



**INCORPORATING  
NATURAL HAZARD ASSESSMENT  
AND MITIGATION INTO  
PROJECT PREPARATION**

**Department of Regional Development  
Executive Secretariat for Economic and Social Affairs  
Organization of American States**



**A Contribution to the  
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The Committee of International Development Institutions on the Environment (CIDIE) has endorsed the publication of this paper, which has been received, discussed and contributed to by members of the Committee, as a valuable contribution for a better understanding of common approaches to environmental management. The views expressed are those of the author(s) and should not necessarily be taken as representing the position of the Committee or of its member institutions. This document has been authorized for release by the CIDIE as a valuable contribution to the discussion on development and environment.

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CIDIE Secretariat  
P.O. Box 30552  
Nairobi, Kenya  
Tel: 333930 Ext. 4111  
Telex 22068 UNEP KE  
Telefax (2542) 520711

## PREFACE

In 1983 the Department of Regional Development of the Organization of American States began a pilot project for reducing natural hazard vulnerability in OAS member states. This project, supported by the Office of Foreign Disaster Assistance (OFDA) of the U.S. Agency for International Development, is focusing on the incorporation of natural hazard assessment and mitigation information into the integrated regional development planning process. It provides direct technical assistance to member states, designs and supports training courses, and carries out applied research in areas of atmospheric and hydrologic hazard assessment, use of remote sensing and geographic information system (GIS) technologies, and is increasingly focusing on urban-related natural hazard and natural resource management issues.

One of the major areas of concern in addressing regional and urban development planning needs is the use of natural hazard assessment and mitigation information in investment project formulation for international development assistance lending. Far too often proposed and funded investment projects from all sectors lack sufficient recognition of the risks posed by natural events. Such consideration of natural hazard issues is best accomplished during the project identification and preparation stages, and not as a critical review of already prepared projects which have clearly identified institutional and political constituents.

This document was prepared by the Department to help identify the major constraints and opportunities to further the use of natural hazard information during the investment project formulation process, focusing on development assistance agencies. It describes their roles, procedures, structure, and influence, and presents a strategy for promoting natural hazard assessment and mitigation in investment projects. Also included is a list of issues for discussion by CIDIE members to assist each member in defining future actions it might undertake.

This document is based on an original draft prepared for the Department by John Horberry, with subsequent work by Stephen Bender and Richard Saunier. Valuable comments on interim drafts were contributed by René Costales, Edward Echevarria, Marea Hatzioles, Gudren Huden, Alcira Kreimer, John McKenna, Albert Pritz, Alan Swan, Julia Taft, Jeremy Warford, and Janice Weber. This final version was discussed and approved for publication as a CIDIE document during the Ninth Session of CIDIE in Washington, D.C. (June 13-17, 1988).

Kirk P. Rodgers  
Director  
Department of Regional Development  
Organization of American States

## INCORPORATING NATURAL HAZARD ASSESSMENT AND

### MITIGATION INTO PROJECT PREPARATION

Report to CIDIE members by the Organization of American States

#### Introduction

The 1972 Declaration of the United Nations Conference on the Human Environment states, "Environmental deficiencies generated by the conditions of under-development 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," (Principle 9). A good deal of financial and technological assistance has taken place in the intervening years. The recognition, however, of the relationship between natural hazards and development has not been fully understood, and much development assistance has ignored disaster mitigation altogether.

United Nations specialized conferences which have been held on desertification, water, deforestation, human settlements, etc., all point to increased disaster vulnerability, particularly for poor countries and the poorest segments of the population. This increased vulnerability is due, in large part, to environmental degradation brought about by development programs as well as the fact that some "beneficiaries" of development efforts are being relegated to increasingly risk prone situations. But as Gunnar Hagman points out in Prevention Better than Cure (The Swedish Red Cross, 1984), "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 disaster hazards have been overlooked in some planning and implementation of development activities. It is now being observed that intensive development may be the cause of many new disasters in poor countries."

It is apparent that all major types of disasters (including civil strife and conflict) are on the increase worldwide, and the number of people affected and killed are increasing much more rapidly than general population growth. During the 1960s an estimated 277 million people were affected by disasters; in the 1970s this figure had grown to 483 million; and so far in the 1980s 574 million people have been affected principally by drought, floods and tropical cyclones. During 1980-1986, an estimated US\$75.4 billion in losses due to disasters was reported. (These figures do not include disasters in the U.S. and USSR). For the same period US\$3.5 billion was made available by international organizations for relief and reconstruction purposes, a sum less than 5 percent of the losses.

In Latin America and the Caribbean basin, disasters and resulting relief and reconstruction programs have dictated a reassessment of economic development programs. National, regional and local plans and programs have had to be reformulated to reflect newly recognized disaster vulnerability, as in the case of Bolivia, Colombia, Guatemala, Honduras, Nicaragua, Peru, the Paraguay River Basin, and several Caribbean island countries. In other situations, disasters have exacerbated pre-existing development problems, as in the case of Mexico City and San Salvador.

Natural disasters in the region have brought devastating economic losses and requests for massive infusions of foreign financial assistance. As an example, during the period 1983-1986 natural disasters in Latin America and the Caribbean caused estimated losses of more than US\$12.5 billion while less than US\$900 million has been provided for relief and reconstruction purposes.

Even though the interests of project owners, investors, insurers and beneficiaries favor natural hazards assessment, it has usually fallen to the public sector to take the appropriate steps in the collective interest. Because the institutions and public policy mechanisms in developing countries that would be responsible for hazard assessment and mitigation are rarely very strong or effective, the role of external donors and technical assistance agencies is of critical importance.

The Organization of American States through its Department of Regional Development (OAS/DRD) has undertaken a program to develop better methods to incorporate natural hazards assessment and mitigation into the integrated development planning process through its Natural Hazards Risk Assessment and Disaster Mitigation Pilot Project in Latin America and the Caribbean Basin. This project is jointly funded by the OAS and the United States Agency for International Development and its Office of Foreign Disaster Assistance (USAID/OFDA) and draws on support channelled through national counterpart participation. It is an effort in researching, field testing and integrating appropriate technical information about natural hazard management into development planning and investment project formulation. The project recognizes the special role that integrated development planning plays in developing countries; and it is attempting to expand that role in the short term using resources at hand, while helping to draw up an agenda for intermediate and long term mitigation research and implementation.

This approach is particularly relevant in post-disaster situations where tremendous pressures are brought to bear on local, national and international agencies to replace, preferably on the same sites, destroyed production facilities and infrastructure. All too quickly the need for natural hazards assessment information and its incorporation into the development planning process, becomes evident.

This paper focuses on the opportunities and constraints for incorporating natural hazard assessment and mitigation into project preparation and implementation by international development assistance agencies. The linkages between integrated development planning and natural hazards are described. This is followed by an overview of the policies and procedures which govern the use of natural hazard risk assessment and mitigation information in project cycles, and which help identify specific proposals for actions to be taken by international technical assistance agencies. It is intended to stimulate discussion among CIDIE participants on how better natural hazards assessment and mitigation can be brought about.

#### Natural Hazard Assessment and Mitigation in the Context of Development Planning and Investment Project Preparation

The basic thrust of this paper is that natural hazards assessment and mitigation should be routinely included in development planning and in the identification of investment projects, and that it makes financial and economic sense to build appropriate mitigation measures into the investment projects themselves. These efforts, of course, consume financial and technical resources. Therefore, natural hazards assessment should include a method for estimating the costs and benefits to the project and to the economy of taking the mitigation measures. In order to do so, one needs to focus on the losses that might be incurred as a result of not taking account of known hazards and the costs of mitigation, which often may be of a non-structural nature.

The argument is that by making the best use of natural hazards assessments undertaken at early stages of development planning, the process of including natural hazards mitigation measures into investment projects is less costly. On the other hand, modifying a project to protect it from a hazard or repairing it after damage has been sustained is always more expensive. With the right information, one can in theory achieve an optimum level of risk management. This however, will require modifications in two important areas: institutional cooperation and institutional priorities. The ideal state of affairs would be:

- that governments and development assistance agencies would have adequate access to either general or local information on natural hazards;
- that national and regional planning institutions and sectoral agencies would undertake the necessary natural hazards assessments and formulate policies for non-structural mitigation;
- that these policies, in turn, would be part of the process of identification and preparation of investment projects;
- that donors or lenders would undertake their own review of individual investments from the natural hazard perspective; and,

- that a strong private insurance sector would optimize risk management and efficiency, and spread the costs of unavoidable risks across the entire society.

The priority given to natural hazards assessment and mitigation by governments and by development assistance agencies is not very high, if one is to judge by the increasing losses to major investment projects from storms, earthquakes, floods and landslides that could have been significantly reduced if development activities had been carried out with more attention to the hazards and possible mitigation measures. The apparent lack of awareness of the governments of the need to limit losses can be explained by a number of factors:

- perceptions of the magnitude of the risk are low;
- perceptions of the potential savings of mitigation are low;
- political and financial pressures make it unappealing to take expensive steps now to avoid losses in the future;
- if losses occur, international agencies frequently provide assistance;
- acceptance of the inevitability of natural hazards and lack of knowledge about non-structural mitigation;
- the burden of analysis, institution-building and implementation discourages the effort of assessment;
- political, financial, economic and social costs of hazards assessment and mitigation may not always be less than the benefits;
- the costs of undertaking natural hazards assessment and mitigation fall on public institutions that cannot recapture directly the benefits of preventing losses in the future; and,
- there are few incentives or legal mechanisms for mitigating hazards which are increased by or transferred from adjacent land to investment project sites and vice versa.

Likewise, the international development assistance agencies sometimes neglect natural hazards which may affect projects for which they have provided funds or assistance. The set of reasons is similar:

- perception of the risk and potential losses is low;
- the costs of analysis, mitigation and implementation are tangible and immediate compared to expected benefits in the form of probable avoided losses which can only be guessed at;



- the institutional effort and resources required, especially in the absence of any concern on the part of the country, are significant;
- the possible benefits of reduced losses pertain to governments rather than to the development assistance agency which shares only limited responsibility; and,
- hazards analysis and mitigation responsibilities may reside in institutional sectors other than the ones which will plan and execute the project.

The following section reviews the role of the various development assistance agencies, their present policies and procedures which are relevant to natural hazard assessment and mitigation. It is intended to open a discussion of what CIDIE members could do to support one another to make natural hazards assessment and mitigation an integral part of project design and financing.

#### Existing Development Assistance Agency Roles and Procedures, Structure and Influence

##### Development Agency Roles

The different categories of development assistance agencies (technical assistance agencies, bilateral and multilateral banks) each have a potential role in supporting the assessment and mitigation of natural hazards. In part, this potential role depends on the political and financial structure of the agencies.

Technical assistance agencies, such as the UNDP and the OAS support institution-building, research, planning activities and assist governments in project identification and formulation as requested. Their financial impact and their political or technical leverage, are limited. Their contribution to pre-investment work, regional or sectoral plans, project identification and pre-feasibility, however, is particularly critical in relation to natural hazards assessment and mitigation.

Bilateral agencies, such as USAID, CIDA and the OECD Development Assistance Committee members, provide funds for projects as well as for technical assistance. Most bilateral funds are concessional and financial returns are less important than in the case of development banks. They can exert considerable leverage over development projects which they fund.

The multilateral development banks, mainly the World Bank and the regional development banks, fund development projects, but are increasingly involved in sector policies, institutional strengthening, program lending and structural adjustment. The dominant factors that shape their lending programs are financial and economic soundness and the creditworthiness of the borrowing institutions. Within these parameters they can significantly influence hazard mitigation issues.

## Institutional Procedures

There are several institutional procedures, shared by most development assistance donors, that are relevant to the task of natural hazards assessment and mitigation:

### a. The Project Cycle

All development assistance agencies have some sort of project cycle. The cycle begins with a programming function, followed by project identification, feasibility, detailed design, appraisal and finally project approval. Once the project is approved, the implementation phase is likely to include supervision and ex-post evaluation. The emphasis and precise sequence varies from agency to agency. For instance, development banks place most emphasis on final appraisal of investment projects, while a technical assistance agency is mainly involved at the programming or feasibility stage.

At various stages in the project cycle, agencies have established review mechanisms to ensure that specific functions have been performed, information provided or analysis undertaken. These are important for guiding a project through the project cycle and for coordinating the various relevant policies. Two tools of analysis in this context are cost-benefit analysis and environmental assessment.

### b. Cost-Benefit Analysis and Environmental Assessment

Cost-benefit analysis is usually applied at the end of the project cycle after the design is fixed, is rarely extended beyond the direct financial and economic flows and is usually used to see if the project meets a certain minimum rate of return. Environmental assessments have been adopted by some donors to prepare projects that affect other interests. The experience with this tool is that while it can provide incentives for project proponents and consultants to provide information about a project's implications for other parties, it is sometimes regarded by project staff as a complication that conflicts with the main objectives.

### c. Risk Analysis

Certain agencies, notably the World Bank, have introduced the notion of risk analysis into their project analysis procedures. This either takes the form of testing how sensitive the cost-benefit results are to changes in certain parameters, such as prices of inputs, rates of interest or levels and prices of outputs, or adjusting the value of the project benefits by the probability of their being realized. More formal risk analysis in this context involves estimating the probability distribution of the rate of return. In theory, this allows a funding agency to choose between project options or design decisions in order to minimize the risk that the benefits of the project are not achieved.

What is significant, but less often treated in the literature, is the relation of physical risk to the integrity of a project. In part, this is incorporated into the normal professional practice of, for instance, engineers designing a dam to sustain an earthquake or a bridge to survive a flood on the basis of the worst event statistically probable during the desired lifetime of a project. But the design of projects to be resilient in the face of natural hazards, is evidently less routinely taken into account by agronomists, for instance. Nor is it much addressed in economic analysis; where the expected value of probabilistic losses from floods, earthquakes, cyclones or landslides should logically be compared with the costs of protecting against a certain probability of the loss occurring.

#### d. Project Approval and Agreement

Although various aspects of project design are negotiated with the recipient institution during the project cycle, such as what types of studies should be done and what disciplines are represented on the design team, much of the actual form of the project is negotiated at the approval stage. The donor often attaches conditions to the funds that concern how the money is spent, what components are included in the implementation plans, what must be monitored and what the disbursements are dependent on. Thus it is at this point that donors can exercise some formal leverage over the implementation of the project. However, the majority of the conditions negotiated at this point are financial or administrative.

#### Institutional Structure

The institutional structure of many agencies is of some relevance. Usually, the central policy and program staff and the technical staff that are attached to the regional or geographical desks are divided according to sector--such as energy, agriculture, urban development, transport, etc. The professional and institutional focus that results is not conducive to inter-sectoral coordination nor does it promote sensitivity to risk considerations at the earliest stage of review.

#### Limits to Donors' Influence

The technical and administrative uncertainties of implementing economic development programs tax the donor institutions sufficiently to make them cautious about complex project analysis procedures or programs that are administratively demanding. In other words, asking an agency to consider additional policy objectives that require careful analysis and that are difficult to administer is likely to meet resistance from the project staff. And, the traditional caveats that donors cannot override the sovereignty of the recipient governments, that they cannot fund activities that governments do not request and that they cannot control the implementation process, are normally valid.

A Strategy for Promoting Natural Hazards Assessment  
and Mitigation in Investment Projects

Notwithstanding the aforementioned constraints, certain hazard management activities can directly or indirectly contribute to a strategy for promoting natural hazards assessment and mitigation. It is, however, important to consider these efforts in the context of factors that make environmental policies and procedures appealing or not to development assistance agencies.

Several principals or at least generalizations taken from present attempts to incorporate natural hazards assessment and mitigation into integrated development planning studies are emerging. They characterize circumstances favorable to increased national and international attention to disaster mitigation issues and can be stated as follows:

- the more developed a country's planning institutions and processes, the more easily natural hazards assessment and mitigation issues can be adopted;
- the more experience a country has gained on assessing specific hazards, often following a major disaster, the more likely it will be to request assistance from donors for continuing such assessments;
- the more scientific, engineering and prevention related information available to countries and to donors, the easier it will be to apply natural hazards assessment and mitigation to individual programs and projects;
- the more experience there is among governments and donors concerning the kinds of mitigation measures that are most cost-effective and implementable, the less reluctance there is on the part of donors and governments to include such measures in projects; and
- the more experience and confidence there is in evaluating mitigation measures at various decision points in the project cycle, the more likely it is that donor and technical cooperation agency and national project staffs will be prepared to undertake the analysis.

For technical cooperation agencies such as the OAS, the activities that should be included in a strategy for promoting natural hazards assessment and mitigation are:

- Support for national planning institutions. Without the institutional capacity to incorporate natural hazards information into the planning process on an inter-sectoral basis, it is unlikely that governments will show any enthusiasm for looking at individual investment projects from this perspective;

- Support for pilot projects. By initiating natural hazards assessments on a pilot basis, it is possible to demonstrate how such assessments can be undertaken and what mitigation measures can be proposed, and thereby generate further demand when governments request project funding from donors;
- Support for comprehensive natural hazard assessments. Efforts to establish the information base needed for preparing priority hazards mitigation strategies, mapping, information modules, details of policy instruments and mitigation measures will make it difficult to ignore their implications for individual investment projects;
- Linkage with relief and reconstruction efforts. In the aftermath of disasters, it is possible to interest governments and development assistance agencies in natural hazards assessment and mitigation more easily than in normal situations;
- Natural hazard assessment in sector planning. By building natural hazards assessment into agricultural, housing, transportation, etc., sector planning, it should be possible to focus attention on hazards in relation to various types of projects before specific investments are identified;
- Project preparation methods. Understanding how to estimate the financial and economic benefits of avoiding direct losses from natural hazards and the costs of appropriate non-structural mitigation measures will make it easier to examine individual investment projects with a view to natural hazards assessment;
- Costs of disaster losses to development programs. Information about the overall investment losses and reparation costs to governments and the private sector, and the distribution of these costs and damages is likely to make the development assistance agencies more sensitive to the issue - especially in the case of countries facing acute international debt and foreign exchange shortages; and,
- Case-studies of project design principles or components aimed at natural hazard mitigation. Liability and insurance schemes for investments, property rights designed to create incentives for hazard mitigation, subsidies for mitigation measures, institutional responsibility for coordinating disaster relief with hazard assessment and mitigation, and other relevant experiences would point to recommendations as to how funding activities can be made more resilient to the impact of natural hazards.

The OAS has initiated programs in all of these activity areas through direct technical cooperation, training, applied research, and participation in international conferences and workshops. But the need for such activities to be carried forward by the OAS and other technical cooperation agencies is much greater than present resources allow. Moreover, a strategy to promote natural hazards assessment and mitigation must also include elements for influence and cooperation with the donors which actually fund the investment projects. There are three feasible elements to induce this influence and cooperation: (1) a change in the context in which the donors perceive the governments and collaborating technical assistance agencies to be addressing natural hazard assessment and mitigation issues; (2) incentives for analysis; and (3) the assignment of accountability for losses.

#### A Change in Context

Changing the context in which donors perceive natural hazard assessment and mitigation taking place includes most of the activities that the OAS is already promoting: assisting governments in regional planning, pilot natural hazards assessments, assistance for information systems, increasing the quality of project identification, and building the appropriate mitigation measures into pre-investment activities. There are three strategic questions at this stage which address further development of these activities. One is "What can be done that is most cost-effective in terms of improving both the commitment, and the technical and institutional capacity for hazard assessment in a country?" The second is, "What outputs can be generated that are most likely to appeal to donors and therefore bridge the gap between hazard assessment and project preparation?" The third is, "What cooperative mechanisms can be developed between the technical assistance and donor agencies that will help reach the first two goals?"

In response to the first question, implementation of the following ideas seems necessary:

- Focus on priority hazards. Efforts should be concentrated on assessing hazards that are sufficiently urgent to generate the necessary cooperation. Trade-offs must be made between the need for specific information, and broad research interests.
- Focus on priority sectors. The losses to some sectors are likely to have greater immediate significance to governments and economic interests than others, and it seems prudent to try to generate institutional support for attention to these; and
- Choose simple and practical information collection and analysis systems. The burden of data collection and management often consumes all available technical and institutional capacity and resources, leaving none for decision-making and implementation. Information systems should reflect realistic priorities for hazards and the development activities that are affected.

As to the second question, the following guides should be used:

- Early identification and integration of mitigation issues. Mitigation measures built into projects from the earliest preparation stages are more likely to receive adequate review;
- Practical and cost-effective solutions to persistent problems. For certain types of projects such solutions are less likely to be rejected if they are demonstrated to be applicable to reoccurring situations; and
- Implementation commitment. Confidence in hazard mitigation is higher if governments appear committed to implementation.

As to the third question, the following ideas are suggested:

- Pooling of resources. Donor and technical assistance agencies should make available their professional staff for joint missions at varying stages of the project cycle;
- Exchange of experiences. Donor agency staff should present through a structured program their institution's natural hazards management policy, programs and project evaluation criteria. Technical assistance agency representatives should periodically present case study and other training course material on the design and implementation of natural hazard assessment and mitigation techniques in project formulation taken from real field experiences; and
- Government institutional support. Development agencies should make natural hazard assessment and mitigation a standard area of government institution staff development and training support programs in conjunction with project formulation activities.

#### Incentives for Analysis

If project staffs of the development assistance agencies who assist government institutions are faced with a requirement to review or incorporate natural hazards assessment and mitigation into project preparation and analysis, there will be some resistance unless there is consistency with existing review mechanisms and appraisal methods. Various ways to promote this exist:

- Provide reusable information. Guidelines for sectors to alert them to the implications of specific hazards, as well as examples of appropriate mitigation measures and implementation requirements should be given. This approach is only as effective as the use of other guidelines, and depends largely on mechanisms to ensure that they are used routinely;

- Integrate hazard concerns into existing review mechanisms such as programming missions, project identification reports, reconnaissance surveys, and project appraisal. Hazards will inevitably be one of many factors to be taken onto account and there is a limit to the positive contribution that such mechanisms can contribute to project design;
- Promote proven mitigation measures in relation to specific types of projects. Design standards, insurance schemes, diversification of crops, feasibility of hazard resistant crops or designs are examples. Project staffs are more likely to become enthusiastic about positive project opportunities than review mechanisms;
- Incorporate the costs and benefits of hazard mitigation into economic appraisal. This makes sense to the extent that decisions are made on the basis of economic returns, that the information on which to base the economic calculations is available and that the analysis is geared towards improving project design. Agencies vary considerably in the importance attached to economic evaluation;

It is hard to generate support for a new activity unless it can be justified on the basis of financial and economic returns. From this point of view, it is an advantage to be able to show that hazard mitigation can save financial and economic costs in the conventional cost-benefit framework; and,

- Sensitize project staff members. This is especially important for project staff responsible for hazard prone regions and sectoral advisers responsible for hazard sensitive sectors. Training, cooperation, and publicity can contribute to making project staff more aware of the issue. This, probably more than any other factor, can offset the institutional and financial resistance to hazard assesment and mitigation on the part of government and the development assistance agencies alike.

#### Assignment of Accountability for Losses

Ultimately, the concern of the development assistance donors for natural hazards assessment and mitigation is dependent on the degree to which they suffer losses from natural disasters that may be incurred by the projects in which they assist in planning, designing and funding.

There are a number of ways to assign accountability:

- Evaluate losses from natural hazards in the context of not only the creditworthiness of the government or a particular sector, but also the donor's program area and its project design and loan repayment performance;



- Study, discuss and publish evaluations in instances where losses have been incurred for projects that failed to consider or evaluate hazard mitigation measures; and
- Promote professional standards on the part of the engineers, agronomists or other responsible for planning and executing development projects that include natural hazards assessment and mitigation issues.

#### CIDIE Discussion and Future Actions

Implementation of the proposed strategy for promoting natural hazard assessment and mitigation in investment projects will require not only a continuation of the existing activities such as those of the OAS, but also new efforts to produce cooperation between donors, technical assistance agencies and national governments. The financial resources necessary to sustain the recommended activities would be quite small in comparison with the potential savings from reduced emergency relief and reconstruction programs. The institutional commitment necessary to modify procedures and introduce changes is great, but certainly affordable given the alternatives.

In order to further define the resources and commitment necessary to implement the strategy, attached is a list of questions for review by each member of CIDIE and possibly for group discussion. Responding to these questions and determining specific actions to be taken is a possible next step for evolving individual agency policies and identifying possible areas of cooperation between CIDIE members.

INCORPORATING EARTHQUAKE HAZARD ASSESSMENT AND MITIGATION  
INTO DEVELOPMENT PROJECT PREPARATION  
Issues for Discussion

1. Which sectors should receive most attention and which sectors are most aware of the potential losses from natural earthquake? i.e. agriculture, transportation, energy, industry.
2. In which countries is there the most concern about the impacts of these potential losses e.g. highly indebted, undiversified economy, highly urbanized, mountainous?
3. It is feasible to incorporate earthquake hazard assessments and mitigation measures into programming, feasibility studies, review mechanisms and project appraisal and what instruments would be most effective?
4. What experience is there with pre-investment efforts designed to produce project proposals that were sensitive to earthquake hazards and what improvements would be useful in the way the project proposals are prepared?
5. Would guidelines geared towards these hazards, specific sectors and specific mechanisms for mitigation be useful? How might they be systematically put into practice?
6. What opportunity is there for incorporating earthquake probabilities and costs of mitigation into economic evaluation of projects? Are there other ways to incorporate these variables other than modifying cost-benefit methods?
7. What incentives will motivate development and lending agency project staff to consider these variables and contribute to the improved design of projects vis-a-vis disasters?
8. Are development assistance agency staff members sensitive to the criticisms about their practice in relation to earthquake hazards?
9. Do current financial conditions make development lending institutions more or less accountable for the losses that may be sustained by their investment projects which are impacted by disasters?
10. What pre-investment activities can agencies like OAS and support that would enhance the consideration of natural hazards in project proposals to lending agencies?

11. Are there opportunities for joint natural hazards programs that would encourage cooperation between the members of the development assistance community?
12. How could such joint natural hazards programs be financed?

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## **THE ORGANIZATION OF AMERICAN STATES**

The purposes of the Organization of American States (OAS) are to strengthen the peace and security of the Hemisphere; to prevent possible causes of difficulties and to ensure the pacific settlement of disputes that may arise among the member states; to provide for common action on the part of those states in the event of aggression; to seek the solution of political, juridical, and economic problems that may arise among them; and to promote, by cooperative action, their economic, social, and cultural development.

To achieve these objectives, the OAS acts through the General Assembly, the Meeting of Consultation of Ministers of Foreign Affairs, the three Councils (the Permanent Council, the Inter-American Economic and Social Council, and the Inter-American Council for Education, Science, and Culture), the Inter-American Juridical Committee, the Inter-American Commission on Human Rights, the General Secretariat, the Specialized Conferences, and the Specialized Organizations.

The General Assembly holds regular sessions once a year and special sessions when circumstances warrant. The Meeting of Consultation is convened to consider urgent matters of common interest and to serve as Organ of Consultation in the application of the Inter-American Treaty of Reciprocal Assistance (known as the Rio Treaty), which is the main instrument for joint action in the event of aggression. The Permanent Council takes cognizance of matters referred to it by the General Assembly or the Meeting of Consultation and carries out the decisions of both when their implementation has not been assigned to any other body; monitors the maintenance of friendly relations among the member states and the observance of the standards governing General Secretariat operations; and, in certain instances specified in the Charter of the Organization, acts provisionally as Organ of Consultation under the Rio Treaty. The other two Councils, each of which has a Permanent Executive Committee, organize inter-American action in their areas and hold regular meetings once a year. The General Secretariat is the central, permanent organ of the OAS. The headquarters of both the Permanent Council and the General Secretariat is in Washington, D.C.

The Organization of American States is the oldest regional society of nations in the world, dating back to the First International Conference of American States, held in Washington, D.C., which on April 14, 1890, established the International Union of American Republics. When the United Nations was established, the OAS joined it as a regional organization. The Charter governing the OAS was signed in Bogotá in 1948 and amended by the Protocol of Buenos Aires, which entered into force in February 1970. Today the OAS is made up of thirty-two member states.

**MEMBER STATES:** Antigua and Barbuda, Argentina, The Bahamas, (*Commonwealth of*), Barbados, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominica, (*Commonwealth of*), Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, St. Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, United States, Uruguay, Venezuela.