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NATURAL DISASTER REDUCTION: ECONOMIC ASPECTS OF DISASTER
REDUCTION FOR SUSTAINABLE DEVELOPMENT

Technical session

Addendum

Summary of presentations

Panel I: Overview/introduction

Impact of natural disasters on national economies and the implications for the international development and disaster community (Mr. Romulo Caballeros and Mr. Ricardo Zapata-Marti, Economic Commission for Latin America and the Caribbean, Mexico)

Natural disasters have numerous impacts on national economies that can bear on economic performance, on the sustainability of the long-term development strategies of countries and the conduct of economic policy. This paper will review these consequences, using the experience of the Latin American and the Caribbean countries in the past 20 years as an illustration and will highlight the implications for the international community's efforts to support disaster reduction.

To begin, the paper will provide a typology of disasters, including the successive phases after an event and their salient characteristics, and will outline some methodological insights regarding damage assessment. The linkages among the nature of the affected country, the dimension of the event, and its socio-economic consequences will be highlighted.

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Next, the paper will describe the methodology used to appraise the different types of disasters and to measure their effects in the national economy and society. The experience of carrying out disaster assessments and the measurement of their economic consequences will be summarized. Possible implications for the affected country's institutions, given social and economic circumstances, will also be presented.

The paper will examine the different consequences that disasters have over the long term, both in terms of development prospects and the most significant variables that affect economic performance, such as the balance of payments, production and income growth, public finance etc. Special attention is paid to the institutional organization for confronting disasters - prevention, emergency aid, damage control and reconstruction - and how these actions affect national priorities and the country's ability to return to its development path. The role of the international donor community and external resources in these actions is specifically addressed.

Finally, conclusions and recommendations will be offered with respect to the international efforts needed to advance disaster prevention. Disaster prevention and mitigation must be part of a systematic approach that does not stop with emergency assistance or aid in the reconstruction process but goes beyond, linking development potential and sustainability to these actions.

Case studies

The intent of the case studies is to provide common and detailed experience on which to base the technical session discussion. The cases will construct a context in which the methodological issues and practical application of the topics (vulnerability assessments, benefit-cost analysis, and insurance) can be considered in more detail. The complexity of the settings might include cultural, economic, social and political factors, as well as specific disaster scenarios.

Context of disasters and sustainable development: the case of a growing city in a developing country (Mr. Atiq Rahman, Bangladesh Centre for Advanced Studies, Bangladesh)

The characteristics of a rapidly growing urban centre, such as Dhaka, Bangladesh, will be outlined, as will how they interact with hazards. The scenario may include factors such as: a large inventory of vulnerable constructions; extensive and interdependent infrastructure networks whose failure could cause a harmful chain of events; a growing proportion of the population of the city, which is poor and living in precarious sites (hills, landslide and flood areas) with few or no public amenities; a significant portion of the economic infrastructure for the country, the impact on which would have important implications for the nation's productivity, debt, employment and gross domestic product; and an affected area that comprises overlapping or multiple jurisdictions, requiring considerable coordination of actors in pre-disaster planning and emergency response.

Context of disasters and sustainable development: the case of an agricultural area in transition (Mr. Thomas Odhiambo, International Centre of Insect Physiology and Ecology, Kenya)

The characteristics of an agricultural area in transition will be outlined. The scenario may include: an arid zone which is being incorporated into the larger national and international economy, and the possible consequences, such as shifting demands from external markets which results in the diversion of credit and marketing facilities away from the traditional farmer, erosion of traditional land use and herd management systems; a shrinking land base, leading to over-farming and erosion (farmers more vulnerable to drought), or population movements into hazardous locations and economic relationships; and the erosion of traditional mechanisms for absorbing and sharing losses, while not yet being replaced by new mechanisms, such as the accumulated wealth and response capacities of more industrialized societies.

Panel II: Decision-making to reduce the potential losses in development investments

Disaster vulnerability and sustainable development: a general framework for assessing vulnerability (Ms. Mary Anderson, Collaborative for Development Action, United States of America)

The purpose of the paper presented is to suggest a comprehensive, yet usable, framework for understanding vulnerability that can be used by: (a) communities to assess their risk and to decide on which courses of action to take to reduce their vulnerability; (b) planners of disaster mitigation and prevention efforts; (c) educators to improve the public's understanding of disaster proneness and prevention; and (d) governmental and international bodies to discuss and agree on joint responsibilities and cooperative efforts to reduce vulnerability.

The paper reviews the way in which understanding or vulnerability has shifted and enlarged over time. The interrelationships among economic development efforts of the past, trends in vulnerability and current concern with defining and achieving sustainable development are treated. Five critical characteristics of vulnerability are identified, and a framework for vulnerability assessment is presented which reflects the characteristics, factors and relationships discussed in the paper.

Advantages and limitations of benefit-cost analysis for evaluating investments in mitigation (Mr. Randall A. Kramer, School of the Environment, Duke University, United States of America)

Anticipating and reducing the effects of natural disasters can have a positive impact on local, regional, and national economies. By incorporating information about natural disasters and possible mitigation strategies into the planning process, the prospects for a satisfactory outcome of public investment in development projects can be enhanced. Although rarely done, disaster risk information can be used throughout the project planning cycle. It can be particularly useful in benefit-cost analysis to consider the economic feasibility of different projects or different mitigation components

of projects. As usually practised, such analysis fails to account for the fact that future project benefits may be highly uncertain if prone to the effects of natural disasters. This is particularly true in developing countries where a high proportion of natural disasters occur.

Several methods have been proposed for incorporating disaster information into benefit-cost analysis. Limited information approaches include sensitivity analysis, discount rate adjustments, cut-off periods and several game theory methods. These limited information approaches allow recognition of the impacts that natural disasters can have on project feasibility but are crude in their ability to convey useful information to decision-makers. If sufficient information is available to estimate the probability distribution of a project's net benefits stream, several other approaches are possible. In particular, one can use mean-variance analysis, stochastic dominance analysis and safety-first analysis. To illustrate the use of risk-modified, benefit-cost analysis, an example will be presented for an agricultural development project in the Caribbean.

The paper will also examine how the incorporation of natural disaster risk into benefit-cost analysis may alter investment decisions, and suggest means to modify project design. It will examine how decision-makers at various levels may use modified benefit-cost analysis to guide investment decisions and trade-offs. It will also explore distributional issues including how disaster risk might affect the equity outcome of projects. Finally, the paper will discuss implications for sustainable development.

Disaster-related activities of the Asian Development Bank: an economic perspective (Mr. Gunter Hecker, Asian Development Bank, Philippines)

The paper will introduce disasters in the Asian and Pacific region and the increasing role of the Asian Development Bank (ADB) in disaster response, emphasizing mitigation, fostering of self-reliance, institutional strengthening and donor coordination.

The paper will present some economic evaluations of disaster-related projects of ADB and will discuss the future role of development banks in that area, including issues such as the evaluation of benefits, institutional flexibility, the staged approach and staff training for disaster-related projects.

Panel III: Sharing the risks and costs through insurance arrangements

Role of insurance in reducing losses from natural disasters
(Mr. Howard Kunreuther, Risk Management and Decision Processing Center, University of Pennsylvania, United States of America)

The paper focuses on the potential role that insurance can play in reducing losses from natural disasters while at the same time aiding the financial recovery of home-owners suffering property damage from a severe disaster. After reviewing why insurance is ideally suited to play both of those roles in theory, the paper focuses on reasons why few individuals purchase coverage voluntarily and adopt cost-effective mitigation measures.

The paper then focuses on the concerns that the insurance industry has had on the impact of a catastrophic disaster on their solvency. Particular attention is given to the conditions of insurability and the circumstances which may make it difficult for the industry to offer coverage against specific hazards.

A set of goals and objectives are delineated for a natural hazards programme with some emphasis on loss prevention and mitigation. Based on these objectives, the paper compares a private system of insurance with a programme that relies on the federal Government to provide reinsurance protection against catastrophic losses at a price. In particular, the following issues are addressed in relation to both these programmes: type of risk information needed to set premiums and encourage mitigation measures; role of regulations (e.g., building codes) and requirements (e.g., purchase of insurance as a condition for a mortgage) in conjunction with insurance; ability of private reinsurance to cover catastrophic losses and the role that government reinsurance can play in reducing premiums; impact of the programmes on federal disaster relief and the need for special assistance to low income individuals; and implementation costs associated with some type of joint private-public insurance programme.

Country experiences

A panel of experts from the private insurance sector will present and discuss country experiences of insurance arrangements to share the cost and risk from natural disasters.

Italy	Mr. Fabio Fegitz, Unione Italiana de Riassicurazione
Japan	To be announced
United States of America	Mr. Frank Nutter, Reinsurance Association of America
Caribbean	To be announced
South West Pacific	To be announced.
