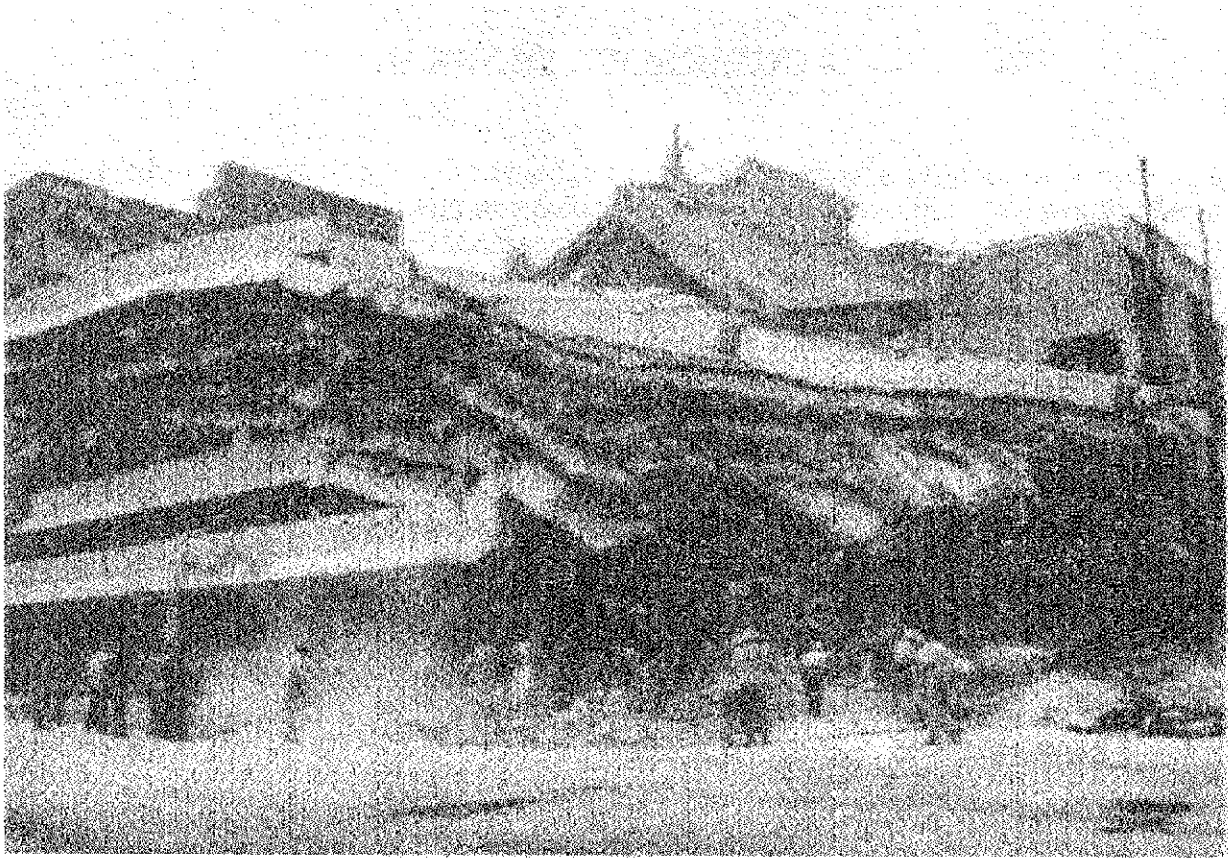
DISASTERS, SUSTAINABILITY AND DEVELOPMENT: A LOOK TO THE 1990s

A World Bank Colloquium

"We believe that the Decade is a moral imperative. It is the first coordinated effort to prevent the unnecessary loss of life from natural hazards. It also makes practical sense. The Decade is an opportunity for the world community, in a spirit of global cooperation, to use the considerable existing scientific and technical knowledge to alleviate human suffering and enhance economic security."

-- *International Ad Hoc Group of Experts, Tokyo Declaration on the International Decade for Natural Disaster Reduction*



The Colloquium on Disasters, Sustainability, and Development: A Look to the 1990s was held on June 6, 1989 in Washington, D.C. and was sponsored by the Environment Department and the Human Resources Development Division of the World Bank. The Colloquium was coordinated by Alcira Kreimer, Senior Environmental Specialist, assisted by Michele Zador, Consultant, The World Bank.

ACKNOWLEDGEMENTS

The editors would like to acknowledge the contribution of a number of people who helped to make the Colloquium and production of this volume possible. We would like to express our gratitude to Kenneth Piddington for his support of this initiative. John English and Surinder Deol were instrumental to the success of the project. Administrative support for the Colloquium and this volume was provided by Marietta Visaya, Olivia McNeal, Mariatu Morton, and Cheryl Francis. We also would like to express our appreciation to the moderators, panelists, and Colloquium attendees who provided the impetus for the Colloquium.

Photo credits: Edward Echeverria, Michele Iannacci, Alcira Kreimer, Robert H. Nooter, and the World Bank Bangladesh Field Office.

CONTENTS

EXECUTIVE SUMMARY v

CONTRIBUTORS ix

PART I. INTRODUCTION

"Disasters, Sustainability, Development: A Look to the 1990s" 1
Alcira G. Kreimer

PART II. OPENING SESSION

Introductory Remarks to the Colloquium 17
Kenneth W. Piddington

PART III. PANEL DISCUSSIONS

Panel 1. International Decade for Natural Disaster Reduction

Summary of the Panel Proceedings 26
"Background to the IDNDR"
Stephen Rattien 29
"Formation of National Committees for the IDNDR"
Richard E. Hallgren 34
"Planning for International Participation in the Decade"
Philippe L. Boulle 38
Note by the Panel Moderator
Everardo Wessels 42

Panel 2. Vulnerability: Communications and Technology

Summary of the Panel Proceedings 46
"International Disaster Communications"
David Webster 50
"The Role of NGOs in the Reduction of Vulnerability"
Charles Sykes 56
"Communications in Relief: Armenia, Bangladesh, and Sudan"
Frederick M. Cole 59
"Technology Transfer and Disasters"
Francisco R. Sagasti 62
"Natural Disaster Mitigation: World Bank Operational Policy Issues"
Alberto Harth 66
Comments by the Panel Moderator
N. Erik A. Arrhenius 72

Panel 3. Regional Efforts for Disaster Reduction
Summary of the Panel Proceedings 76
"Response Efforts in Health Emergency Preparedness"
Dr. Jose Luis Zeballos 79
"Disaster Prevention and Mitigation in Latin America and the Caribbean"
Stephen O. Bender 88
"Satellite Remote Sensing Applications for
Natural Hazard Preparedness and Emergency Response Planning"
Glenn S. Morgan 93
Comments by the Panel Moderator
Stephen F. Lintner 112

Panel 4. Country Efforts to Prevent and Mitigate Natural Disasters
Summary of the Panel Proceedings 116
"Recovery and Mitigation Efforts in Bangladesh and Nepal"
Patrick E. McCarthy 120
"Prevention and Mitigation in Mexico"
Felix A. Jakob 127
"Mitigation Efforts at the Municipal Level:
The La Paz Municipal Development Project"
Maryvonne Plessis-Fraissard 132
Comments by the Panel Moderator
Thakoor Persaud 136

PART IV. CONCLUDING SESSION
Concluding Remarks to the Colloquium
Kenneth W. Piddington 141

APPENDICES
Appendix A. Colloquium Program 147
Appendix B. List of Participants 151

EXECUTIVE SUMMARY

Over the past 20 years, extreme natural events have been responsible for the death, injury, or loss of home for nearly one billion people, and they have caused unparalleled destruction in several developing countries. Based upon catastrophic experiences of the past, a new understanding of natural disasters is emerging. Patterns of development and human settlement are increasingly being linked to the severity with which extreme natural events strike. Environmental degradation is being held responsible for exacerbating the impact of droughts, floods, hurricanes, landslides, and wildfires. And scientists are now discussing the potential consequences of global warming in terms of a higher incidence of catastrophic natural events. If disasters are to be avoided in the future, human settlement patterns will need to be modified and environmental degradation ameliorated. And if development policies and projects are to be sustainable over the long term in disaster-prone countries, then the physical structures and the economy, in general, of these countries must be made resilient and their citizens must be taught disaster prevention and mitigation measures.

The designation of the 1990s by the United Nations as the International Decade for Natural Disaster Reduction (IDNDR) is a testimony to the growing worldwide concern about natural disasters and the recognition that calamities are preventable to a large extent. With resourcefulness and commitment to disaster reduction, extreme natural events do not necessarily have to become catastrophes.

The "Colloquium on Disasters, Sustainability, and Development: A Look to the 1990s," held at the World Bank on June 6, 1989, brought together specialists in development, natural disasters, and the environment to explore the lessons learned from recent efforts in disaster prevention, mitigation, response, and reconstruction, and to discuss strategies for reducing the devastating impact of natural hazards in the 1990s. The symposium was divided into four panel discussions on (i) the International Decade, (ii) the role of technology and communications in vulnerability, (iii) regional disaster preparedness activities, and (iv) country-specific disaster reduction projects and programs. Several common themes emerged from the discussion at meeting.

Colloquium participants lauded the International Decade as a milestone in the history of humanity's attempt to cope with disasters. The Decade signifies a fundamental shift in global perception about calamities, a recognition that the traditional, reactive approach to dealing with emergencies has been ineffective and that a proactive strategy, to anticipate and prepare for natural hazards, must be adopted. Through the Decade, a mandate to assist in disaster reduction has been adopted in which the world can mobilize in a unified effort. The Colloquium speakers emphasized that preparations for the Decade must be flexible enough to adapt to changing global conditions, and that Decade activities must be multidisciplinary to reflect the encompassing nature of disaster reduction. Other key approaches for the Decade were urged:

Disaster mitigation and environmental management must be further integrated into development policy and introduced early in the project preparation cycle. To assist in this endeavor, more research needs to be

devoted to developing disaster reduction techniques and tools, and to making the linkages between disaster reduction and broader concerns of global consequence, such as North/South issues.

- Outreach programs must be established to sensitize decision makers and the general public about the benefits of protecting their resource base against natural hazards. (Both groups typically underestimate the long-term economic consequence of a disaster.)

- Mechanisms to disseminate disaster reduction information and technologies to developing countries must be created and implemented.

In addition to these initiatives, the experts identified a number of impediments that need to be redressed for disaster reduction planning and implementation to be effective. The unpredictability of disasters -- when and where they strike and with what magnitude -- often creates a psychological barrier to action and makes planning for an extreme event difficult. Several speakers also identified fatalistic attitudes toward natural disasters and the characteristic short-term focus of politicians as often diverting attention away from longer-term, disaster reduction concerns. Better analytical tools for integrating these unpredictable events into development policy and projects need to be created. In addition, in the current climate of fiscal restraint, public investment in disaster reduction mechanisms often is hampered by the stiff competition for scarce resources.

Despite these hurdles, Colloquium participants expressed their optimism that disaster reduction programs for the International Decade will be successful if current trends in the field continue. The designation of the International Decade itself reflects a new awareness and drive by the event's 155 adopting nations to invest in measures to minimize vulnerability. Single-focus development mandates are being transformed into multidisciplinary development strategies that integrate environmental management and disaster reduction measures. New applications for existing technologies are being created. And in several sectors, traditional emergency response mechanisms are being replaced by forward-looking measures that anticipate and prepare for extreme events. Most important, however, disaster-prone countries are beginning to embark upon their own long-term programs to lower vulnerability.

To fulfill one of the Decade's main objectives -- the establishment of disaster reduction programs worldwide -- Colloquium participants agreed that concerted cooperation at the international level is of paramount importance. However, the primary focus will need to rest at the national level with individual governments and their citizens. For this purpose, national IDNDR committees are being established. Several speakers said that these newly established committees will be in a unique position to design, promote, and coordinate disaster reduction programs for their countries' specific needs. The committees also will be able to link international Decade activities with community-level projects, and to act as liaison representing their countries in international forums.

Whether at the local, national, or global level, disaster reduction programs will continue to rely heavily on technological innovation for designing seismic resistent structures, tracking the path of hurricanes, or communicating effectively during relief operations. Although many of the technologies required for disaster reduction are available today, speakers agreed that gaining access to them for risk management has been problematic. And in cases where the technology is available

for disaster reduction purposes, it often has been inappropriately applied.

Participants suggested that overcoming problems of inaccessibility to technology for disaster management could be accomplished in several ways. The financial constraints associated with planning for and monitoring unpredictable events can be circumvented if disaster reduction functions as one of many integral components of existing systems. In addition, public and private ventures could be better coordinated in order to eliminate redundant applications of technologies, and conversely, to fill in the gaps where needed. As technology continues to advance, the experts predicted, less expensive systems with wider application will be made more accessible.

Regarding the appropriateness of technology transfer, the speakers emphasized that a delicate balance must be achieved. On the one hand, high-tech solutions and state-of-the-art expertise are essential in certain instances to reduce vulnerability. On the other hand, local communities have traditional disaster response mechanisms for coping with calamities. The key to international disaster reduction assistance must be to buttress local capacity and these traditional response mechanisms when appropriate, through non-governmental organizations if need be, and to promote, when appropriate, the transfer of disaster reduction technologies in a form that is compatible and sensitive to local practice.

Satellite remote sensing was examined during the Colloquium as one such state-of-the-art technology that can make a significant contribution to lower vulnerability and augment preparedness in developing countries. The technology's ability to provide accurate and timely information for pre-disaster planning, disaster monitoring, post-disaster assessment, and in general development planning can support traditional disaster management practices.

The scope and evolving nature of the disaster management field emerged as speakers discussed prevention and mitigation initiatives in individual countries, regions, and international organizations.

The World Bank's disaster program has undergone profound changes since the institution's beginnings, as a financier of the post-World War II reconstruction effort in Europe, to current preparations for freestanding disaster reduction loans. The Bank's program essentially has mirrored the world's changing perception about calamities. Disaster reconstruction, once solely devoted to the rehabilitation of physical structures, today addressed the broader, social and economic considerations of disaster recovery. Indeed, the Bank has gone beyond traditional disaster reconstruction projects and is beginning to integrate disaster reduction measures into non-emergency loans and to open a dialogue with its member countries on these matters.

At the regional level, organizations are coalescing and formulating their own disaster reduction programs. In two of the sectors examined at the meeting -- health and planning -- a multidisciplinary approach is being adopted. Technical and financial resources are being pooled, government officials trained, and disaster mitigation priorities and programs established.

Throughout the world, several disaster-prone developing countries are energetically launching new initiatives to cope with hazards. The Colloquium explored four diverse case studies in which disaster reduction programs and projects are successfully being designed and implemented.

In Bangladesh, pervasive floods and

cyclones have been responsible for some of the most catastrophic disasters of this century. In an effort to grapple with its hazards, Bangladesh is embarking upon an aggressive, far-reaching disaster mitigation program, which, as currently envisioned, includes the construction of flood-control works and the development of a comprehensive disaster preparedness plan. In Bangladesh, and elsewhere, natural disasters are an integral force in the perpetuation of poverty, and therefore, disaster reduction measures must be central in the country's economic development strategy.

The Colloquium also examined three World Bank-sponsored reconstruction projects in Nepal. These innovative projects in the education, housing, and highway sectors take advantage of the opportunity afforded by the recovery process to advance disaster prevention and mitigation. Specifically, the disaster reduction components aim to promote seismic resistent construction and timber conservation, and to establish a post-monsoon damage monitoring system.

In the case of Mexico, since the 1985 Mexico City earthquake, the government has undergone a significant shift in attitude toward natural disasters, changing from fatalistic notions of disasters as acts of God to a commitment toward preventing and mitigating calamities. In conjunction with the Mexico City earthquake recovery effort, the government designed and began to implement a long-term, countrywide disaster reduction program.

In La Paz, Bolivia, smaller-scale hazards strike often and create extensive physical damage and loss of life over a period of time. Like many Third World cities, La Paz is poor, lacking basic infrastructure in many areas. Despite seemingly intractable obstacles, an affordable and cost-effective disaster mitigation program has been introduced in a Bank-financed project for municipal development. Even in the case of a poor city at high risk, the La Paz project suggests that disaster mitigation programs can be economical and effective.

In conclusion, the International Decade and the Colloquium case studies of country, regional, and international efforts illustrate the momentum being generated for disaster reduction at all levels of the public sector. The 1980s can be viewed as a testing ground for implementing disaster prevention, mitigation, and reconstruction programs. As the 1990s approach and predictions of global warming and a higher frequency of extreme natural events continue to be issued, and as populations continue to burgeon, it is incumbent upon disaster-prone developing countries and the donor community to integrate the lessons learned from the case studies of the 1980s for development to be effective and sustainable in the future.

CONTRIBUTORS

N. Erik A. Arrhenius
Principal Adviser on Science and Technology
Vice President of Sector and Policy Research
The World Bank

Stephen O. Bender
Project Chief
Natural Hazards Project
Organization of American States

Philippe L. Boulle
Director of the New York Liaison Office
United Nations Office of the Disaster Relief Coordinator (UNDRO)

Frederick M. Cole
Assistant Director of Asia and the Pacific
Office of Foreign Disaster Assistance
U.S. Agency for International Development

Richard E. Hallgren
Executive Director
American Meteorological Society, and
Chair, U.S. IDNDR Committee

Alberto Harth
Operations Adviser
Central Operations Department
The World Bank

Felix A. Jakob
Senior Urban Planner
Latin America and Caribbean Country Department
The World Bank

Alcira G. Kreimer
Senior Environmental Specialist
The Environment Department
The World Bank

Stephen F. Lintner
Senior Environmental Specialist
Europe, Middle East, and North Africa Environment Division
The World Bank

Patrick E. McCarthy
Senior Financial Analyst
Asia Country Department
The World Bank

Glenn S. Morgan
Environmental Officer
The Environment Department
The World Bank

Thakoor Persaud
Senior Housing Specialist
Latin America and Caribbean Technical Department
The World Bank

Kenneth W. Piddington
Director
The Environment Department
The World Bank

Maryvonne Plessis-Fraissard
Project Officer
Latin America and Caribbean Country Department
The World Bank

Stephen Rattien
Deputy Executive Director
Commission on Engineering and Technical Systems
National Research Council

Francisco R. Sagasti
Division Chief
Strategic Planning and Review Department
The World Bank

Charles Sykes
Assistant Executive Director
CARE

David Webster
Director
International Disaster Communications Project
The Annenberg Washington Program
Northwestern University

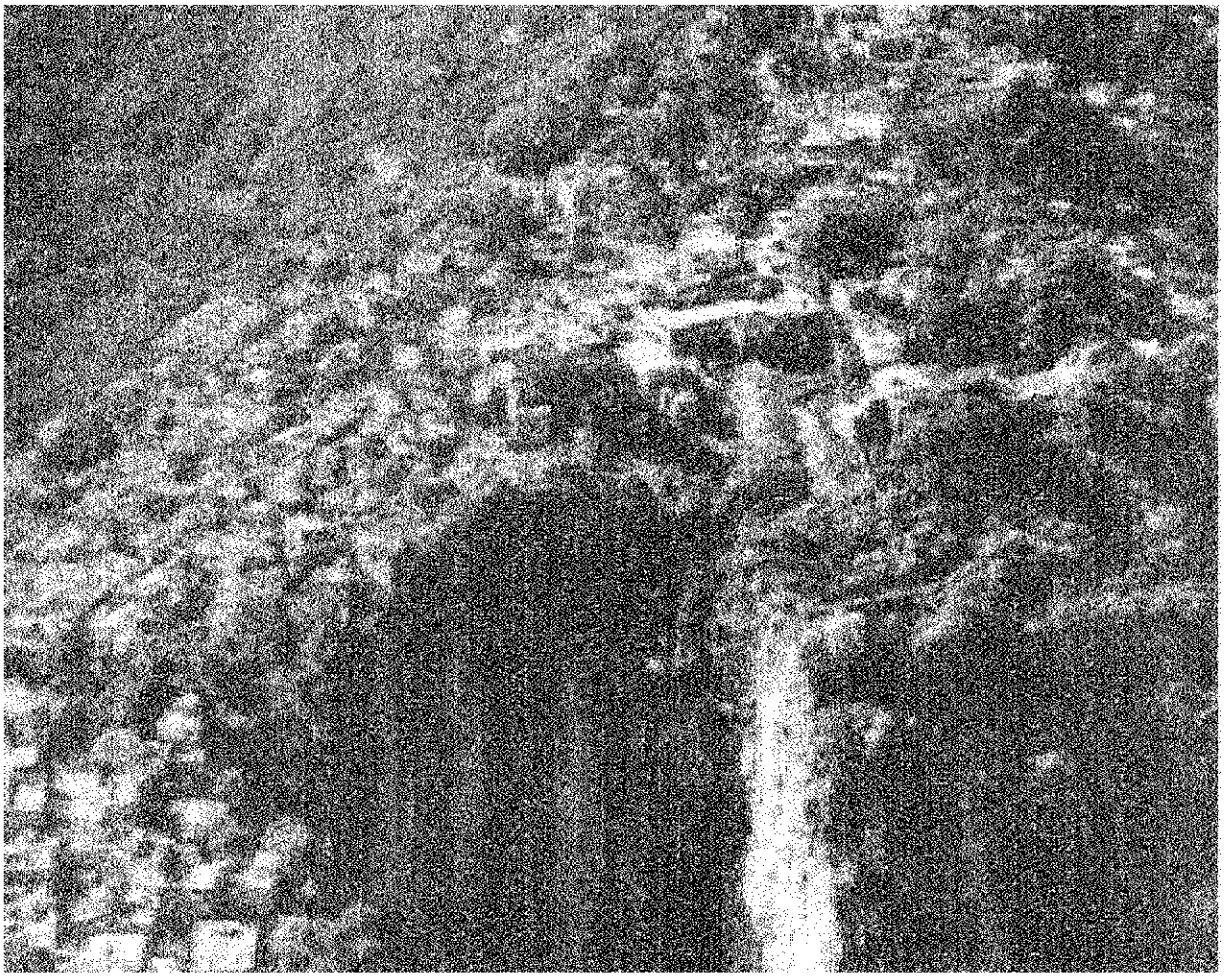
Everardo Wessels
Director
Latin America and Caribbean Techical Department
The World Bank

Dr. Jose Luis Zeballos
Medical Officer
Pan American Health Organization

Part I. Introduction

"Today humans are playing too large a role in natural disasters for us to go on calling them "natural". So a distinction must be made between the "trigger events" -- too little rain, too much rain, earthshocks, hurricanes -- which may be natural, and the associated disaster, which may be largely man-made. For instance, a strong earthquake in an unoccupied desert area, which affects no one, is hardly a disaster. A mild earthquake in a shantytown of heavy mud-brick houses on the side of a steep ravine may well prove a disaster in terms of human deaths and suffering."

-- *Anders Wijkman and Lloyd Timberlake, Natural Disasters: Acts of God or Acts of Man?*



Disasters, Sustainability, and Development: A Look to the 1990s

Alcira Kreimer
Senior Environmental Specialist
The Environment Department
The World Bank

On June 6, 1989, the Environment Department and the Human Resources Development Division of the World Bank sponsored a symposium in Washington, D.C. to promote the exchange of ideas and experiences on disasters and development. Approximately one-hundred people with a variety of expertise in different types of disasters represented disaster-related private and public agencies, research centers, and academic institutions at the Colloquium.

The varied backgrounds and experiences of the participants provided a broad spectrum of opinions and perspectives on the main issues under discussion. The Colloquium served as a forum for discussing issues relevant to disaster-prone developing countries.

"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, costly losses produced by a extreme event are preventable."

A large number of World Bank-member countries are prone to major disasters. They have to cope with difficult short- and long-term problems of

Alcira G. Kreimer is a Senior Environmental Specialist with the World Bank's Environment Department, where she provides advice on policy, research, and operations for disaster prevention, mitigation, and recovery. She is the coordinator of the Bank's Task Force on Natural Disaster Reduction and the organizer of the Colloquium. She is the Bank representative to the U.N. inter-agency working group for the IDNDR. Ms. Kreimer has worked on reconstruction efforts in Mexico, El Salvador, Colombia, Dominican Republic, Dominica, and Guatemala. She has served on the Bank's advisory committees for the Bangladesh, Jamaica, Sudan, Ecuador, and Madagascar disaster reconstruction projects. Prior to joining the Bank, she was in charge of projects on international disaster assistance at the U.S. National Research Council and she served as a consultant on disasters and development for the United Nations Commission on Human Settlements and the United Nations Environment Programme. Formerly a faculty member at MIT, Mrs. Kreimer holds a Ph.D. in environmental planning from the University of California at Berkeley, a postgraduate degree in urban planning from the Centre de Recherche d'Urbanisme in Paris, and a master's degree in architecture from the University of Buenos Aires.