a bottom-up empowerment process—not just a process of donating materials and food to helpless victims.

Through mobilizing people, and drawing on their local knowledge and expertise, positive results could be achieved through modest aid inputs. Under the control of community-based NGOs, resources were used efficiently and effectively. Community-based NGOs were typically multisectorial, combining disaster reconstruction with other development activities, such as housing, agriculture, and environmental protection.

The support activities of external NGOs and central governments were more effectively used in community-based programs than in top-down programs. For example, the Streatham Village and CCF projects showed how technical assistance and training reinforced and strengthened local organizational capacity, which in turn permitted the implementation of recovery, reconstruction, mitigation, and various developmental measures.

Agents of Change

Some programs showed how disaster was viewed as a unique vehicle for change. The post-disaster recovery period offers an opportunity, not only to stimulate local organization building efforts for immediate concerns related to recovery, but long-term development as well.

Such bottom-up approaches lead to reconstructing damaged housing and public facilities, and induce change in the social, economic, and political relations which underpin sustainable development. These same approaches reinforced organizations, built up cooperative networks, and increased awareness. Therefore, these grassroots movements increased people's potential for reducing their vulnerability to future disasters and to conditions of impoverishment, in contrast to the top-down approach.

The most interesting bottom-up approaches were those where external organizational efforts supported and complemented community-based NGO activities, through the redistribution of power and resources at the local level. In one case, Antigua's Disaster Relief Committee was widely regarded as successful in involving a cross section of outside and local organizational participants. The committee was established independently by the central government, with a separate identity and authority. This entity was not perceived to be politically motivated by aid acquisition and distribution. Foreign donor organizations were thus supportive of this organization and recognized its legitimacy in handling aid. Local NGOs were represented as well, which allowed for the expression of local needs and capacities.

Overcoming Politics

Politics is not necessarily a bad factor. In the Caribbean countries we examined, however, allocating scarce post-disaster resources presented certain problems. Politics leads to differential distribution of aid and local recovery, raising significant questions about equity and fairness. The significance of politics is perhaps most dramatically seen in Jamaica, where the division between rival political parties is sharp and contentious. Allocation of disaster aid is subject to these political divisions. Sensitivity to political divisions is crucial in designing mechanisms for distributing aid.

Despite its problems, the Jamaican building stamp program did manage to achieve a high degree of political neutrality. The aspects of this program, which minimized politics, included: an aid allocation system based on clear and objective standards and criteria; a comprehensive damage assessment performed in a fairly neutral fashion; and allocation of the actual aid through the local private sector—that is, building supply stores in the actual communities.

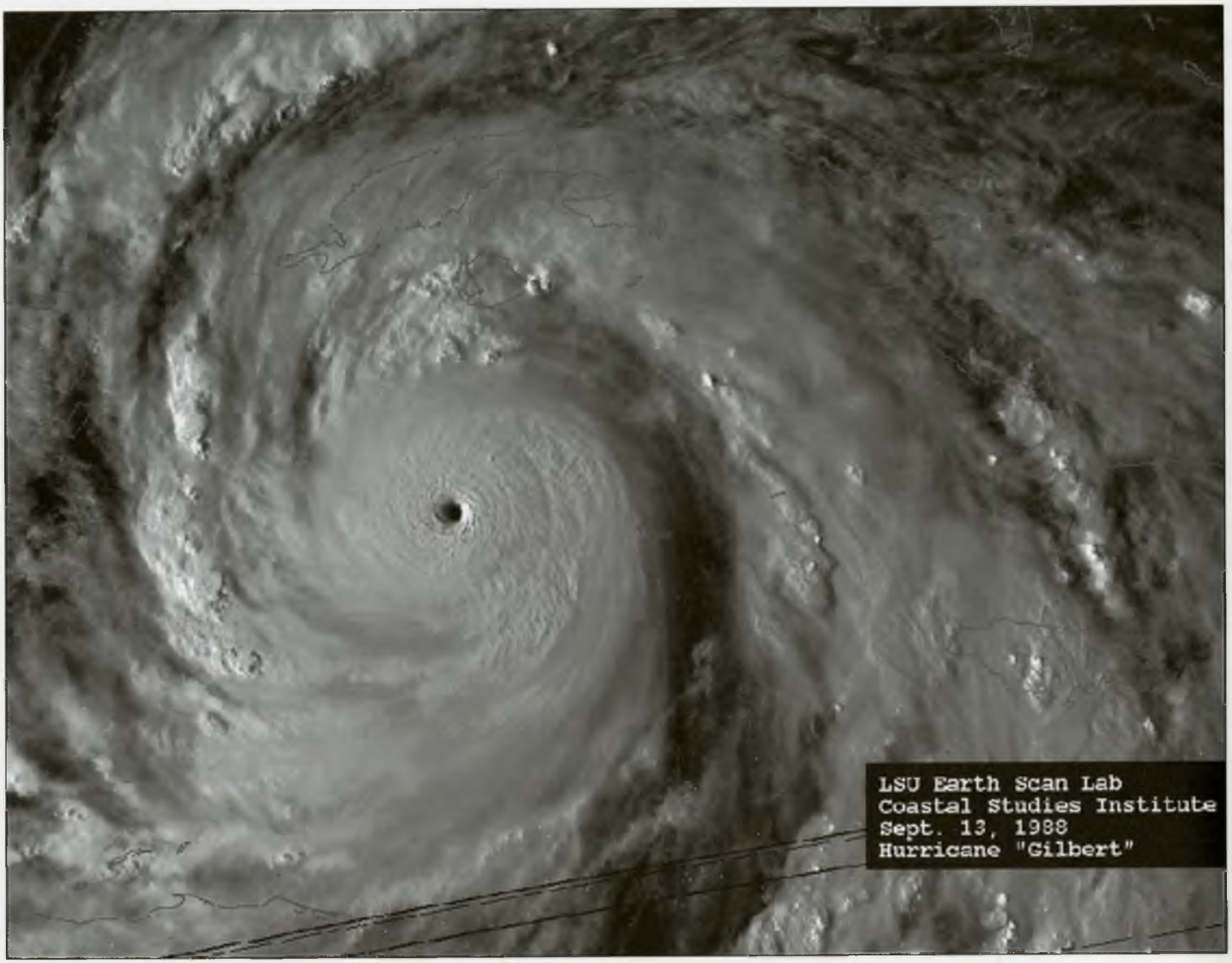
The preparation in advance of a detailed usable disaster plan, which laid out coordinating responsibilities, required actions and clear recovery/reconstruction standards and criteria to minimize the role of politics.

Making Disaster Plans Relevant

The experiences documented here suggest that major reforms are also needed in the designing of national disaster plans. Such plans can provide a crucial coordinating framework following a disaster. More attention should be paid to making public officials, public and private organizations, and the general public more aware of the existence of these plans, and how they can be useful during response and recovery. The plans primarily focus on preparedness and emergency response plans. They should be further expanded, to: 1) explicitly address recovery and reconstruction; and 2) foster long-term development. Disaster plans should be widely disseminated, made the focus of community fora, and frequently updated.

Achieving Fair and Equitable Recovery

Considerable questions have been raised by the case studies about the fairness of recovery and reconstruction. Poorer people and communities, for instance, are less likely to receive their fair share of disaster assistance in a timely fashion. Any program for disaster recovery must incorporate the goal of social equity. Criteria and procedures for damage assessment, and allocation of short- and long-term disaster assistance, should treat, in an equitable fashion, all regions, communities, and socioeconomic groups, unless there are clear and compelling reasons to



A satellite image of Hurricane Gilbert. After an eight-hour rampage across Jamaica, Gilbert veered towards Mexico's Caribbean coast. Photo: National Climatic Data Center, National Oceanic and Atmospheric Administration (NOAA).

do otherwise. Resource needs may be greatest in poorer communities, where the ability of residents to recover on their own may be much lower. Any disaster plan or recovery framework must explicitly address the issue of equity—and strive to achieve it.

A number of specific recommendations might enhance equity in recovery. These include giving greater responsibility to locally based NGOs, which are likely to be more insulated from political pressures and have a much clearer, sharper understanding of the relative needs of individuals and groups following a disaster. Moreover, there is a strong need in many Caribbean countries to address the issue of land tenure. Our cases illustrate that those without secure land tenure—those living in squatter communities—frequently do not receive the same level of disaster assistance or aid. Programs like the building stamp program in Jamaica, for example, are restricted to those who can show property ownership. Those living illegally (i.e., in squatter settlements) are less likely to seek out disaster assistance programs. These tend to be the poorest of residents, in the poorest of communities; they are frequently at the greatest risk. Promoting equity in disaster planning requires some strategy to deal with the land tenure issue. Among the possibilities are efforts at designing aid programs that are not contingent on proving land or proper-

ty ownership; tenure reform to redistribute land or property ownership; and special outreach programs with squatter communities in mind.

Reducing the long-term exposure of people and property to natural disasters in the Caribbean will require a number of specific mitigation actions. These are actions that, for effective implementation, will require the concerted efforts and support of the public and private sectors.

Strengthening the Building Stock

Obviously, the low quality of the housing stock in much of the Caribbean region, and its vulnerability to wind and other forces of nature, is a major cause of high damage and loss of life. In countries such as Jamaica, general conditions of poverty translate into large numbers of people living in housing that will not withstand a hurricane or any other natural disaster.

In the future, then, substantial attention must be given to strategies for strengthening housing stock, both in new construction and retrofitting of existing units. There are many obstacles to these strategies in developing countries. The existence of an official building code is rarely an issue—the Caribbean building code has been widely adopted. If adequately implemented and enforced, the code would strengthen the building stock in the region. The problem, in most cases, is one of enforcement, and greater attention needs to be directed here. There is an especially strong need for trained personnel, and an administrative structure for enforcing the code. In many urban areas in the Caribbean, there already exists some form of construction permit and inspection process.

But while improvements in such a code implementation/enforcement system can and should be made, this recommendation is not an appropriate strategy for many parts of the Caribbean. First, as stated earlier, much of the construction (and reconstruction) occurs through an informal housing sector, especially in rural areas, often outside the jurisdiction and scope of a permit review. Much of the new housing in the Caribbean is constructed without going through a code review and inspection process. Other strategies are needed to address the informal housing sector. The possibilities include programs to train carpenters, craftsmen, and trade workers in construction strengthening techniques and designs, and the education of the general public about appropriate construction techniques.

***Generally, a natural hazard does not exist until people and property are placed in harm's way. At this point, a natural process or function becomes a hazard, and eventually, a* disaster.**

The informality of much of the Caribbean housing sector is greater following a disaster. We found substantial anecdotal evidence that in Jamaica, following Hurricane Gilbert, a large portion of the recovery and rebuilding took place without any type of government review or approval. In many cases, housing occupants scavenged building materials and made repairs themselves. We also noted that because of the large amount of repair and reconstruction work available, not to mention the higher demand for building tradesmen, many inexperienced and unskilled individuals were employed in rebuilding. There is a special need to find effective ways to promote mitigation and construction strengthening techniques during this informal rebuilding process. Locally based education and training programs are, again, potentially effective. Such efforts in Montserrat, following Hurricane Hugo, are positive examples—albeit on a small scale. A similar training program was instituted in Jamaica, through the Hexcell house program, but it was short-lived and also relatively small.

Efforts at strengthening the Caribbean building stock will require strategies for both the formal and informal housing sectors. External aid organizations should consider long-term investments in disaster reduction, yielded by development programs, which will lead to safer building practices in both formal and informal housing sectors.

Poverty affects vulnerability to natural disasters in the Caribbean. Much of the population of the Caribbean basin lives in the most rudimentary housing—frequently, single-room, tin-roof wooden structures. Poverty prevents the population from living in stronger, better built structures resistant to the forces of wind and water. Housing recovery programs, like Jamaica's building stamp program, and the Hexcell house program, can only go so far to improve the post-disaster housing stock, given the low levels of income and resources of residents. Similarly, programs to educate about appropriate building practices can achieve limited success in light of these conditions. This shortcoming further reinforces the importance of overall economic development programs and efforts to alleviate the basic problem of poverty.

Sustainable Land Use Patterns

Generally, a natural hazard does not exist until people and property are placed in harm's way. At this

point, a natural process or function becomes a hazard, and eventually, a *disaster.* Our study finds that past and recent developments in these Caribbean nations have occurred in the most dangerous locations, for instance, in low-lying shoreline and inland flood-prone areas.

Given the context of developing countries, promoting sustainable land use may require a number of different efforts. Greater attention, at the national level, should be given to land use planning. Countries such as Jamaica do have a rudimentary land use planning framework, modeled after the British town planning system. Such systems, where they exist, are basic in scope, with limited efficacy. Yet while such systems do suffer from many limitations, they represent a useful regulatory and management framework from which to proceed. One problem has been a limited understanding of the spatial extent of natural hazards present. A lack of a series of floodplain maps, in Jamaica, has impeded efforts to manage land use to reduce exposure to that hazard.

Efforts should be made to enhance the capability of Caribbean nations to effectively manage land use. Among the specific areas that should receive attention are: preparation of systematic and accurate maps of hazardous zones indicating the type, magnitude, and spatial extent of hazards; expanded funding for planning and the training of planners; efforts to strengthen land use and town planning laws; and the existing processes through which building and development proposals are evaluated.

As with building codes, however, land use planning will have difficulty influencing many of the locations and decisions in the informal housing sector. It is not uncommon for squatter communities to emerge illegally on public lands. Often such squatter communities emerge in some of the most dangerous locations—along floodplains, and in areas vulnerable to slides and other hazards. This trend suggests the need to supplement more formal procedures and processes of land use planning and control with more informal mechanisms. Community-based NGOs (e.g., churches, civic groups, and neighborhood organizations) have great potential in many Caribbean nations to educate and advise citizens on appropriate land use decisions.

Environmental Protection

Disaster planning can, and should be, integrated with environmental management and protection. The relationship between these areas is clear. First, evidence suggests that exposure of people and property increases, as a result of environmentally destructive actions. Second, many features of the natural environment serve important mitigation functions; preserving these features can represent an effective disaster reduction strategy. Wetlands absorb floodwaters, for instance, while beach and dune systems serve as natural seawalls, absorbing the force of surge and waves. A long-term strategy for reducing exposure of people and property to disasters must preserve and protect such natural mitigative features. Third, there are many opportunities to accomplish both environmental conservation and disaster reduction/recovery goals. Many nations in the Caribbean are taking significant actions to protect their environments, and realize that maintaining their natural heritage is extremely important in achieving long-term economic development goals. A number of Caribbean countries have established parks and protected areas, which have the potential to help reduce natural disasters. Jamaica, for example, has established a Blue Mountain/John Crow National Park, with the potential to preserve significant parts of the island's natural heritage. Similar areas may be established in the future, as efforts to increase tourism will most likely burgeon. Many of these protected areas are, however, "paper parks"—established on paper, with little or no management capability or personnel. The establishment of protected areas, and systems of protected areas, has considerable promise for reducing disaster vulnerability as well. Yet natural hazards must be taken into account in designing these parks and park systems, with sufficient resources and personnel, to ensure proper control and management.

Part of the answer here lies in a long-term process of expanding public awareness of, and concern about, the environment. Local, community-based environmentalism is beginning to emerge in many parts of the Caribbean. In Jamaica, for instance, a group called Portland Environmental Protection Association (PEPA) has been instrumental in expanding environmental awareness and mobilizing local resources to oppose certain environmentally destructive practices. Environmental education holds great promise for broadening the political base and constituency supportive of sustainable development practices. Such programs are beginning to take hold in some parts of the Caribbean, and are worth expanding. Part of the objective is to promote a greater sense of causal connection between environmental destruction (e.g., deforestation) and the long-term negative results of such destruction (e.g., increased flooding).

Understanding Natural Hazards

One major obstacle to achieving safer, more sustainable land use patterns is the limited understanding of the location and nature of hazards. Many Caribbean nations have

limited (if any) mapping of hazard zones, such as the 100-year floodplain. Only recently, for instance, has Jamaica undertaken detailed floodplain mapping. It is difficult to expect that serious development efforts in floodplains can take place without detailed mapping of such hazards. Similarly, few Caribbean nations have had their coastlines "modeled" to understand likely inundation levels under different hurricane landfall scenarios. Puerto Rico, however, has had the Sea Lake and Overland Surge from Hurricanes (SLOSH) model applied to its coastline. This information will serve as an important basis for gauging the amount and types of properties at risk, the number of people and communities at risk, and the likely future evacuation needs. Understanding the potential long-term effects of future sea level rise is another example of an important information need, lacking in most Caribbean nations.

Many Caribbean nations lack the funding and expertise to undertake such studies. Development agencies can help in this regard. Generally, the cost of these types of studies and analyses should be viewed as essential investments in long-term land use sustainability.

Further Considerations

In the future, any effective long-term reduction in vulnerability to natural disasters will occur through a broader, more holistic framework of sustainable development. While the vision of a "sustainable" future remains ambiguous, and in need of definition, it is clearly one which seeks to direct people, property, and social investments away from high hazard areas, protects and sustains ecological functions, and explicitly balances short-term needs and long-term goals. Each Caribbean nation should, ideally, develop a strategy for sustainable development—one which considers strategies for economic development, location and timing of public investments, taxation policy, and natural resource conservation. A sustainable development plan for Montserrat, for example, would require a much longer time frame than most conventional development or land use plans—perhaps such a plan should project as far as 500 years into the future.

Where will people live? How will people earn their livelihoods? What will be the condition of the environment? How much risk and exposure to natural events, such as hurricanes and earthquakes, will be acceptable? A long-term sustainable development plan could pull together the many disparate national plans and policies—from tourism, to infrastructure, to economics—that are frequently developed and implemented separately. Some Caribbean nations have already embarked upon a course to develop integrated development schemes. Jamaica, for example, has developed a national environmental inventory, as well as a physical development plan. Similar planning would be useful in guiding the distribution of developmental funds and disaster assistance by development agencies and international disaster assistance organizations. Such agencies could make the funding of national sustainable development plans a priority. While merely attaching the label of "sustainable" to such a national planning effort does not guarantee long-term development, a serious attempt at applying the theory and principles of sustainable development would advance the long-term goal of reducing exposure to natural hazards in the Caribbean. ■

A Matter of Choice

Stephen O. Bender

Natural processes, punctuated by dramatic events, shape our landscapes, flush our reefs and estuaries, and form our soils. Hurricanes, earthquakes, landslides, and volcanic eruptions are all too easily forgotten environmental management issues which currently affect the greatest number of lives and wreak the greatest economic losses. Natural disasters are no more "natural" than ecosystem degradation; both result from choices made by societies.

Much has been written about sustainable development in the past few years. For some, the term is seen as synonymous with the term "environment," which is treated more extensively inside and outside development literature. By comparison, little has been written about natural hazard reduction, though much has been written about disasters and their aftermath.

"Development" is traditionally understood as a change towards the greater wealth of a community, whereas a "disaster" is defined as a destructive situation beyond the coping ability of a community. "Natural disaster" refers to the situation caused by a natural event. Often "sustainable" refers, however unintentionally, to the emergence of hazardous situations as an outgrowth of development efforts.

The link between disasters and development has been recognized in the context of developing countries for some time. In 1972, the United Nations Conference on the Human Environment (UNCHE), the most prominent of early environmental meetings, focused on this link and stated: "Environmental deficiencies generated by the conditions of underdevelopment and natural disasters pose grave problems and can best be remedied by accelerated development through the transfer of financial and technological assistance as a supplement to the domestic effort of the developing countries."

In 1984, Gunnar Hagman more succinctly described the relationship in *Prevention Better than Cure*: "When a disaster has occurred, development agencies have regarded it as a nuisance and tried to avoid becoming involved; or even worse, the risk of existing or new potential hazards has been overlooked in the planning and implementation of some development activities. It is now being observed that intensive development may be the cause of many new disasters in poor countries."

These, and other descriptions, predate the popular use of the term "sustainable development" in referring to a set of development activities related to their environment. This recognition also preceded the widespread acceptance of an integrated approach to the analysis of natural events and the hazards posed to development planning. Previously, disaster assistance had not yet begun usurping resources designated for traditional international development activities.

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Wordplay and Its Implications

The terms "sustainable development" and "natural disasters" will not disappear from the development vocabulary in the near future. Moreover, an examination of the impact of natural disasters on development, sustainable or otherwise, reveals that far more is known about the *vulnerability of structures* than the *structure of vulnerability*. Development decisions continue to be made in the name of "sustainability," without understanding the potential consequences of placing populations, and social and economic infrastructures at risk.

The definition of sustainable development—derived from the *Bruntland Report* and embraced by the United Nations Conference on Environment and Development (UNCED)—is development which meets present needs without compromising the ability of future generations to do likewise. Economic development is not sustainable in conditions of vulnerability to natural hazards. Nevertheless, in Latin America and the Caribbean, population pressures, as well as other demands on regional ecosystems,

Natural events can turn disastrous if abetted by society's choices

From a distance: the smoldering crater rim and dome complex of Soufriere Hills Volcano on Montserrat. Relatively dormant for almost four centuries, Soufriere Hills began erupting in July 1995. Since then, dangerous pyroclastic flows—streams of superheated ash, gases, and rocks travelling at nearly 100 mph—have forced one-third of the island's 11,000 people to evacuate. Those remaining have relocated to the safety of the island's northern hills, abandoning the villages that surround the crater, as well as the capital city of Plymouth. In a violent eruption on June 25, 1997, the volcano claimed its first four victims. Over a week later, a blanket of volcanic ash obscured the Miami skyline—1,300 miles away. Despite the lull in activity throughout the rest of July, the first week of August witnessed new, elevated levels of volcanic activity, culminating in violent explosions and intense pyroclastic flows. These flows have now filled and incised the Gages Valley, imperiling Plymouth. Residents of Montserrat have been placed under renewed alert. Photo: Montserrat Volcano Observatory.

have long since outstripped their natural capacity to provide sufficient goods and services, especially in meeting the basic needs of the urban poor. Food, fuel, and building materials are all naturally occurring goods whose availability has become scarce. Increasingly, such goods must have value added during their production, transportation, and distribution in the form of resistance to natural hazards. In a similar fashion, safe building sites (from natural hazards) are increasingly more scarce. If resistance to natural hazards is not part of the design, construction, and/or operation of infrastructures, populations are placed at risk. When natural events occur in vulnerable areas, disasters are often the result.

Disaster, Dependency, Decisions

Disasters induce dependency. There is no more obvious manifestation of dependency than an international appeal for assistance, not to mention the aftermath of outside intervention. Vulnerability is a reflection of dependency which detracts from a community's ability—over time—to sustain development. The difference between the level of development, or betterment, and the level of vulnerability, may be described as the resiliency of the community in confronting disasters. When a natural event, such as an earthquake, hurricane, or flood prompts a request for external assistance, the overall course of development may be altered for years. The disaster may create further scarcity, dependency, and the loss of hard-earned development gains. In any case, disasters reveal that risk has been preferred to investment in vulnerability reduction.

Some vulnerability reduction issues can be addressed by an individual, such as attempts to strengthen the family home against the seismic forces of earthquakes. But in most cases, vulnerability reduction is beyond individual efforts. Actions are best taken collectively, and most effectively, through a society's institutions. Public and private sectors must take measures to protect ecosystems, as well as economic and social infrastructures; the impetus should be to guard against the loss of life and reduce the economic impact of natural disasters.

"Development" for developing countries has various definitions, including the creation of, equitable distribution of, and access to wealth. Some definitions, particularly those dealing with sustainable development, attempt to be all inclusive, thus creating contradictions and mutually exclusive choices when real examples are sought. In any given country, the definition adopted has it own constituency seeking betterment for the community. Often not addressed, however, are the issues of betterment *for whom*, and *who pays*.

Future Objectives

In the future, development objectives must focus less on the relative conditions of wealth and more on the absolute conditions of vulnerability. Addressing the issue of vulnerability helps to define the target population for whom development actions are undertaken. Development projects assign resources (e.g., time, knowledge, money, goods, services, etc.) for the betterment of some segment of the population. Promotion of vulnerability reduction activities is, therefore, an increasingly important measure of "for whom" development is intended.

Natural processes, punctuated by dramatic events, shape our landscapes, flush our reefs and estuaries, and form our soils. Hurricanes, earthquakes, landslides, and volcanic eruptions are all too easily forgotten environmental management issues which currently affect the greatest number of lives and wreak the greatest economic losses. Natural disasters are no more "natural" than ecosystem degradation; both result from choices made by societies. Natural hazard management is part of environmental management.

If sustainability includes the continuing provision of food, fuel, building materials, and safe building sites, then the manner in which natural events affect a community, both in terms of the events' attributes and hazards, is part of an integrated approach to environmental management. New generations of environmental profiles are needed which highlight population, and economic and social infrastructures' vulnerability to natural hazards. These must complement the two-decade-long achievements linking degradation of ecosystems to development actions.

Hard "Green" Facts

"Green" accounting, otherwise known as natural resource accounting, is the inclusion of natural resource stocks in national income accounts. The purpose of "green" accounting is to recognize the productive role of natural resources in capital formation, which can be recorded in the stock of capital. National income accounts are used to measure economic development in lesser developed countries by looking at income as the return on invested capital. Income from other assets, such as natural and human resources, has not been traditionally included because both of these have been considered surplus assets.

Natural events, the hazards they pose, and the impacted landscapes are part of natural resources, and therefore should be part of national "green" income accounts, due to the issues of demand and scarcity.

Landscapes which are least susceptible to natural events are sought for development because the investment needed to reduce vulnerability is minimal. Naturally occurring mitigation elements in ecosystems which control flooding (for example, forests and wetlands), or reduce wind and wave action (reefs, dunes, mangroves, and marshes), or stabilize the soil (woodlands and prairies) are typically in finite supply relative to the time frames in which a country wishes to exploit them. Some landscapes become more vulnerable, because such elements have been damaged or removed due to environmental degradation, or because development activities in hazardous areas have created vulnerable social and economic infrastructures—where none existed before.

Value, Vulnerability, Depletion

As the supply of these naturally occurring, least vulnerable resources is depleted, value must be added to reduce risk to an acceptable level for resource use. Buildings must be strengthened against earthquakes and hurricane winds; building sites must be protected from floods and landslides; and infrastructures must be moved away from fault lines and volcanic hazardous zones. Obviously, these additional costs are not always factored in. In both developing and developed countries, natural hazards continually inflict loss of life and property. When the impact of these events is widespread, and if those responsible for national income accounts do the necessary calculations, adjustments to the accounts are made.

There are three types of hazard-related natural resource accounts that should be factored into evolving national income accounts. The first type are losses due to the impact of natural events, which often result in a declared disaster.

A Tale of Two Volcanoes: Eldfell, Iceland

A view of the town and harbor of Vestmannaeyjar on the island of Heimaey with the cone of the erupting Eldfell in the background.

The 1973 eruption of Eldfell on the island of Heimaey, which lies just off the southern coast of Iceland, prompted *the largest, most successful effort* ever exerted to manage the consequences of volcanic activity. Believed to have been dormant, the volcano began erupting on Janaury 23, 1973, after two days of earthquake swarms. The eruption began along a 1.5-mile-long fissure a few hundred yards from the outskirts of the town. Within hours, nearly all of the town's 5,300 inhabitants were evacuated to the mainland. In a matter of days, much of the town was destroyed by lava or buried under tephra.

As the eruption progressed, lava flows threatened to seal off the harbor. To save Iceland's chief fishing port, more than 19 miles of pipeline and 43 pumps were used to deliver seawater at a rate of over one cubic yard per second onto the lava flows. A total of eight million cubic yards of water were pumped onto the lava. Not only was the harbor saved, but its entrance was actually improved in the process.

The successful management of the eruption of Eldfell averted what could have been a tragic disaster. While much of the town was destroyed, the eruption only claimed one fatality and spared the town's precious harbor. Photo: Nordic Volcanological Institute.
(Continued on page 40.)

These accountable losses include destruction to economic and social infrastructures and losses to naturally occurring mitigation elements in ecosystems. The second involve the value of natural structures (for example, reefs) and functions (for example, the floodwater absorption capacity of wetlands) of ecosystems which mitigate the impact of natural hazards. The issues associated with valuing the services provided by these resources are similar to those related to valuing the currently recognized goods and services provided directly (and indirectly) by aquifers, oil deposits, estuaries, and other natural resources. Third, and lastly, come the depreciated value of economic and social infrastructure due to the risk of natural hazards.

Resilience Before Assistance

Settlements, communities, provinces, and countries must employ their democratic structures to devise alternatives to hazardous situations, vulnerability, and disasters. The economic and social fabrics of societies must become more resilient to natural events—rather than more dependent on assistance. A development approach which condones continued vulnerability to natural hazards—where large segments of the population have no choice but to live and work in high risk environments—perpetuates dependency. Vulnerability reduction to natural hazards must be the foremost objective to sustain social and economic development. ■

Based on remarks made at the Hemispheric Congress on Disaster Reduction and Sustainable Development, September 30-October 2, 1996, Florida International University, Miami, Florida.

A Tale of Two Volcanoes: Nevado del Ruiz, Colombia

An aerial view of the remains of Armero, Colombia, destroyed by the eruption of Nevado del Ruiz in 1985.

In 1985, the eruption of Nevado del Ruiz became the second most deadly volcanic eruption of the century, claiming over 23,000 victims. (The first is the 1902 eruption of Mount Pelée in Martinique that killed 29,000 people.) An historically active volcano, the snow-capped Nevado del Ruiz began rumbling in 1984. On November 13, 1985, a violent eruption spewed hot ash and rocks across the snow-covered summit. The resulting lahars of hot mud, ash, and rock raced down the sides of the mountain at over 30 mph, consuming the town of Armero in a matter of minutes.

Although a seismic station had been monitoring the volcano regularly and vulnerable areas had been identified, Colombian *authorities had neither an effective procedure for communicating this information, nor a disaster mitigation plan* in the event of an emergency. The lahars that destroyed Armero within minutes took over two hours to reach the town after the eruption began. Had there been an effective hazard assessment and an early warning system, the death toll could have been far less.

The priorities of a society, when it comes to protecting its members from the potential dangers of natural events, are the determining factors in evading a tragic outcome. Photo: R. J. Janda, courtesy of the United States Geological Survey, Cascades Volcano Observatory. ■

Trees for People, People for Trees
Communities Managing Forest Resources

a video by the

Caribbean Natural Resources Institute (CANARI)

Produced with support from the British Development Division in the Caribbean

Trees for People, People for Trees is a 22 minute training video on community forestry in the Caribbean. It examines the concept of community forestry and uses examples from around the region to illustrate some of the ways in which Caribbean communities are managing forests and forest resources for their social, economic, and ecological benefit.

Trees for People, People for Trees is a useful training tool, and can be used in formal and non-formal educational settings. The video is suitable for use by community animators, extension officers, village councils, teachers or anyone interested in community forestry in the Caribbean.

Trees for People, People for Trees is now available on VHS cassette from CANARI for US$15.00. PAL and PAL SECAM versions for European systems are available for US$ 20.00. Prices include shipping and handling. To obtain a copy of the video, please send your prepaid order to either of the addresses below.

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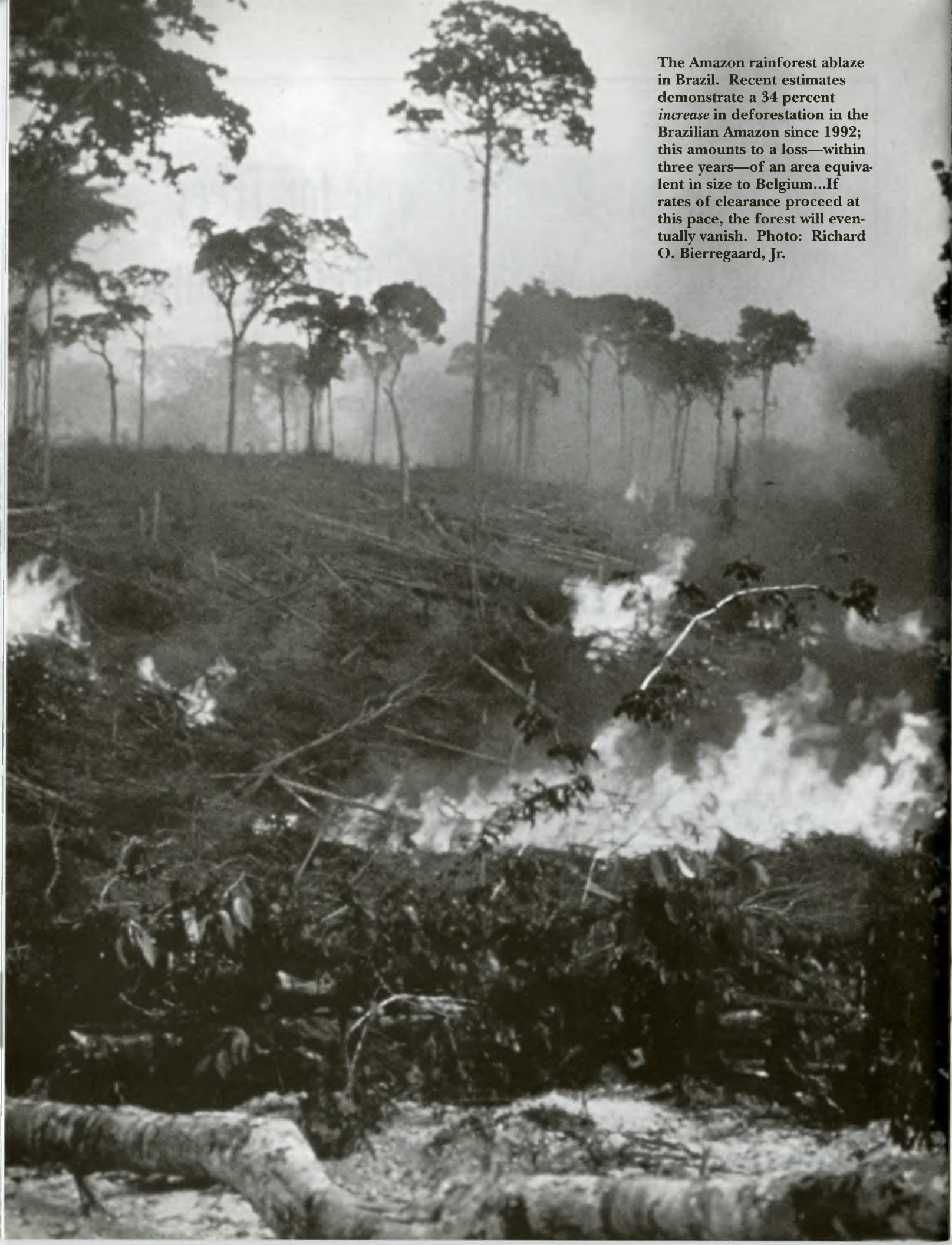

The Amazon rainforest ablaze in Brazil. Recent estimates demonstrate a 34 percent *increase* in deforestation in the Brazilian Amazon since 1992; this amounts to a loss—within three years—of an area equivalent in size to Belgium...If rates of clearance proceed at this pace, the forest will eventually vanish. Photo: Richard O. Bierregaard, Jr.

The Wealth of Nations

Janet M. Chernela

Suggestions for reevaluating the means of measuring wealth are now in heated debate. A turning point in the history of "green" accounting occurred in 1995, when the World Bank (WB) reformulated mechanisms with which to measure national wealth. Formed at the United Nations Monetary Conference at Bretton Woods in 1944, the WB's earliest tasks were the rebuilding of postwar Europe and designing a worldwide monetary system that would promote wealth and avert widespread financial failure prevalent during the 1930s. In the 1960s, the WB turned its focus on developing nations, with policies driven by the assumption that if the stock of physical capital increased, social welfare would follow. In recent years, large lending projects to developing governments have come under criticism due to the many negative environmental and social consequences. Criticism, generated by increasingly vocal environmental constituencies in Europe and the US, reached a peak between the years 1987 and 1989, prompting the Bank to examine alternatives and address policies affecting sustainable development and, relatedly,

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In the new accounting system for measuring a nation's wealth, a value is assigned to natural resources that are not in use, while resource depletion is counted as a "cost" to be calculated in pricing mechanisms and market competitiveness. Thus, environmental degradation results in* debiting *the national wealth account.

the fundamental assumptions underlying conventional assessments of wealth.

Changes in personnel, activities, and agendas suggest a profound reorientation of the WB's lending practices and relations among "developed" and "developing" nations. When James Wolfensohn replaced Lewis Preston as the WB's president in 1995, Wolfensohn announced that environmental concerns would have priority status on the Bank's new agenda. One of his first acts was the creation of a Vice Presidency for Environmentally Sustainable Development and the appointment to that position of economist Ismail Serageldin. Serageldin's first formal address, "Sustainability and the Wealth of Nations: First Steps in an Ongoing Journey (SWND95)," was received as a revolutionary reconsideration of the notion of wealth.

The speech, released as a draft on September 30, 1995, prior to the Third Annual World Bank Conference on Environmentally Sustainable Development, suggests four kinds of capital: man-made (produced), natural, human, and social (this last category is the least developed). The extension of the term capital, beyond classical definitions limiting its usage to financial accounting of produced goods, may allow for the development of a new means of evaluating the wealth of nations in a manner compatible with environmental sustainability.

The most common valuation technique employed to measure progress at the national level has been the Gross Domestic Product (GDP), although a number of alternative measures had been recommended to take into account the depletion of natural resources. In the Bank's new system for measuring a nation's wealth, a value is assigned to natural resources that are not in use, while resource depletion is counted as a "cost" to be calculated in pricing mechanisms and market competitiveness. Thus, environmental degradation results in *debiting* the national wealth account.

According to Vice President Serageldin:

Conventional national accounts may serve macroeconomists and central bankers well, but they do a poor job of measuring sustainable income or changes in a nation's productive capacity. That includes estimates of depreciation of man-made capital, but not that of natural capital....For example, when a tropical forest is logged, no estimate is made for the loss of an irreplaceable asset. When land cultivation

Razing the rainforest to make way for a road near Tagua, Ecuador. Photo: Haroldo Castro, courtesy of Conservation International.

increases the loss of topsoil, which subsequently accumulates in a reservoir, no allowance is made for the harmful effects on soil and water storage.

To address some of these deficiencies, the Bank has been collaborating with the United Nations Statistical Office and with others to develop a new system of environmentally adjusted national accounts...[known as]...Integrated Environmental and Economic Accounts....Operationally, this translates into: encouraging the growth of natural capital by reducing our level of current exploitation; investing in projects to relieve pressure on natural capital stocks...and by increasing investment in human resources particularly of the poor who are both the victims and the unwitting agents of environmental degradation in many of the poorest societies on earth. ("Sustainability and the Wealth of Nations: First Steps in an Ongoing Journey." World Bank Draft: September 30, 1995, pp. 14, 18)

The new measures of value carry important implications. In conventional systems of accounting, for example, countries with the fewest environmental regulations receive a competitive advantage. Costs of environmental regulations are passed onto consumer pricing, placing producers who comply with governmental regulations at a market disadvantage. Under the newly recommended fiscal accounting, resource degradation will be translated into costs, thus leveling the playing field for producers in nations with extensive environmental regulation.

Wealth in Latin America

Comparing preliminary rankings by wealth with conventional ones, where income is the sole indicator, produced a number of surprises. Of 192 countries ranked under the new system, eight rose 20 or more positions, while two fell 20 or more (SWND95). According to the 1995 draft, which assigns a value to biodiversity, the world's wealthiest nation is Australia, with an estimated wealth of $835,000 per person; Iceland is the seventh wealthiest, and the US, the twelfth (see Table 1 on page 45).

In South America, Suriname climbed more than 20 positions to

Table 1: Composition of Wealth (Top 25 Wealthiest Countries in the World)*†

	Country	Estimated Wealth (US$) Per Capita	Sources of Wealth (% total) Human Resources	Produced Assets	Natural Capital
1	Australia	835,000	21	7	71
2	Canada	704,000	22	9	69
3	Luxembourg	658,000	83	12	4
4	Switzerland	647,000	78	19	3
5	Japan	565,000	81	18	2
6	Sweden	496,000	56	16	29
7	Iceland	486,000	23	16	61
8	Qatar	473,000	51	11	39
9	United Arab Emirates	471,000	65	14	21
10	Denmark	463,000	76	17	7
11	Norway	424,000	48	22	30
12	United States	421,000	59	16	25
13	France	413,000	77	17	7
14	Kuwait	405,000	62	9	29
15	Germany	399,000	79	17	5
16	Austria	394,000	75	18	7
17	Suriname	389,000	19	4	77
18	Belgium	384,000	83	16	2
19	Netherlands	379,000	80	18	2
20	Italy	373,000	82	15	3
21	Finland	347,000	34	28	38
22	United Kingdom	324,000	83	14	3
23	Singapore	306,000	85	15	0
24	Hong Kong	302,000	88	12	0
25	Spain	268,000	78	13	9

become the 17th wealthiest country in the world and the only South American country among the wealthiest 25. The new calculation shows $389,000 in wealth per person for Suriname, ranking it in per capita wealth above Belgium, the Netherlands, Italy, and the United Kingdom. The second South American country to rise over 20 points in the new calculation is Guyana, with a reported estimate of $90,000 per capita wealth.

According to the "back of the envelope" calculations by the WB in its 1995 preliminary reporting, Suriname holds 77 percent of its total wealth in natural capital (the remainder is divided between 4 percent in produced assets, and 19 percent in human resources) and Guyana a full 92 percent of its total wealth in natural capital (the remaining 5 percent in produced assets, and 3 percent in human resources). With over 75 percent of their wealth in natural resources, Guyana and Suriname are among only four South American nations that have more than 60 percent of their wealth in natural resources; the other two are Bolivia and Paraguay. (Newly released reports by the WB list wealth for 130 nations, 62 less than the earlier draft. Among the countries absent in the newer listings are Suriname and Guyana, reflecting perhaps a scarcity of data, and/or the international isolation of these two countries.)

Most of Latin America's strongest national economies fall within the range of 40-60 percent of capital in natural resources. These include Chile (43 percent), Brazil (45 percent), Peru (48 percent), and Argentina (51 percent). As many as six Latin American countries have less than 20 percent of their wealth in natural capital: Haiti, Guatemala, the Dominican Republic, El Salvador, Mexico, and Costa Rica. Costa Rica, long touted as a model of environmental preservation, has one of the poorest ratios of natural to produced capital in the world. This country holds only 14 percent of its total wealth in natural capital, as compared to 16 percent in produced assets and 70 percent in human resources.

Table 2: Composition of Wealth in the Americas*†

	Country (world rank)	Estimated Wealth (US$) Per Capita	Sources of Wealth (% total) Human Resources	Produced Assets	Natural Capital
1	Canada (2)	704,000	22	9	69
2	United States (12)	421,000	59	16	25
3	Suriname (17)	389,000	19	4	77
4	The Bahamas (28)	227,000	71	16	13
5	Virgin Islands (37)	156,000	82	16	2
6	Argentina (46)	120,000	39	10	51
7	Antigua and Barbuda (47)	119,000	83	15	2
8	Barbados (48)	117,000	82	17	1
9	Puerto Rico (49)	114,000	81	17	1
10	Netherlands Antilles (53)	100,000	81	17	3
11	Aruba (54)	100,000	80	17	3
12	Martinique (57)	98,000	82	17	2
13	Guadeloupe (58)	97,000	80	17	3
14	Guyana (60)	90,000	3	5	92
15	Mexico (62)	74,000	73	11	16
16	Trinidad and Tobago (64)	70,000	59	30	11
17	Chile (65)	70,000	49	9	43
18	St. Kitts and Nevis (66)	68,000	77	18	5
19	Uruguay (68)	61,000	56	14	30
20	Venezuela (70)	58,000	39	25	36
21	St. Lucia (73)	54,000	82	16	2
22	Belize (80)	48,000	26	14	60
23	Brazil (81)	47,000	37	19	45
24	Dominica (82)	46,000	77	16	6
25	Jamaica (83)	46,000	23	19	58
26	Panama (84)	43,000	59	19	22
27	Grenada (85)	40,000	81	17	2
28	St. Vincent and the Gren. (90)	36,000	81	17	2
29	Costa Rica (91)	36,000	70	16	14
30	Cuba (95)	35,000	65	14	21
31	Colombia (111)	26,000	59	16	25
32	Paraguay (112)	25,000	27	16	57
33	Bolivia (118)	22,000	17	15	68
34	El Salvador (120)	20,000	83	14	3
35	Dominican Republic (122)	18,000	76	17	7
36	Ecuador (123)	18,000	42	31	27
37	Peru (124)	18,000	23	29	48
38	Guatemala (127)	18,000	75	15	10
39	Honduras (149)	10,000	50	28	22
40	Nicaragua (156)	8,000	49	13	38
41	Haiti (170)	5,000	78	18	4

Worse, Guatemala, the Dominican Republic, El Salvador, and Haiti rely on the sale of natural capital to finance most of their investment in fixed capital. With the exception of Haiti, each of these countries registers between $18,000 and $20,000 per capita wealth. Guatemala holds only 10 percent of its total wealth in natural capital, as compared to 15 percent in produced assets and 73 percent in human resources. The Dominican Republic holds only 7 percent in natural assets as compared to 17 percent in produced assets, and 76 percent of its wealth in human resources. El Salvador holds a still lower 3 percent of its total wealth in natural capital, 14 percent in produced assets, and 83 percent in human resources. Finally, Haiti, with an annual per capita wealth of $5,000, has 18 percent in produced assets, 78 percent in human resources, and only 4 percent in natural assets. Haiti is the only Latin American country ranked among the 25 poorest nations in the world.

Unable to sustain present levels of resource extraction, these six nations are actually depleting, rather than augmenting, their capital base. The advantage of the new WB accounting system is that such processes become visible. To illustrate, a number of these countries posted healthy economies according to the standard GDP growth rates. The Dominican Republic, for example, posted a robust annual growth rate for 1996 that exceeded 7 percent. GDP figures for El Salvador in 1995 showed a growth rate of 6 percent. The new "integrated" or "green" accounting, however, revealed that, despite appearances of healthy growth, both the Dominican Republic and El Salvador may be nearing stagnation if investment in produced capital continues to be offset by depletion of natural assets. In these examples, the potential utility of the new wealth-measuring instrument, i.e., to reveal previously obscured procedures relying solely on calculations of GDP, becomes apparent.

Amazonian Logging

The challenges of promoting sustainable development through these new measures present a number of difficulties, especially in the context of international financial transactions involving natural resource purchases. The Amazon rainforest of Brazil, estimated at 280,000 m^2, makes up one-third of the world's remaining primary or frontier rainforest. Internationally recognized as a critical refuge for global biodiversity, the Amazon rainforest stores carbon dioxide, and is a significant contributor to climate regulation. The Brazilian rainforest also provides livelihoods for several million people.

These same forests, recognized as critical resources, are also under severe threat of excessive vegetation removal from mining, road building, ranching, and logging. Recent estimates demonstrate a 34 percent *increase* in deforestation in the Brazilian Amazon since 1992; this amounts to a loss—within three years—of an area equivalent in size to Belgium. The amount of deforestation climbed from 2.8 million acres in 1991 to nearly 3.8 million acres in 1994, a rate of approximately 10 percent per year, and cumulative over a diminishing base. If rates of clearance proceed at this pace, the forest will eventually vanish. Furthermore, according to reports from the World Resources Institute, Asian logging companies have purchased rights to cut down vast tracts of rainforest for as little as $3 an acre. In the last year alone, Asian companies have quadrupled their investments in the Brazilian Amazon.

The combination of government conservation policies and their weak enforcement inadvertently facilitates illegal timber exports. Managed plots in Brazil provide ready outlets for the exports of illegally logged timber from reserves outside managed areas. While they are intended to safeguard these reserves, the areas designated for sustainable logging encourage loopholes that can be used by capital-strong companies.

Although sound environmental protection laws and harvest practices exist in theory, underfunded government agencies are weak and unable to enforce policies. A recent auditing of Brazil's federal environmental agency, IBAMA, revealed irregularities in two out of every three management plans. Eduardo Martins, head of IBAMA, points out that the agency's financial, technical, and political problems hamper its ability to oversee the rainforest. With only 80 environmental inspectors to monitor an area the size of western Europe, IBAMA cannot control illegal loggers, often armed, or other clandestine invaders of the forest. The only recourse of these agencies is to penalize companies found exporting illegal timber; Chinese-owned SIFEC and Malaysian WTK were recently fined $140,000 and $160,000 respectively, for such offenses.

Establishing Value

How do international transactions show up in the new accounting system? In the case of timber concessions purchased by non-Brazilian timber firms, neither standard national accounting, nor the new "green" accounting, would show loss of natural assets. The transaction would appear as an export of services by, say, Malaysia, with a corresponding money flow to Malaysia. The logs would be sold at market value. The portion

returned to investments—invested in capital, or produced assets—would contribute to, and therefore appear, as growth in Malaysia's total national wealth. Portions of the incoming monetary flow that were consumed would not appear on Malaysian records of national wealth.

The Brazilian side of the ledger would show an income flow in the form of wages and salaries to Brazilians, with fees to the government for concessions. According to the new criteria for measurement, the sale of forests only shows as a deficit if the rate of deforestation outpaces the rate of reforestation. That is, only if Brazil cuts down more than it replaces would the ledger show an actual deduction from wealth. Minimally, this system requires adequate reporting.

The new accounting is intended to influence the determination of fair value, thereby improving conditions for sustainability. The World Bank's new "green" accounting provides a means by which a nation can 1) demand an appropriate price for a natural resource, and 2) demand its restoration from a buyer. Each route is problematic. The accounting assumes that the new growth is an adequate replacement for the old, and that the forest can be harvested and restored indefinitely without irrevocable damage. The assumption that a forest can be indefinitely exploited is ill-advised, because it does not take into account soil erosion and compaction, nutrient depletion, and the lack of parity between the older, cut forest, and the newer, restored forest.

For the WB, the owner, government or private, should sell a natural resource, such as a tract of forest, for a value equivalent to the economic rent. Such rent is the residual or difference between the world market price for a product and harvesting costs, which would include such expenditures as return on investment, wages, and machinery. The WB's position derives from the assumption that a free competitive market provides the conditions for fair pricing.

Market conditions, however, are rarely truly "free." Debt-burdened governments are vulnerable to powerful international interests that, with their roving capital and technology, can seek the best return for their investment, playing currency-short governments against one another. Such sales are attractive to governments because the increased volume of trade in the region would bring benefits to the owners of capital, increase income flows to large numbers of voting wage-earners, and attract consumer markets. Moreover, if interests rates are high, as they are in most of Latin America, it is rational to log the forest sooner and obtain profits to reap high interests. By selling resources below the market value, these governments, without appearing to do so, undermine their own nation's revenue sources in the international marketplace.

The difficulties in determining fair pricing are many. Note, for example the recent outcry over the sale of the Brazilian state-owned and operated company, *Valle do Rio Dôce,* owner of the world's largest iron ore deposit. The public asserts that the deposit's market value is grossly underestimated, and the political implications are vast.

A debtor nation, such as Brazil, finds itself caught between Scylla and Charybdis. While Brazil must meet debt payments, it must also present a "green" face to the international financial community. "Brazil cannot get low-cost loans from such sources as the World Bank," said Brazilian President Fernando Henrique Cardoso, "if we don't have a sense that we are responsible before the rest of mankind for preserving nature" (*Agencia do Estado do Brasil,* March 31, 1995). The combined forces of national and international politics place conflicting pressures on public officials to talk "green," while acting otherwise.

Cutting Both Ways

The newly revised system of measurement cuts both ways. The WB has provided an important instrument for pricing formerly neglected or underrated natural resources. Objectifying the value of natural resources would appear to be conservation-friendly. This practice should prevent the undersale of natural wealth. Assigning a price to natural resources, however, implicitly creates the expectation that those resources will be economically developed. If the standing forest is assigned a high monetary value and the population is poor, there will be pressure to convert that wealth into income. Where poverty is persistent, the appearance of untapped wealth that might generate income may seem negligent. Poverty and conservation must therefore be addressed together. Reconsider the cases of Guyana and Suriname.

Recall that when natural resources were calculated as part of the national wealth, Suriname rose 20 positions in preliminary findings to become the single South American country among the top 25 wealthiest nations, with a calculated $398,000 in wealth per person. According to the new system of accounting, Guyana also rose over 20 ranks, showing an estimated $90,000 per capita wealth.

What do these figures mean on "the ground"? The per capita figure is calculated by dividing a given, estimated endowment of natural capital of a country by the *size* of its population. Developing nations with large endowments of

yet unexploited natural resources and low populations will score dramatically high in terms of wealth according to such accounting.

Proponents of the WB model hold that wealth per capita reflects the potential for income that the average citizen in a developing nation may have, compared to the potential income for an average citizen of a developed nation, such as, say, the United Kingdom. According to the 1995 rankings, Suriname appears wealthier than the United Kingdom, but can only offer its citizens a fraction of the per capita income enjoyed in developed countries. While Suriname may be comparable to Austria or Belgium in terms of potential wealth per capita, in fact, the per capita national income for Suriname is $2,360 per person. In Guyana, with an estimated wealth of $90,000 per person, the average annual income is $380. While the economies indicate strong showings, the average rates of income per person are stagnant or falling. If wealth is a stock that represents the *potential* for future income, poverty might be diminished by converting natural wealth to income.

In practice, wealth is not distributed evenly. The owners of natural assets (recall that these include oil and mineral deposits, as well as land) tend to be governments or elites. The numbers are therefore misleading; the act of buying and selling natural resources is not accurately measured by these procedures, nor is it deterred. Indeed, assigning a price to a natural resource attracts a buyer with the capacity to purchase it.

In addition, the WB attributes the natural wealth of a country to "luck": it is an "endowment" that "happens to" be found within a particular national boundary, as for example, the presence or absence of a precious mineral. This view, however, neglects the socioeconomic variables and inter-country historical realities that have contributed to the contrasting wealth profiles of nations. It is interesting, for example, that Suriname and Guyana, the two countries in South America with the highest remaining wealth in natural resources 1) were never colonized by an Iberian nation, and 2) have recently been isolated from the international political and economic community. Yet these "social" factors are the least understood.

The luck-of-the-draw position also neglects the will of nations to negotiate. When Malaysian logging investment in Guyana multiplied fivefold between 1991 and 1996, the government called a moratorium on concessions until proper regulations and enforcement mechanisms were in place. This moratorium is currently facing opposition. An additional problem is that much of the movement of natural resources goes unrecorded. Recent allegations by Guyanese officials, for example, report that up to 100,000 ounces of gold, a quarter of the annual declared national production, left the country over several years through illegal shipments to the United States. The social, historical, and ideological characteristics of nations, and their relations with other nations, play a significant role in determining the use of stocks of natural wealth. It is difficult to see how these features will be factored into the class of items categorized as "social wealth."

The timber conglomerates now in the neotropical rainforests of Brazil, Guyana, and elsewhere in the Americas, are those companies reputed to have exhausted, within the last decade, the rainforests of Malaysia and Papua New Guinea, leaving social dislocation and environmental devastation in their wake. Mathematics tells us that we cannot wait until the losses are registered by either "green" or conventional forms of accounting. It is better to avoid such losses altogether. ■

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* "Sustainablility and the Wealth of Nations: First Steps in an Ongoing Journey," 1995 Draft, The World Bank, Annex 1, pp. 3-4. Data are based upon 1990 preliminary calculations and extracted from a total list of 192 nations. World Bank Disclaimer: "Please note that the individual country wealth numbers are only *first approximations* in a research report. They are likely to change, although we do not expect the overall regional patterns to change that much. We will not defend an individual country statistic without more in-depth individual country analysis. If individual country wealth data are cited in any way they must have a disclaimer to distinguish them from the regular types of country data that are published by the Bank, and which are based on much more solid, detailed country-specific analyses."

† Author's Comments: These numbers are preliminary. Their use is intended to be relative, rather than absolute, as they constitute the start of discussion, not the conclusion. A newer ranking, with fewer countries, can be found in "Expanding the Measure of Wealth: Indicators of Environmentally Sustainable Development," The World Bank, Washington, D.C. A revised discussion, without country rankings, can be found in "Sustainability and the Wealth of Nations: First Steps in an Ongoing Journey," Ismail Serageldin, *Environmentally Sustainable Development Studies and Monographs Series No. 5.* 1996: The World Bank, Washington, D.C.

The Day the Earth Shook

Edited by Pedro D. Botta

"Can anything seem adequately safe to anyone, if the world itself is shaken and its most solid parts collapse?" These words were written by the Roman philosopher Seneca in AD 62 after an earthquake destroyed much of the ancient city of Pompeii. Tens of thousands of earthquakes occur every year throughout the world. While most of these are barely perceptible, occasionally, an earthquake becomes infamous because of its toll on human lives. Among the most powerful forces in nature, earthquakes are the result of shifts in the earth's rocky outer shell, the lithosphere. If we were to look at a map that showed the boundaries of the lithosphere's plates, we would note that the Americas are subject to the movement of seven tectonic plates. More importantly, much of the plate activity of the Americas is due to subduction, where one plate slides under another—subduction is responsible for the strongest seismic activity in the world. Millions of people live in the seismic-prone areas of the Americas.

When an earthquake of even moderate intensity strikes, people are affected, often with tragic results. The images that follow are a photographic retrospective of earthquakes in the Americas during the 20th century. Each tells a story: each a devastation. All of the images are courtesy of the Earthquake Engineering Research Center (EERC) of the University of California, Berkeley. ■

The Kohler and Chase Building set ablaze in the aftermath of the San Francisco earthquake of April 18, 1906. Measuring 8.30, this earthquake was one of the most destructive in the history of the Americas. Photo: Steinbrugge Collection, EERC.

E S S A Y

A century-long retrospective: from the archives of the Earthquake Engineering Research Center, University of California, Berkeley

The crumbling tower of the Church of San Juan de los Jarros, damaged by the earthquake that shook Acambay, Mexico, on November 19, 1912. The quake registered a magnitude of 7.80. Photo: Steinbrugge Collection, EERC.

The interior of the Chapel of María Auxiliadora after the earthquake of January 17, 1929, in Cumana, Venezuela. This quake, measuring 6.90, occurred in a seismically active region of Venezuela. Sixty-eight years later, on July 9, 1997, a powerful 6.90 magnitude tremor struck this region, killing over 70 people, injuring close to 500, and leaving 2,000 homeless. Photo: Steinbrugge Collection, EERC.

A Capuchin church in Tuquerres, Colombia, destroyed by the earthquakes of October 26, 1935 and January 5, 1936. Photo: Steinbrugge Collection, EERC.

Unearthing the victims beneath the rubble of the cathedral of Ambato, Ecuador. The earthquake, measuring 6.90, struck on August 5, 1949. Photo: Steinbrugge Collection, EERC.

Workers searching through the debris of a collapsed building in Mexico City after the earthquake of July 28, 1957. The quake registered 7.50 on the Richter scale. Photo: Steinbrugge Collection, EERC.

A view of demolished buildings along Costañera Avenue in Valdivia, Chile. This massive earthquake, which convulsed southern Chile in May 1960, registered a magnitude of 8.50. Photo: Steinbrugge Collection, EERC.

A burning petroleum tank in Valdez, Alaska. This burst of fire was caused by one of the most powerful and longest earthquakes on record—the Anchorage, Alaska, earthquake of March 27, 1964. The tremor measured 8.60 and lasted four minutes. Photo: Steinbrugge Collection, EERC.

Downtown Managua, Nicaragua, in ruins after the earthquake of December 23, 1972, which measured 6.19. Photo: Steinbrugge Collection, EERC.

The colonial city of Antigua, Guatemala. Much of Antigua's colonial architecture was devastated by the earthquake of February 4, 1976, which measured 7.50. Photo: Steinbrugge Collection, EERC.

Mexico City's famous Hotel Regis, in shambles after the massive earthquake of September 19, 1985, which measured 8.10. Photo: Steinbrugge Collection, EERC.

Aerial view of the collapse of Interstate 5 at Gavin Canyon, California. Extensive damage was inflicted on infrastructure as a result of the January 17, 1994, earthquake in Northridge, California, which measured 6.69. This natural disaster has proven to be the costliest in US history—surpassing Hurricane Andrew. Photo: Northridge Collection, EERC.

Disasters and Everyday Life

Betty Hearn Morrow

At Risk: Natural Hazards, People's Vulnerability, and Disasters
by *Piers Blaikie, Terry Cannon, Ian Davis, and Ben Wisner*
London: Routledge, 1994.

Most disaster studies focus on the dramatic role played by hazard events—the havoc raised by an earthquake, a tornado, or a flood. In contrast, social scientists argue that the context in which an event occurs creates the "disaster." Blaikie, Cannon, Davis, and Wisner combine both perspectives to consider the complex interaction between the social, economic, and political conditions which promote vulnerability, as well as the timing and nature of a hazardous event. Refreshingly, *At Risk: Natural Hazards, People's Vulnerability, and Disasters* breaks with the tendency of multiple-authored books to be compilations of separately written, often disjointed chapters. Here, the authors have succinctly integrated their complementary experiences into a cohesive, convincing book on the creation of vulnerability. Together they have investigated dozens of disasters—from rural to urban, in industrialized nations and developing countries. Their detailed accounts, rich in ethnography and insight, illustrate the complex ways individual attributes interact with local conditions to create patterns of vulnerability. While their academic training, ideologies, and backgrounds vary, the authors speak with one voice when they conclude that most disasters are, essentially, social events.

Natural hazards are not new. Yet a dramatic rise has occurred in the number of disasters reported worldwide—from an annual average of 52.8 in the 1960s, to 112.8 in the 1970s, and 222.8 in the 1980s (p. 31). Some of the increase can be ascribed to changing definitions and better reporting, but this rationale does not explain the doubling factor every decade. Simply, more people are placed at risk through demographic changes in population size and distribution, including rapid urbanization. Global economic pressures have resulted in fewer resources devoted to infrastructure development and maintenance. Land degradation and environmental losses, as well as wars, have placed vast numbers of people in precarious locations and circumstances. Global conditions are placing greater population concentrations on marginal, hazard-prone lands.

Blaikie, et al. have developed an access model to illustrate how the origins of disaster risk can be traced to patterns of social structure and culture. Their paradigm emphasizes the complex ways in which everyday social processes allocate assets, income, and other societal resources, including the ability to mitigate disaster. The authors state: "It is out of 'normal' life that the social conditions for disasters emerge" (p. 49). Compelling examples illustrate how structures of domination—gender, age, race, ethnicity, caste, and class—give rise to differential access to resources, such as food, medical treatment, land ownership, and sustaining livelihoods. The concept is also developed that hazards are often created by the same political and economic processes (controlled by the groups with the most power) which exploit the environment, and create or accentuate a future hazardous event.

Patterns of inequality are in operation from the macro level of international and national decision making, such as World Bank and national economic policies, to the community level, where development policies promote the interests of some groups over others. These patterns are also evident at the micro level which exists within households. Of special note is the extraordinary attention these authors pay to the role of gender in creating vulnerability. Traditional disaster studies have ignored—or been oblivious to—the countless ways in which gender influences disaster impact and response. Blaikie, et al., however, provide concrete examples of feminized disaster risk. The authors disclose that "Gender is a pervasive division affecting all societies, and it channels access to social and economic resources away from women and towards men. Women are often denied the vote, the right to inherit land, and generally have less control over income-earning opportunities and cash within their own households...less access to resources, in the absence of other compensations to provide safe conditions, leads to increased vulnerability..." (p. 48). This disadvantageous position continues in the

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The ethics at hand

aftermath. Wives, mothers, and daughters toil daily to provide the basic needs of their families in destroyed homes and communities, temporary shelters, and refugee camps. During famines, they are the last to eat. If widowed or abandoned, they are at the mercy of social and physical elements. When combined with other disadvantaged statuses, such as age or ethnicity, women's vulnerability dramatically increases.

The access model goes to the root of social vulnerability by examining its gradual development; this vulnerability is reflected in the everyday conditions of communities subjected to hazards. Since the model examines cycles of change, it can also illustrate how preconditions, which worsen impact, can also make full recovery highly unlikely for certain groups—leaving them at increased risk for the next hazardous event. Case studies are used to illustrate how historical discriminatory practices result in marginal groups living in weak structures in precarious locations. Such groups have unstable livelihoods, limited resources, and little flexibility in responding to a hazard.

Effective mitigation must include an in-depth analysis of the risk faced by the various local population groups. The authors recommend that communities develop local access profiles, with emphasis on those segments of the community with limited access to natural, social, and financial resources, whose homes and workplaces may be hazardous. Sustainable development policies must focus on the most vulnerable groups, notably women, children, the elderly, marginalized minorities, and the poorest third of all households (pp. 225-227). By directing attention to the protection of homes and livelihoods of the most vulnerable, the authors make a convincing argument that mitigation initiatives will maximize the use of resources, while reducing community risk.

The middle chapters of the book are organized around types of hazards—famines and natural hazards, biological hazards, floods, severe coastal storms, earthquakes, volcanoes, and landslides. Examples are given to illustrate the relationship between preconditions and events. In the case of the 1985 Mexico City earthquake, for example, vulnerability is traced to layers of preexisting conditions, including: historical factors, which led to erecting parts of the city on an unstable former lake bed; construction and maintenance practices, which rendered certain structures vulnerable; patterns of society-wide and intra-household stratification, placing some groups of people at great risk; and local political and economic conditions, which severely curtailed institutional response to the earthquake. The complexities of vulnerability also influence mitigation approaches. Extensive flooding in Bangladesh in 1987 and 1988, for example, led to the formulation of a series of strategies to offset future risk. These strategies ranged from designing high-tech, capital-intense projects to assisting local communities in coping with the inevitability of floods. The authors point out that each solution, nonetheless, carries its own pattern of vulnerability. They state: "Disaster reduction is not isolated from other aspects of life in Bangladesh. It operates in a hierarchy which connects the vulnerable and poor in the village to national and international interests...The existing distribution of power, income, and assets is a major component of that vulnerability" (p. 139). Moreover, the authors argue that real mitigation lies not through the building of dams and embankments to prevent flooding, but through changes in the social processes that create unsafe daily conditions.

The career paths of all four authors indicate a shared commitment to the alleviation of vulnerability. Therefore, the book is intended to be a useful tool for policy makers and responders at all political and economic levels. They warn against a "top-down" approach to reducing risk, arguing that vulnerability reduction must occur within the broader context of community and disaster planning. One obvious place for initiatives is the relief and recovery process after an event. Using the 1970 Peruvian earthquake and the long-term famine which began in the Sudan in 1983 as examples, several guidelines for managing recovery are proposed. These revolve around ways to effectively integrate local disaster relief mechanisms, avoid perpetuating inequalities, and balance reform and conservation.

The ideas presented by the authors are not new; nonetheless, *At Risk* brings them together around a framework which emphasizes the social creation of vulnerability and the use of local knowledge and organizations to

address the issue. "Even where there is no political will on the part of the elite, the unity of the people often forged in the post-disaster situation can be used to demand reforms" (p. 216). This mobilization can have expanded consequences, as illustrated by the correlation of disaster events with political change in settings as diverse as Guatemala—where peasant mobilization after the 1976 earthquake led to the government's "scorched earth" retaliation—and East Pakistan—where the impact of the 1970 cyclone contributed to the development of the Bangladesh independence movement.

Vulnerability is deeply rooted in the social and economic landscape; "any fundamental solutions involve political change, radical reform of the international economic system, and the development of public policy to protect rather than exploit people and nature" (p. 233). At the same time, Blaikie, et al. recognize that the reduction of vulnerability is largely an ethical issue, directed at those in power. Meaningful change will require "full, day-to-day participation of ordinary people and their own popular organizations in the struggle to enlarge choice and reduce vulnerability" (p. 238). Sustainability implies hazard mitigation grounded in the conditions of everyday life. ■

"Green" Insurgencies

Marian Goslinga

A recent article in the Viewpoint section of the *Miami Herald*[1] ("Economic Gap Fuels Insurgencies," by Andrew A. Reding) called attention to the widening gap between rich and poor in Latin America and the Caribbean. Using statistics supplied by the United Nations Development Program, Reding indicated that, while in the underdeveloped world the poorest 20 percent of the population received 7 percent of total income, the ratio for Latin America and the Caribbean is 20 percent to 3 percent.

The elimination of this gap is essential for attaining real economic growth which, in turn, is necessary for democracy and political stability. Governments have come to the conclusion, however, that traditional economic policies are no longer viable. There cannot be any real economic growth where natural resources are squandered; long-term strategies are needed to protect the environment from ruthless exploitation.

Sustainable development has come to mean the linkage of ecology/environmental protection to economic growth; the concept has dominated economic discussions in the last decade. In 1996, in particular, there was a veritable explosion in publications dealing with the issue from a wide variety of angles. Only a sampling of these has been listed here.

In addition, in May 1996, a computer file was created at the University of New Mexico's Latin American Data Base (LADB) covering sustainable development and the economy in Central America. *EcoCentral* is updated weekly and available by subscription. (Contact: LADB [info@ladb.unm.edu].)

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Gifts TO THE Earth

This month, World Wildlife Fund released the Global 200, the most comprehensive ever scientific assessment of all outstanding wild habitats remaining on earth. WWF is calling upon governments, corporations, and others to take action to conserve these places to secure a future for the wildlife, and the people, who live there. These **gifts to the earth** will help preserve precious strands in the web of life, and WWF salutes these extraordinary contributions:

▶ **GLOBAL 200: EVERGLADES (#110)**

Florida Governor Lawton Chiles and Cabinet approved the protection of nearly 3,000 square nautical miles of valuable state territorial waters within the Florida Keys National Marine Sanctuary, a move that will protect the most extensive North American living coral reef system, one of the largest in the world.

▶ **GLOBAL 200: PACIFIC NORTHWEST COAST (#222)**

Shell Canada Limited, Chevron Canada Resources, Petro-Canada and Mobil Oil Canada donated 320,000 acres of exploration rights off Canada's Pacific coastline, to establish a new marine preserve for Orcas, sea otters, starfish, and hundreds of other marine species.

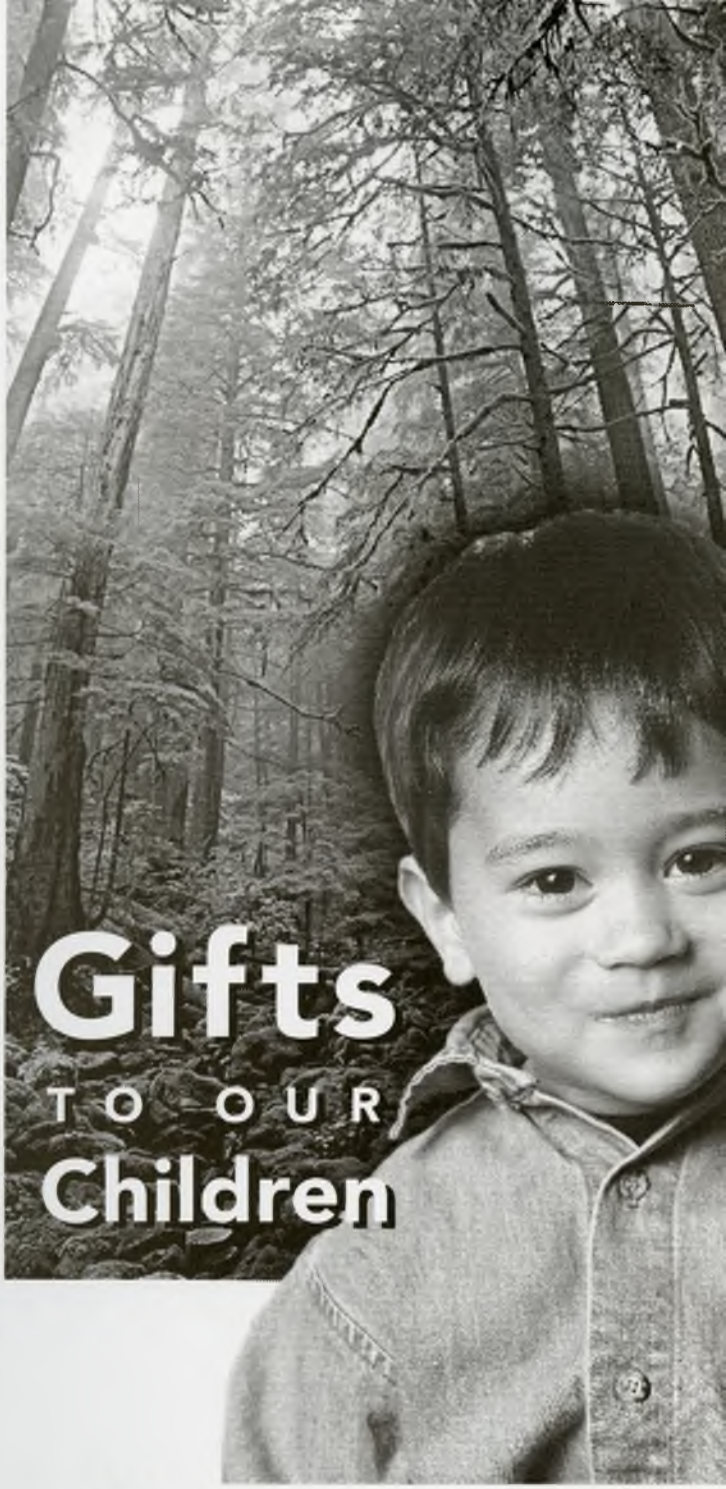
▶ **GLOBAL 200: CHOCÓ-DARIÉN MOIST FORESTS (#6)**

Panamanian President Ernesto Perez Balladares blocked the completion of the Pan-American Highway, which would have imperiled several million acres of rare rainforest, home to more species of birds than any place on Earth.

▶ **GLOBAL 200: ALTAI-SAYAN MONTANE FORESTS (#73)**

▶ **GLOBAL 200: DAURIAN STEPPE (#97)**

The Prime Minister of Mongolia has pledged to protect 30% of his nation's lands for all time, an area larger than the state of California. Mongolia's pristine mountains and sweeping grasslands are home to the snow leopard and Siberian Crane.



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