

development arising from the vulnerability of their communities, economies, and environment to the disruptions of natural disasters. The goal of the "Colloquium on Disasters, Sustainability and Development: A Look to the 1990s" was to identify key sustainability issues arising in disaster-prone countries.

Bank-financed activities in response to major emergencies have risen in recent years. During the 1980s, emergencies created by natural disasters reached a critical mass. They included earthquakes in Malawi, Armenia, Mexico, Colombia, Nepal, and Ecuador; a volcanic eruption in Colombia; hurricanes in Jamaica, Mexico, Madagascar, and Fiji; a forest fire in China; a drought in India; and floods in Bangladesh, Sudan, Brazil, and Pakistan. Vulnerability is increasing as development processes continue to ignore risks posed by natural hazards.

In light of the growing threat of natural disasters, it is fortunate that the United Nations has designated the 1990s as the International Decade for Natural Disaster Reduction, or the IDNDR (Resolution 42/69, February 25, 1988, see Annex 1). The fundamental objective of the Decade is to reduce, through concerted international action, the loss, damage, and economic disruption caused by natural disasters.

Background on World Bank Activities

As a development institution, the World Bank's principal objectives are to encourage the growth of productive activities and resources in less developed countries and to assist member countries in raising their standard of living and improving labor conditions. Because disasters significantly impact development, the Bank has been actively involved in providing post-disaster recovery and rehabilitation assistance in a number of

instances. As poorer countries have become increasingly vulnerable to natural disasters, and as the Bank has been confronted with the need to respond to a growing number of reconstruction projects, the organization has placed greater effort on preventive measures.

Since the Bank was created in 1947, there have been approximately 100 operations targeted for reconstruction after various disasters, such as earthquakes, floods, hurricanes, volcanic eruptions, and war (see Annex II for a summary of Bank-financed recovery projects). The very first four Bank operations were targeted for reconstruction and included assistance to France, the Netherlands, Luxembourg, and Denmark after the Second World War. Currently, the Bank is financing recovery activities in, among other countries, Jamaica, Pakistan, Sudan, Brazil, Bangladesh, Mexico, Mozambique, China, and Nepal.

Specific aspects concerning the Bank's current activities in natural disasters were presented at the meeting and included a discussion on disaster prevention and mitigation within a general framework of environmental concerns (K. Piddington); operational policy concerns in natural disaster mitigation (A. Harth); prevention, mitigation, and recovery activities in countries (F. Jakob, P. McCarthy, M. Plessis-Fraissard, T. Persaud); and efforts to use remote sensing in the assessment of disaster risk (G. Morgan).

Disasters and Development

Extreme events are integral components of the environment. However, the extent of damage that results from them is to a significant degree a function of the decisions made, activities undertaken, and technologies utilized during the process of development. In

many cases, the costly losses produced by an extreme event are preventable. Moreover, vulnerability is increasing in many countries as urban agglomerations spread onto high-risk areas, inappropriate technologies are utilized, architectural designs and construction ignore disaster risk, and strategies that link scientific and technical research to management and decision making are missing.

"Reducing the potential for future losses from natural calamities is the most appropriate mechanism to improve the sustainability of development."

In making projections for natural hazard risk in the next millennium, we have to assume that environmental systems will be further strained by urban and industrial growth, higher demand for services, and the deficient operation and maintenance of infrastructure. These trends indicate there is an urgent need for disaster prevention and mitigation mechanisms.

Disasters have an impact on development by requiring the diversion of funds from national, state, and municipal budgets, as well as from development projects, to the restoration of facilities and infrastructure. Post-disaster needs include requirements posed by direct and indirect losses, and by severe institutional demands. In addition to human life, losses include damage to homes, businesses, and industries, and deterioration of governmental revenues from a smaller tax base. Indirect economic costs include a decline in income and employment from damage to industrial and commercial facilities and agricultural production, and from time-related losses (e.g., the cost imposed by the period required to return

to normalcy).

Demands on institutions can be significant and translate into destabilizing forces in the public sector. In most cases, major disasters are unusual for the impacted countries. National and sectoral agencies may face difficulties in accommodating to the overwhelming requirements needed for reconstruction. In most countries, financial arrangements to mobilize resources for recovery works include funds from extraordinary taxes, temporary increases in tariffs, bond issues, contingency funds from the national budget, and reallocation of priorities in the national budget. That is, losses are redistributed at the national level. In addition, funding for relief and reconstruction may be available from local and international donations, international and bilateral development organizations, and NGOs. In some cases, disaster recovery also may require the immediate mobilization of manpower and materials in the affected region, including the diversion of construction workers from non-affected areas of the country, the reallocation of equipment to reconstruction, the reduction of exports of construction materials (e.g., timber and cement), and the postponement of non-emergency construction activities.

Disaster Impact and Sustainability

Reducing the potential for future losses from natural calamities is the most appropriate mechanism to improve the sustainability of development. As the world enters the 1990s, we face a dilemma. Action is needed to ensure that disaster prevention and mitigation become integral components of development. In this sense, an important aspect of Bank-financed recovery projects implemented in the last few years has been the inclusion of disaster reduction measures. After disasters, both governments and affected communities are

committed to the adoption of measures to minimize vulnerability. Prevention and mitigation mechanisms included in Bank-financed projects (e.g., Mexico, Nepal, Bangladesh, and China) have comprised (i) the implementation of measures to strengthen the capability of institutions to deal with risk reduction, mitigation, preparedness, and response; (ii) the development of instruments, such as building codes and land-use plans, to avert future losses; (iii) the retrofitting of vulnerable buildings (e.g., schools and hospitals); (iv) the evaluation of insurance needs in reference to specific civil works; and (v) the development of educational and training programs for disaster prevention, mitigation, and response.

The critical constraints imposed by natural disasters on development processes indicate that efficient vulnerability reduction measures are needed in regional strategies, country focus, sectoral work, and projects. In the past few years, the Bank has undertaken the task of assisting disaster-prone member countries in efforts to reduce their vulnerability to natural calamities, not only through recovery operations, but also through regular projects. Examples of those efforts include projects to control locust (Algeria), improve disaster preparedness (Bangladesh), mitigate natural hazard risk (Mexico), provide assistance at the municipal level in efforts to control landslides and floods (Bolivia), improve disaster planning and prevention capabilities in the power sector (Colombia), and reduce the susceptibility of forest resources to natural disasters such as flooding and landslides (Indonesia).

In Lieu of a Conclusion: The Task Ahead

The losses from disasters amount to a significant burden to governments, institutions, and populations in less developed countries. The World Bank's

work in post-disaster recovery has been enhanced by its extensive experience in rebuilding economic, social, and physical systems after disasters. As mentioned earlier, the Bank's assistance, particularly in the past five years, has been geared not only to rebuilding lost assets and facilities, but also to reducing vulnerability of human settlements and economies to natural disasters. It is obvious that policies and activities geared toward strengthening local capabilities to reduce losses can only contribute to the achievement of sound development objectives and sustainable growth.

The Colloquium was a step toward discussing the very pressing issues we are confronting now. In addition to the discussion on specific efforts at the World Bank, there was ample opportunity to discuss the International Decade for Natural Disaster Reduction (P. Bouille, R. Hallgren, S. Rattien and E. Wessels); to emphasize the important linkages between communications, technology, and vulnerability (D. Webster, F. Sagasti, F. Cole, E. Arrhenius); to underline the substantial contribution of NGOs in disaster reduction (C. Sykes); to highlight the significance of regional efforts in disaster reduction (J. Zeballos, S. Bender and S. Lintner); and to explore country efforts to prevent and mitigate natural hazards (F. Jakob, P. McCarthy, M. Plessis-Fraissard and T. Persaud).

At this time, the actions and activities being undertaken by the international community are encouraging. A concerted international effort will be greatly enhanced by the Decade for Natural Disaster Reduction. Although the next decade will require perseverance and cooperation among the numerous local, national, and international actors, their effort will undoubtedly be a worthwhile one.

Annex 1. Resolution Adopted by the General Assembly 42/169. International Decade for Natural Disaster Reduction

The General Assembly,

Recalling its resolution 3345 (XXIX) of 17 December 1974, in which it requested the Secretary-General to take appropriate measures to provide facilities co-ordinated multidisciplinary research also at the regional level aimed at synthesizing, integrating and advancing existing knowledge on the relationships between population, resources, environment and development, in order to assist Member States, particularly the developing countries, and the organizations of the United Nations system in their efforts to cope with the complex and multidimensional problems related to this field in the context of social and economic development,

Noting with appreciation the important contribution made by the World Commission on Environment and Development, as reflected in its report, which calls for new national and international approaches in dealing with the various factors affecting the environment, including natural disasters,

Considering that natural disasters, such as earthquakes, windstorms (cyclones, hurricanes, tornadoes, typhoons), tsunamis, floods, landslides, volcanic eruptions, wildfires and other calamities of natural origin, have claimed about 3 million lives worldwide in the past two decades, adversely affected the lives of at least 800 million more people and resulted in immediate damages exceeding \$23 billion,

Considering also that, among disasters of natural origin, drought and decertification are resulting in enormous damage, particularly in Africa, where the recent drought threatened the lives of more than 20 million people and uprooted millions of others,

Recognizing that the effects of such disasters may damage very severely the fragile economic infrastructure of developing countries, especially the least developed, land-locked and island developing countries, and thus hamper their development process,

Recalling the report of the Secretary-General on the work of the Organization, particularly the section concerning natural disasters and the merits of proposals that have been made to stimulate international study, planning and preparations on this subject over the next decade under the auspices of the United Nations,

Also taking note with appreciation of the report of the Secretary-General concerning the existing mechanisms and arrangements within the United Nations system for disaster and emergency assistance and co-ordination,

Recognizing the responsibility of the United Nations system of promoting international co-operation in the study of natural disasters of geophysical origin and in the development of techniques to mitigate risks arising therefrom, as well as for co-ordinating disaster relief, preparedness and prevention, including prediction and early warning,

Convinced that concerted international action for the reduction of natural disasters over the course of the 1990s would give genuine impetus to a series of concrete measures at the national, regional and international levels,

Recognizing that the primary responsibility for defining the general goals and directions of efforts undertaken in the framework of an international decade for natural disaster reduction and for implementing the measures that would result from the activities of the decade lies with the Governments of the countries concerned,

Considering that the concept of a global programme for natural disaster reduction is predicated on collaborative efforts among culturally and economically diverse nations, together with relevant organizations of the United Nations system and concerned national and international non-governmental organizations, including scientific and technological institutions,

1. Recognizes the importance of reducing the impact of natural disasters for all people, and in particular for developing countries;

2. Recognizes further that scientific and technical understanding of the causes and impact of natural disasters and of ways to reduce both human and property losses has progressed to such an extent that a concerted effort to assemble, disseminate and apply this knowledge through national, regional and world-wide programmes could have very positive effects in this regard, particularly for developing countries;

3. Decides to designate the 1990s as a decade in which the international community, under the auspices of the United Nations, will pay special attention to fostering international

co-operation in the field of natural disaster reduction, and to take a decision at its forty-third session on the content and modalities of United Nations participation therein after having considered the report of the Secretary-General referred to in paragraph 9 of the present resolution;

4. Decides that the objective of this decade is to reduce through concerted international actions, especially in developing countries, loss of life, property damage and social and economic disruption caused by natural disasters, such as earthquakes, windstorms (cyclones, hurricanes, tornadoes, typhoons), tsunamis, floods, landslides, volcanic eruptions, wildfires and other calamities of natural origin, such as grasshopper and locust infestations, and that its goals are:

(a) To improve the capacity of each country to mitigate the effects of natural disasters expeditiously and effectively, paying special attention to assisting developing countries in the establishment, when needed, of early warning systems;

(b) To devise appropriate guidelines and strategies for applying existing knowledge, taking into account the cultural and economic diversity among nations;

(c) To foster scientific and engineering endeavours aimed at closing critical gaps in knowledge in order to reduce loss of life and property;

(d) To disseminate existing and new information related to measures for the assessment, prediction, prevention and mitigation of natural disasters;

(e) To develop measures for the assessment, prediction, prevention and mitigation of natural disasters through programmes of technical assistance and

technology transfer, demonstration projects, and education and training, tailored to specific hazards and locations, and to evaluate the effectiveness of those programmes;

5. Requests the Secretary-General, co-operation with the appropriate organizations of the United Nations system and relevant scientific, technical, academic and other non-governmental organizations, to develop an appropriate framework for attaining the objective and goals referred to in paragraphs 3 and 4 above and to submit a report thereon to the General Assembly at its forty-fourth session through the Economic and Social Council;

6. Recommends that, if necessary, extrabudgetary resources be provided for the preparation of the above-mentioned report and considers that, for this purpose, voluntary contributions from countries, international organizations and other organizations are highly desirable;

7. Calls upon all Governments to participate during the decade for concerted international action for the reduction of natural disasters and, as appropriate, to establish national committees, in co-operation with the relevant scientific and technological communities, with a view to surveying available mechanisms and facilities for the reduction of natural hazards, assessing the particular requirements of their respective countries or regions in order to add to, improve or update existing mechanisms and facilities and develop a strategy to attain the desired goals;

8. Further calls upon Governments to keep the Secretary-General informed of their countries' plans and of assistance that can be provided so that the United Nations may become an international centre for the exchange of information, the storing of documents and

the co-ordination of international efforts concerning the activities in support of the objective and goals referred to in paragraphs 3 and 4 above, thus enabling each Member State to benefit from the experience of other countries;

9. Requests the Secretary-General to report to the General Assembly at its forty-third session on progress made in the preparations outlined above with particular emphasis on defining the catalytic and facilitating role envisaged for the United Nations system.

Annex 2. World Bank Lending Operations
Natural Disaster Reconstruction and Rehabilitation Projects
1947 - 1989

The Environment Department
June 6, 1989

Code	Country	Project Title	Disaster	Year ¹
(L)	Bangladesh	Third Flood Rehabilitation Project	Flood	FY1989
(R)	Costa Rica	Atlantico Agricultural Development Project	Hurricane	
(R)	India	Water Supply and Sewerage Project	Drought	
(R)	India	Gujarat Urban Development Project	Drought	
(L)	Jamaica	Emergency Reconstruction Import Project	Hurricane	
(R)	Jamaica	Water Supply and Sewerage Technical Assistance	Hurricane	
(R)	Jamaica	Fourth Power Project	Hurricane	
(R)	Mexico	Urban Transport Project	Hurricane	
(L)	Mozambique	Urban Rehabilitation Project	Civil War	
(L)	Nepal	Municipal Development and Earthquake Emergency Housing Reconstruction Project	Earthquake	
(L)	Nepal	Earthquake Emergency Schools Rehabilitation Project	Earthquake	
(L)	Pakistan	Flood Damage Restoration Project	Flood	
(L)	Sudan	Emergency Flood Reconstruction Project	Flood	
(R)	Sudan	New Halfa Irrigation Rehabilitation Project	Flood	
(R)	Sudan	Blue Nile Pump Schemes Rehabilitation	Flood	
(R)	Sudan	Agricultural Services Project	Flood	
(R)	Sudan	Gezira Rehabilitation	Flood	
(R)	Sudan	Third Highway Project	Flood	

(L) Disaster reconstruction/recovery loan.

(R) Non-emergency loan reallocated following the disaster for recovery efforts.

(1) Year indicates fiscal year of Board approval.

(NP) Loan not processed.

Code	Country	Project Title	Disaster	Year
(L)	Bangladesh	Second Small Scale Flood Control, Drainage and Irrigation Project	Flood	FY1988
(L)	Bangladesh	Second Flood Rehabilitation Project	Flood	
(L)	Bangladesh	Rural Roads and Markets Improvement and Maintenance Project	Flood	
(L)	Bhutan	Second Forestry Development Project	Pest Epidemic	
(L)	Brazil	Rio Flood Reconstruction and Prevention Project	Flood Landslide	
(L)	Chad	Road Reconstruction Project	Civil War	
(L)	China	Da Xing An Ling Forest Fire Rehabilitation	Forest Fire	
(R)	Dominican Republic	N.A.	Cyclone	
(R)	Ecuador	Low-Income Housing Project	Earthquake	
(L)	El Salvador	Earthquake Reconstruction Project	Earthquake	
(R)	El Salvador	Fourth Education Project	Earthquake	
(L)	India	Drought Assistance Project	Drought	
(L)	Mozambique	Second Rehabilitation Credit	Civil War	
(L)	Nepal	Road Rehabilitation Project	Flood	
(L)	Nepal	Mahakali Irrigation II Project	Flood	
(L)	Sri Lanka	Emergency Reconstruction and Rehabilitation Project	Civil War	
(L)	Yemen, AR	Sana'a - Hodeidah Road Rehabilitation Project	Flood	
(L)	Chad	Highway Maintenance Project	Civil War	FY1987
(L)	Chad	Agricultural Rehabilitation Project	Civil War	
			Drought	
(L)	Ecuador	Emergency Petroleum Reconstruction Project	Earthquake	
(L)	Madagascar	Cyclone Rehabilitation Project	Cyclone	
(L)	Mozambique	Energy Technical Assistance and Rehabilitation	Civil War	
(L)	Yemen, PDR	Fifth Highway Project	Flood	

Code	Country	Project Title	Disaster	Year
(R)	Bangladesh	N.A.	Cyclone	FY1986
(L)	Brazil	Northeast Urban Flood Reconstruction Project	Flood	
(L)	Chile	Santiago Water Supply and Sewerage II Project	Earthquake	
(L)	Chile	Valparaiso Water Supply Reconstruction Project	Earthquake	
(L)	Colombia	Second Irrigation Rehabilitation Project	Volcano	
(R)	India	N.A.	Flood	
(L)	Madagascar	Third Railways Project	Cyclone	
(L)	Mexico	Earthquake Rehabilitation and Reconstruction	Earthquake	
(R)	Mexico	Rainfed Agricultural Development Project	Earthquake	
(R)	Mexico	Second Urban and Regional Development Project	Earthquake	
(R)	Mexico	Medium Size Cities and Sinaloa Water Project	Earthquake	
(R)	Mexico	Export Development Project	Earthquake	
(R)	Mexico	Lazaro Cardenas Industrial Port Project	Earthquake	
(L)	Vanuatu	Multi-Project Credit	Cyclone	
(L)	Bangladesh	Flood Rehabilitation Project	Flood	FY1985
(R)	Bangladesh	First Drainage and Flood Control Project	Flood	
(R)	Bangladesh	Second Drainage and Flood Control Project	Flood	
(R)	Brazil	Highway Project	Flood	
(R)	Chile	N.A.	Earthquake	
(R)	Ecuador	N.A.	Flood	
(L)	Ethiopia	Drought Recovery Program	Drought	
(R)	Kenya	N.A.	Drought	
(L)	Madagascar	Cyclone Rehabilitation Project	Cyclone	
(R)	Madagascar	Second Education Project	Cyclone	
(R)	Madagascar	Water and Sanitation Project	Cyclone	
(R)	Madagascar	Sixth Highway Project	Cyclone	
(L)	Mozambique	Rehabilitation Program	Civil War Drought	
(L)	Sudan	Drought Recovery Program	Drought	
(L)	Swaziland	Cyclone Rehabilitation (Roads) Project	Cyclone	

Code	Country	Project Title	Disaster	Year
(R)	Argentina	N.A.	Flood	FY1984
(L)	Colombia	Popayan Region Earthquake Reconstruction	Earthquake	
(R)	Colombia	Third Water and Sewerage Loan	Earthquake	
(R)	Colombia	Urban Development Loan	Earthquake	
(L)	Uganda	Third Reconstruction Credit	Civil War	
(NP)	Yemen, AR	Earthquake Reconstruction	Earthquake	
(L)	Ghana	First Reconstruction Import Credit	Civil War	FY1983
(R)	Honduras	N.A.	Flood	
(R)	Nicaragua	N.A.	Flood	
(L)	Peru	Higher Agricultural Education Project	Earthquake	
(R)	Peru	Lower Piura Irrigation Rehabilitation Project	Flood	
(R)	Peru	Eight Highway Project	Flood	
(R)	Peru	Petroleum Production Enhancement Project	Flood	
(L)	Uganda	Agricultural Rehabilitation Project	Civil War	
(L)	Uganda	Rehabilitation of the Education Sector	Civil War	
(L)	Uganda	Post and Telecommunication Rehabilitation	Civil War	
(L)	Yemen, PDR	Roads Flood Reconstruction Project	Flood	
(L)	Dominica	Road Maintenance and Rehabilitation Project	Hurricane	FY1982
(L)	Uganda	Industrial Rehabilitation Project	Civil War	
(L)	Uganda	Second Reconstruction Program	Civil War	
(NP)	Algeria	El Asnam Earthquake Reconstruction	Earthquake	FY1981
(L)	Fiji	Cyclone Reconstruction Project	Cyclone	
(L)	Haiti	Post-Hurricane Agricultural Rehabilitation	Hurricane	
(L)	Mauritius	Urban Rehabilitation and Development Project	Cyclone	
(L)	Nicaragua	Industrial Rehabilitation Credit Project	Civil War	

Code	Country	Project Title	Disaster	Year
(L)	Uganda	Technical Assistance Credit	Civil War	
(L)	Zimbabwe	Manufacturing Rehabilitation Imports Program	Civil War	
(L)	Dominican Republic	Urgent Import Requirements Project	Hurricane	FY1980
(L)	Dominican Republic	Emergency Road Reconstruction Project	Hurricane	
(L)	Dominican Republic	Second Road Maintenance and Reconstruction Project	Hurricane	
(L)	Nicaragua	Agricultural and Industrial Rehabilitation	Civil War	
(L)	Nicaragua	Urban Reconstruction Project	Civil War	
(R)	Nicaragua	N.A.	Civil War	
(L)	Uganda	First Reconstruction Credit	Civil War	
(L)	Yugoslavia	Earthquake Rehabilitation - Highways	Earthquake	
(L)	Yugoslavia	Earthquake Rehabilitation - Port of Bar	Earthquake	
(L)	Yugoslavia	Earthquake Rehabilitation - Railways	Earthquake	
(L)	Lebanon	Reconstruction Project	Civil War	FY1978
(R)	Lebanon	N.A.	Civil War	
(L)	Romania	Post-Earthquake Construction Assistance	Earthquake	
(L)	Guatemala	Earthquake Reconstruction-Education, Transport	Earthquake	FY1977
(L)	Guatemala	Earthquake Reconstruction-Housing	Earthquake	
(L)	Pakistan	Flood Damage Restoration Project	Flood	
(L)	Romania	Agriculture Flood Recovery Project	Flood	FY1976
(L)	Romania	Industry Flood Recovery Project	Flood	
(L)	Somalia	Drought Rehabilitation Project	Drought	

Code	Country	Project Title	Disaster	Year
(L)	Western Samoa	Highway Project	Flood	FY1975
(L)	Burkina Faso	Drought Relief Fund	Drought	FY1974
(L)	Chad	Drought Relief Fund	Drought	
(L)	Ethiopia	Drought Areas Rehabilitation Project	Drought	
(L)	Iceland	Fishing Harbors Rehabilitation Project	Volcano	
(L)	Mali	Drought Relief Fund	Drought	
(L)	Mauritania	Drought Relief Fund	Drought	
(L)	Niger	Drought Relief Fund	Drought	
(L)	Pakistan	Flood Rehabilitation Program Credit	Flood	
(L)	Senegal	Drought Relief Fund	Drought	
(L)	Sudan	Southern Region Agricultural Rehabilitation	Civil War	
(L)	Bangladesh	Coastal Rehabilitation and Cyclone Protection	Cyclone	FY1973
(L)	Bangladesh	Imports Program Credits	Civil War Cyclone Civil War	
(L)	Nicaragua	Earthquake Reconstruction Project	Earthquake	
(L)	Nicaragua	Second Managua Water Supply Project	Earthquake	
(L)	Nigeria	Rehabilitation Program Loan	Civil War	FY1971
(L)	Peru	Road Reconstruction Project	Earthquake	
(NP)	Bangladesh	Coastal Reconstruction Project	Cyclone	FY1970
(L)	Nigeria	Highway Rehabilitation Project	Civil War	
(L)	Nigeria	Transport Rehabilitation Project	Civil War	

Code	Country	Project Title	Disaster	Year
(L)	Yugoslavia	Key Projects Program	War	FY1953
(L)	Yugoslavia	Power, Mining and Industry Reconstruction	War	FY1952
(L)	Denmark	Post-War Reconstruction Loan	War	FY1948
(L)	Luxembourg	Post-War Reconstruction Loan	War	
(L)	Netherlands	Post-War Reconstruction Loan	War	
(L)	France	Post-War Reconstruction Loan	War	FY1947

Part II. Opening Session

"The time has come to view natural hazards as a world problem, but one that scientific and technological advances now provide a unique opportunity to address. The establishment of an International Decade for Natural Hazard Reduction, beginning in 1990, would be a potent first step in reducing the impacts of natural hazards through coordinated research, data gathering, and information sharing."

-- Frank Press, President of the U.S. National Academy of Sciences



Introductory Remarks to the Colloquium

Kenneth W. Piddington

Director

The Environment Department

The World Bank

Good morning. I am Kenneth Piddington, Director of the Environment Department in the World Bank, and it is my pleasure to welcome you to the "Colloquium on Disasters, Sustainability, and Development: A Look To 1990s," which we are co-sponsoring with the Human Resources Development Division of the Bank.

I am pleased that we have a magnificent response to this occasion. If you look at the list of participants, you will see how broad the representation is at the Colloquium. I would like to welcome, in particular, the NGOs who are with us today. We set special store in the Bank to our discussions with the NGOs and their direct involvement in our work. It is also significant that members from other multilateral and bilateral agencies, academic institutions, and research bodies have been able to join us. To all of you I say, Welcome!

Because I am interested in languages, as you may see from my

"We hope that through international action, we can press those decision makers in disaster-prone countries and sell the idea that prevention is not an add-on or luxury -- it is a necessity to ensure sustainability."

biography, I pondered on the words "colloquium" and "conservation." I was reminded of a story when I first took over the Department of Conservation in New Zealand.

I arrived at a remote location in New Zealand to discuss policies relating to the national park. I was checking into the hotel when the clerk said, "Oh yes, Mr. Poddington." I thought, that's very normal (my name gets distorted very easily). The clerk continued, "...from the Department of Conversation." And I thought to myself, why should I correct that, conversation is not a bad name for

Kenneth W. Piddington is the Director of the Environment Department at the World Bank since April 1988. Mr. Piddington comes from a background as a career diplomat in the New Zealand foreign service from 1959 to 1976. He has been Vice-Chair for OECD's Committee for the Environment, New Zealand's Commissioner for the Environment, and the country's Director-General of Conservation. As the New Zealand delegate to numerous international environmental conferences and committees, Mr. Piddington has worked on issues related to the Antarctic, marine protection, and environmental impact assessment. He received his master's degree in modern languages and social anthropology from Auckland University, New Zealand.

a department.

When we are dealing with the environment, many of the issues we are handling call for "conversation," that is, real discussion together. I think the choice of the word "colloquium," which is a slightly more formal Latinate version of "conversation," is very appropriate.

I mention this because I have a sincere belief that in our approach to problem solving in the environmental area, we need far less confrontation and much more conciliation and consensus. I believe, for example, at the global level, we are dealing with a number of very significant issues, where nation-states are tending to work through familiar political blocs. But the environment knows no political blocks; there is no reason why negotiations on CFCs or atmospheric gases should be conducted on the basis of rich countries versus poor countries. I think it is a great shame that this is tending to happen.

Ladies and gentlemen, we are living and working at a time when there is an unprecedented degree of political interest in the environment. Naturally, I follow this with some interest. If there are any Australians in the room, I am intrigued to learn not only that the Australian government has turned green, but that the Greens actually hold the balance of power in Tasmania.

Through the work of the Bank with the Part One and Part Two members, we, as professionals, are aware of governments responding to the clear need for greater coherence in the way we deal with environmental issues and for greater application of the considerable knowledge which is available to deal with them. A substantial amount of that knowledge is represented in this room today in respect to the particular topic we are discussing.

I think that I am allowed at the opening stages of this gathering to indulge in very brief philosophy. I am often intrigued by the distinction, which I regard as purely artificial, between a "man-made disaster" (notice it is never woman-made) and a "natural disaster."

When we work at risk assessment and risk reduction in the environmental area, we take a very different approach. We study a specific site and its characteristics. Then, we analyze the interactions between the human population and the natural factors which are at play. I would like to share with you two brief cameos from my own work in this area.

The first example relates to a liquified petroleum gas (LPG) plant, which is sadly relevant in view of the gas explosion in the Soviet Union this week. We were dealing with the installation of a LPG storage plant in Wellington, New Zealand, which was located next to a residential area surrounded by a hillside of pine trees and with only one escape route.

The experts in risk assessment who were called in by the LPG company computed their statistics and designed their models and concluded that a resident had a greater chance being knocked over by a motor car on this one escape route than being consumed in a gas explosion. And indeed, since a considerable proportion of the population smoked more than twenty cigarettes a day, the risk of mortality from smoking was significantly higher. However, that sort of talk does not convince the population. The local people would never accept the statistical analysis of the experts.

(May I say parenthetically that sometimes in these matters the experts are their own worst enemies. I remember a toxicologist who, when asked about the toxic effects of PCBs, replied, "Well,

anything will kill you if you have enough of it.")

"I have a sincere belief that in our approach to problem solving in the environmental area, we need far less confrontation and much more conciliation and consensus. I believe, for example, at the global level, we are dealing with a number of very significant issues, where nation-states are tending to work through familiar political blocs. But the environment knows no political blocks; there is no reason why negotiations on CFCs or atmospheric gases should be conducted on the basis of rich countries versus poor countries."

Let me come back to my people with the LPG plant. I went to a meeting at the end of the summer. It was an unusual summer, perhaps a harbinger of change in our local climate. We did not have rain for two months. As the drought continued, the risk of fire on the hillside which was covered with pine trees increased. The resentment and anxiety of the people about the LPG plant increased at the same time. They did not separate the difference between the risk from fire and the risk from the LPG plant -- it was the totality of risk for the place they lived in which was important.

In the middle of our meeting, I suddenly sensed a change in mood. It was a feeling of relief. You could feel the tension disappearing. I thought to myself, "Well, we have not done anything to bring about this change. We did not tell the population that the LPG plant would not be built." What shifted the mood was the coming of rain. Everyone in the room

noticed the very first drop on the roof; it was so important to them in terms of the risk they perceived.

As a footnote to the story may I tell you that the hillside has indeed since caught fire, not because of a malfunction in the LPG plant, but because a passing motorist threw away a lit cigarette. No one was injured, partly because evacuation procedures were rehearsed intensively after the construction of the plant.

The second story on risk perception relates to a risk management seminar I attended in Sydney, Australia. The subway in Sydney, which goes underneath the city buildings, is not the modern silent type as in Washington, but rather a noisy beast. Every seven minutes, the proceedings were punctuated by a strong vibration. Together with all the New Zealanders in the room, I stopped functioning with each vibration. Because I live on a fault line, I cannot sit on top of a subway without thinking of an earthquake.

I wanted to mention these perceptions of risks which are very important and greatly underestimated by the experts. I would also stress the interaction between population and the environment. Take the latest floods in Sri Lanka. In this example, we are dealing with questions of deforestation in Sri Lanka and throughout the developing world. Is that particular flood connected to the removal of forest cover? I do not know. However, I can make a general supposition that to some degree, the intensity of a flood and its impact has a relationship to the activities of the population, either in that locality or further up in the catchment area.

Returning to earthquakes, when I was involved in earthquake relief efforts in Peru, questions involving architecture and design, building location, and security

margins were absolutely fundamental in terms of the effects and deaths which occurred.

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In other words, in relation to natural disasters, there is a great deal which can be done. Of course, that may involve the question of resources and the expense of taking the extra precautionary measures, particularly in developing countries.

The Environment Department considered that it would be useful at this stage to share our experiences with you through the Colloquium. I want to thank Alcira Kreimer in particular, and her colleagues, who have lengthy experience in these matters, for preparing with such care the presentations for today.

The Colloquium is part of an ongoing program of activities on disaster prevention, mitigation, and recovery, which is placed within the overall context of environmental concerns. In the Department, we convene the in-house Task Force on Natural Disaster Reduction which is intended to assist in the development of disaster reduction strategies. In addition to the Colloquium, we organize periodic meetings to discuss critical issues concerning disaster prevention.

Today's agenda is an ambitious one. We hope that we can discuss both past experience in coping with disasters and

potential areas for future work on mitigation.

Among the participants, we have a number of agencies whose focus is specifically on disaster relief. I should mention at the outset that the Bank does not participate in immediate relief efforts, such as the provision of emergency health or search and rescue. We think that there are a number of national and international aid organizations better equipped for this work than our organization. That is not to say that we disregard the priorities in terms of relief. We think that our efforts after disasters are better focused on the restoration of the social, physical, and economic infrastructure. This is an area we will discuss in greater detail in the presentations. The demand for resources for relief and reconstruction after disasters is indeed substantial. Our experience with recovery after major disasters in developing countries points in one direction for future work: the need to increase the resilience in those countries that are disaster prone through the adoption of disaster mitigation and preparedness programs. Prevention is critical.

It is most fortunate that the United Nations has designated the 1990s as the International Decade for Natural Disaster Reduction. I am very pleased that we have a colleague from the U.N. here to address that issue. We hope that through international action, we can press those decision makers in disaster-prone countries and sell the idea that prevention is not an add-on or luxury -- it is a necessity to ensure sustainability. Within that philosophy, we would argue in the Bank that where there is an extra cost in order to achieve sustainability, we should be looking at the ways in which that cost can be met rather than discarding it offhandedly and saying it cannot be afforded.