

**REPORT OF THE COLORADO WORKSHOP ON  
HAZARD MITIGATION IN THE 1990s**

**TOWARD THE U.S. DECADE  
FOR NATURAL DISASTER REDUCTION**

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**DNDR 1**

**Prepared by  
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## PREFACE

William E. Riebsame  
Director  
Natural Hazards Research and  
Applications Information Center  
University of Colorado

A "Decade for Natural Disaster Reduction" could evoke the best efforts and highest ideals of the hazards community. The Decade has already garnered wide international attention, and U.N. agencies are moving forward at a brisk pace. The challenge to researchers and practitioners in the U.S., then, is to fashion a United States National Decade, one in keeping with the special hazardousness of a developed, industrialized country on a continent with large seismic zones, a chain of active volcanoes, thousands of miles of storm-prone coastline, large and small flood-producing river basins, and some of the most severe summer and winter weather anywhere in the world.

The U.S. Decade for Natural Disaster Reduction (USDNDR) is being formulated in several different circles, with the chief activity of relevant federal agencies and the National Academy of Sciences being the creation of a committee to establish the goals and objectives of the Decade, in keeping with the broad goals outlined in the Congressional resolution on the Decade. However, when workshop participants gathered in Colorado to generate ideas for the USDNDR, they had a clean slate and an opportunity to envision a program of any shape or size.

And envision they did. They suggested a process that was built from the bottom-up, based on state and local efforts and needs, supported by national agencies, integrated into the country's leading institutions, and able to focus the efforts of researchers, practitioners, and the private sector on the problem of reducing community vulnerability to disasters. They proposed the creation of new private-public partnerships in disaster reduction, called for a national mechanism to nurture coordinated disaster reduction efforts at multiple governmental levels, and identified the serious constraints—political, economic, and technical—that stand between these efforts and true disaster reduction.

Among these hurdles are difficulties in applying relevant expertise and knowledge, insufficient awareness among many segments of government and the general population, financial constraints to hazard mitigation, and, ultimately, the simple fact that national economic development is the root cause of increasing disaster potential. Participants recognized that until the institutions and forces that shape development become more sensitive to hazards, losses from natural disasters will not decrease.

The overall challenge of the Decade is to reduce natural disaster losses in the world while still nurturing social development. This goal must now be supported by new approaches and strengthened existing programs for hazard reduction. Realistically, however, we might consider the Decade successful if we can at least curb the growing losses associated with natural extremes. The value of the Decade is not just its potential for reducing hazard impacts by 1999, but its potential for doing so through predisaster mitigation rather than through greater efforts to intervene after a disaster has struck. It may well be that we will measure the success of the Decade by the number of hazard reduction efforts undertaken or strengthened rather than by actual hazard losses avoided. National development trends will almost certainly place more people and property at risk in the next ten years, and disasters may stay ahead of our efforts to alleviate their impacts in the 1990s. Nevertheless, a vigorous program in the 1990s may lead during the 2000s to the first period in human history marked by real reductions in losses due to natural extremes, a reduction that will rest on the foundation of the "Decade" we are about to begin.

## EXECUTIVE SUMMARY

Whereas the natural hazards of earthquakes, tsunamis, volcanoes, floods, hurricanes, typhoons, tornadoes, landslides, and wildfires have caused great loss of life, enormous property damage, and untold suffering in the United States and throughout the world;

Whereas Congress, recognizing that natural and technological hazards may not be independent of one another in any given disaster . . .

Now, therefore, be it Resolved . . .

That Congress strongly endorses the establishment of a United States Decade for Natural Disaster Reduction as a means of supporting the goal of the International Decade for Natural Disaster Reduction to enhance existing cooperative efforts and promote new cooperative efforts to reduce the devastating impact of natural hazards in the United States and throughout the world.

From legislation establishing the  
United States Decade for Natural Disaster Reduction  
100th Congress, 2nd Session

### Background

In 1988, the U.S. Congress passed legislation establishing the United States Decade for Natural Disaster Reduction (USDNDR) (H. Con. Res. 290, S. Con. Res. 131, 100th Congress, 2nd Session). In doing so, the Congress also endorsed the International Decade for Natural Disaster Reduction (IDNDR) established by a unanimously passed resolution of the 42nd Session of the United Nations General Assembly in December 1987.

The U.N. resolution urges each member nation to establish its own national program for a decade of hazard reduction within its boundaries and, unilaterally or multilaterally, with other member nations. The USDNDR, therefore, serves two purposes: 1) it focuses on natural hazard reduction within the United States and 2) it forms the framework in which the United States can cooperate with other U.N. member nations to reduce natural disasters throughout the world.

As spelled out in the U.N. resolution on the IDNDR, the goal of hazard reduction is to be accomplished through the application of extensive, existing physical science, social science, and engineering knowledge; through the identification of gaps in knowledge; through the implementation of mitigation measures, preparedness planning and hazard awareness; and through the timely and effective transfer of information and knowledge on hazard reduction.

In establishing the USDNDR, the U.S. Congress called for the enhancement of existing programs and new cooperative efforts between governmental and nongovernmental groups.

In mid-October of 1988, 40 hazards researchers, practitioners, and policy makers gathered near Estes Park, Colorado to generate additional ideas, to make recommendations for better cooperation through existing mechanisms, and to make suggestions for new cooperative efforts aimed at hazard reduction in the United States during the 1990s. The suggestions and ideas of these experts are described in this document.

### Recommendations of the Workshop

Participants at the U.S. Decade workshop contributed to five working groups which examined: 1) Integration of Disciplines, 2) Social, Economic, and Political Constraints, 3) Technology Transfer, 4) Private Sector Role, and 5) State and Local Role

The goal of each working group was to suggest approaches, strategies, and goals for hazard reduction in the 1990s in the United States, keeping in mind the status of hazard reduction at present, trends that may affect future efforts, and short- and long-term hazard reduction goals. Detailed summaries of the working group findings are presented later in this report.

The workshop produced several cross-cutting suggestions and recommendations, including:

- That the USDNDR should identify a limited number of specific goals to be achieved by the end of the Decade, and that these goals should include:
  - 1) providing effective hazard mitigation at the state and local level;
  - 2) assessing the status of hazard research and applications to provide a baseline for the Decade; and
  - 3) assessing and strengthening existing programs that can contribute to the Decade.
- That the USDNDR will succeed only with broad, early, and concrete participation by state and local institutions with hazard responsibilities, and that it is at this level that implementation will have to occur;
- That the USDNDR must involve the private sector in all planning and implementation. The Decade offers a special opportunity to construct private-public partnerships for hazard reduction built on the incentive of long-term benefits rather than the disincentive of regulation or loss;
- That the USDNDR must rely on effective technology and information transfer from those able to generate information and research findings and those who know how to implement hazard reducing efforts;
- That the USDNDR needs an integrated plan from the beginning for monitoring and evaluating its progress, along with a set of criteria for measuring actual hazard reduction; and
- That the USDNDR should focus on domestic hazards and needs of U.S. regions and communities facing the most serious threats from natural extremes while complementing and supporting the International Decade for Natural Disaster Reduction where possible.

#### **Next Steps and Goals**

Several important next steps were identified at the workshop. Workshop participants urged federal agencies and the National Academy of Sciences to agree on an organizational structure for the U.S. Decade for Natural Disaster Reduction at the national level. The development of a process to keep hazard groups at different governmental levels and institutions informed of USDNDR program developments was also suggested. That process would also allow these entities to contribute to a nationally coordinated USDNDR effort.

The need to develop a set of broad goals in the U.S. for hazards reduction programs during the next decade was identified as another important "next step." A set of broad goals gives each level of government and all relevant institutions a focus, but allows each entity to organize a subset of goals and objectives to complement the national effort. Such program planning could include short-range (1-3 years) and long-range (5-10 years or more) horizons. The suggestions of workshop participants concerning such goals are presented in the main body of this report.

There were many suggestions for possible steps in the near future, including:

- Recognition by the executive branch of federal government in the form of an executive order or presidential proclamation;
- Establishment of a program to nurture state, local, and private sector contributions to the USDNDR;
- Creation of a national steering committee or advisory group broadly representative of the hazards field;
- Assessment of knowledge about and efforts being made in hazard reduction, including actual regional comprehensive hazard assessments; and
- Creation of local or regional demonstration projects.

## INTRODUCTION

For two and one-half days in October 1988, 40 hazards researchers, practitioners, and policy makers gathered to generate ideas and make recommendations for a U.S. Decade for Natural Disaster Reduction. The workshop occurred at a propitious time: before formal institutional structures for the U.S. Decade were established and before the idea had been widely discussed within the U.S. hazards community. Since the Decade was still undefined, the participants had great opportunity to make suggestions for the USDNDR.

The discussions ranged from philosophical, theoretical, and applications perspectives on hazard reduction to details of institutional relationships and structures for the Decade. Tensions sometimes erupted over how to move the Decade forward; who should take the lead; where funding would come from; and what social, economic and political constraints needed to be overcome. Yet, the group agreed broadly that a U.S. Decade offered a rare and potentially fruitful vehicle for making great strides in hazard reduction, for raising consciousness about the problems posed by hazards, and for strengthening the sense of mission within the hazards community. The group also felt that the Decade needed quick and high-level support and steering from government, research institutions, and leaders in the hazards field as called for in the Congressional mandate. The participants also recognized that the Decade would succeed only through solid participation and implementation at the state and local level and through collaboration with the private sector; and that participants needed quickly to identify clear-cut, realistic program goals for the Decade. These and other key resolutions and general discussions are described in this report. A discussion of the early evolution of the Decade, and an assessment of hazards mitigation successes and problems in the United States, appear in Appendices 1 and 2.

## BACKGROUND

The natural hazards community has been challenged by the proposal to make the 1990s a Decade for Natural Disaster Reduction—a period devoted to improved and invigorated efforts to reduce the toll of natural extremes on people and the built environment. The reasons for an International and U.S. Decade, as stated in a National Academy of Sciences (NAS) report, are that losses from natural hazards are rising, and that “heavy losses at the hands of nature are not inevitable.” The NAS report goes on to state that

experience demonstrates that we have enough knowledge already, if properly applied, to reduce both human and property losses substantially. . . . Progress in scientific and technical understanding of natural hazards, as well as in techniques to mitigate their effects, has led to the [Decade]. (From the NAS publication *Confronting Natural Disasters*, pp. 1-2)

In the spring of 1988, the Federal Coordinating Council on Science, Engineering, and Technology (FCCSET) asked the Federal Committee on Earth Sciences to organize the federal government's participation in the International Decade for Natural Disaster Reduction. To accomplish this task the Committee on Earth Sciences formed the Subcommittee on Natural Disaster Reduction. The subcommittee is chartered to recommend an appropriate federal government mechanism for U.S. participation in the IDNDR; to increase awareness and understanding of federal science, information, and technology transfer programs; and to improve planning, coordination, and communication among federal agencies.

Currently, the subcommittee is negotiating a contract with the National Academy of Sciences for convening a committee to assess the relationship of the federal and national effort in natural disaster reduction to the International Decade, as well as to design a broadly inclusive organization to coordinate U.S. programs throughout the Decade.

The Decade for Natural Disaster Reduction is thus gaining momentum within the hazards field and beyond. A plenary session on the Decade at the 1988 Hazards Research and Applications Workshop in Boulder evoked numerous suggestions and offers of assistance from different elements of the hazards community, and the concept is being widely discussed at other meetings of hazards workers and professional societies.

At the same time, U.S. representatives are part of the U.N. group of experts dealing with the Decade. On the domestic scene, resolutions establishing a U.S. Decade for Natural Disaster Reduction were passed by both the U.S. House of Representatives and the U.S. Senate in 1988. Further, a few state programs have emerged. The Governor of Utah has declared the 1990s the Utah Decade for Natural Disaster Reduction, and the Governors of California and Tennessee have issued similar declarations. In sum, these efforts have brought us to the verge of a significant concerted effort in the United States—an effort that could involve greater recognition, philosophical support, and funding for hazard reduction.

## THE COLORADO WORKSHOP

By late summer 1988, then, there appeared to be a growing need for ideas and energy to shape and inspire the U.S. Decade. A workshop of selected members of the hazards community, including representatives from federal agencies, states, communities, and research institutions, appeared to be a good vehicle for formulating and promoting ideas for the Decade. The Natural Hazards Information Center proposed such a workshop to the National Science Foundation and received support from that agency and the United State Geological Survey to hold a meeting in October.

The goals of the workshop were general: to assist representatives of the hazards field in sorting out ideas for a U.S. Decade, to allow principals from federal and state agencies and from research and practical institutions to meet and discuss the Decade, and to “brain-storm” new ideas to be presented in final a report. The workshops specifically focused on social, economic, and political aspects of hazard reduction rather than on an assessment of the techniques and knowledge available for accomplishing the goals of the Decade. The participants generally accepted the notion promulgated in the NAS report that there is a large gap, even in developed countries, between the “state of the art” and the “state of practice” in hazard reduction. One clear need, then, was to figure out ways to overcome barriers to applying what we know while generating new knowledge on identified weaknesses.

The workshop was held as a retreat near Estes Park, Colorado, and included both plenary and working group sessions. The first background plenary was particularly useful to participants—reminding them of how far the U.S. has come in hazard reduction over the past 20 years, as well as identifying problems yet to be solved (see Appendix 2). The initial plenary sessions were followed by a round of working groups to explore constraints to hazard reduction, possibilities for technology transfer, the integration of research and practice, and the potential private sector role in the Decade. The working groups reported back to the full group on the second day, and there followed a day of plenary discussions on topics ranging from agency contributions to innovative ways of promoting the Decade.

The deliberations at that workshop are reported below as key resolutions, working group reports, a set of unresolved issues, and needed next steps.

## KEY RESOLUTIONS

Discussions at the workshop were far-ranging and eclectic, but a general consensus on several aspects of a model U.S. Decade for Natural Disaster Reduction emerged. Key resolutions were:

- 1) That the group accepts the goals of the Congressional resolution, and feels that the USDNDR should move ahead quickly and with great vigor to reduce natural and related technological hazards;
- 2) That the USDNDR is still an undefined idea in need of executive branch support, an infusion of substantive ideas, and steering mechanisms and guidance based on cooperation among federal agencies, the National Academy of Sciences, state and locals, the private sector, and research institutions;
- 3) That the USDNDR should identify a limited number of specific goals to be achieved by the end of the Decade, and that these goals should include:
  - 1) developing effective comprehensive hazard mitigation capabilities at the state and local level;
  - 2) assessing the status of hazard research and applications to provide a baseline for the Decade; and
  - 3) assessing and strengthening existing programs that can contribute to the Decade;
- 4) That the USDNDR will succeed only with broad, early, and concrete participation by state and local institutions with hazards responsibilities, and that it is at this level that implementation will have to occur;
- 5) That the USDNDR must involve the private sector in all planning and implementation. The Decade offers a special opportunity to construct private-public partnerships for hazard reduction built on the incentive of long-term benefits rather than the disincentive of regulation or loss;
- 6) That the USDNDR must rely on effective technology and information transfer from those able to generate information and research findings and those who know how to implement effective hazard reduction efforts;
- 7) That the USDNDR needs an integrated plan from the beginning for monitoring and evaluating its progress, along with a set of criteria for measuring actual hazard reduction; and
- 8) That the USDNDR should focus on domestic hazards and needs of U.S. regions and communities facing the most serious threats from natural extremes while complementing and supporting the International Decade for Natural Disaster Reduction where possible.

Many of these resolutions, and more detailed ideas and suggestions for the Decade came out of intensive working group sessions, as described in the next section.



## REPORTS OF THE WORKING GROUPS

### Introduction

Participants at the Colorado workshop contributed to five working groups: 1) Integration of Disciplines; 2) Social, Economic, and Political Constraints; 3) Technology Transfer; 4) Private Sector Role; and 5) State and Local Role.

Each working group addressed a key question concerning hazard reduction in the 1990s: 1) How can we better achieve integration of social, physical, and engineering approaches to hazard reduction? 2) What are the major social and economic constraints to achieving hazard mitigation and how can they be overcome? 3) How can the knowledge and technology to reduce hazards be transferred to groups, institutions, or individuals who can actually implement hazard mitigation? 4) What role can/should the private sector and other nongovernmental organizations (NGOs) play in achieving hazard reduction in the 1990s? and 5) What should the role of state and local government be regarding hazard mitigation in 1990s?

The goal of the working groups was to suggest approaches, strategies, and goals for hazard reduction in the 1990s keeping in mind the status of hazard reduction at present, trends that may affect future efforts, and short- and long-term hazard reduction goals. The working groups also were asked to make recommendations for a U.S. Decade for Natural Disaster Reduction.

Both specific and general recommendations were made by the working groups, and there was considerable similarity and convergence in their recommendations. Individual, detailed working group reports follow the summary presented below.

### Summary of the Working Group Suggestions for a U.S. Decade for Natural Disaster Reduction

The Integration of Disciplines Working Group (#1) called for increased communication, rather than integration, among physical scientists, social scientists, and engineers. This increased communication is needed to overcome problems among the different groups involved in hazard reduction activities including the public, policy makers, and hazard research and applications experts. The working group suggested examining and evaluating a set of successful projects to determine the interrelationships that occur in the development, adoption, and implementation process. The group suggested a demonstration project to test the efficacy of the process and recommended an assessment be undertaken within the next three years. They felt that the U.S. Decade needs an action agenda, a research agenda, and a public information component and that strong federal leadership was necessary, but that involvement and leadership from a consortium of hazard related organizations—including local governments, private industry, and nongovernmental agencies—was crucial.

The Social, Economic, and Political Constraints Working Group (#2) suggested that constraints to hazard reduction can also provide opportunities for hazard reduction (for example litigation could result in stronger laws and/or regulation enforcement), and that these opportunities should be seized. In addition, the group agreed that sufficient technological knowledge exists concerning hazards to launch an effective mitigation program; the basic focus of a Decade for hazard reduction should be the *transfer* of knowledge and applications. Therefore, the group recommended applied research, demonstration projects, evaluative efforts, risk communication, and an emphasis on implementation. They suggested assessments of hazard reduction at present so that cross-cutting baselines concerning relative risk, potential for risk reduction, and progress to date could be established. These assessments would help to set priorities for the U.S. Decade.

The group called for a "short list" of definable goals and suggested that they might fall within several areas. For example, individuals who inform the public concerning mitigation should be made more aware of alternative responses, and their political acceptability and economic feasibility. The working groups suggested that with the involvement of the federal government (through a proposed

executive order for hazards reduction) and the support of relevant constituent groups (including those from government, the private sector, and nongovernmental organizations), the focus of the Decade should remain *subnational*—built on existing institutions and existing hazard reduction programs. The Decade, they felt, would have to work around constraints of insufficient knowledge, limited awareness, and limited financial resources.

The Technology Transfer Working Group (#3) developed several major suggestions for the U.S. Decade for Natural Disaster Reduction. The group recommended demonstration projects as well as the documentation and evaluation of efforts to transfer technology. They called for monitoring both the adoption and the effectiveness of technology in place, and they recommended financial incentives for and marketing of hazard reduction information.

The group also recommended that appropriate agencies launch efforts to institutionalize hazard reduction. Technology transfer, they said, should be tied to the normal work flow and oriented to specific user groups. In addition, since the group defined information transfer as technology transfer, they recommended continuing education for researchers, design professionals, the construction industry, public and private decisions makers, and the public.

The Private Sector Role Working Group (#4) called for significant private sector involvement in both the planning and implementation of the U.S. Decade for Natural Disaster Reduction. Consequently, the group also called for strong federal and state government support of public-private partnerships as well as the integration of activities and partnerships at the local level. The Decade—a nationally focused but locally applicable program—should, they said, use publicity, marketing strategies, and public relations to foster support for hazard reduction activities.

The group also recommended incentives to encourage hazard reduction in the private sector and suggested focusing on successful public-private partnerships already in place. Finally, the group suggested that specific, measurable goals in achievable time frames be established, that local and regional assessments of all hazards be performed, and that all efforts emphasize urban areas at risk.

The State and Local Working Group (#5) recommended active and effective participation in the U.S. Decade for Natural Disaster Reduction by governmental agencies from all states, counties, and communities facing significant risks due to natural hazards. The working group stressed that the success of the USDNDR will depend on what happens at the local level. They agreed that resolutions and declarations, such those of the U.S. Congress, California, and Utah, were necessary to increase public awareness and help build further support, and they suggested that other states and municipalities be encouraged to pass similar resolutions. The working group also recommended that national and regional hazards consortiums and public-private partnerships for hazard reduction be established. In addition, periodic reviews to assess and evaluate progress toward hazard reduction are crucial to the success of the effort. Initial and continual involvement of local agencies and individuals, “showcasing” political leaders or successful partnerships, and “marketing” hazard reduction techniques were all suggested by the working group to increase overall awareness. Hazard reduction, the group suggested, is a public-private effort, one that should combine regulation with incentives, and one that should have a multihazard focus and incorporate multiobjective planning.

Again, there was consensus among the five groups concerning the need for the support, involvement, and cooperation of all sectors of the population and levels of government in the planning and implementation of the USDNDR. There was convergence in their recommendations concerning the establishment of demonstration projects, the marketing of hazard reduction strategies and awareness, and the use of incentives to achieve hazard reduction. They also concurred in recommending the use of existing institutions and existing hazard reduction programs and in calling for the performance of baseline assessments of current hazard reduction efforts.

## Working Group #1: Integration of Disciplines

### Integration or Communication?

Working group #1 considered how to better integrate physical science, social science, and engineering disciplines to achieve more effective hazard reduction. While the group agreed with the goal of more effective hazard reduction, the members did not agree that integration is a possible, or even necessary, element of successful hazard reduction.

The discussion centered around several topics: 1) how to determine whether there is a need to integrate; 2) the role that communication and translation play in integration; 3) barriers to integration; 4) the role of integration in determining acceptable levels of risk; and 5) the possible need to refocus from integration to some other technique that might be more achievable and potentially productive.

The group decided it was more appropriate for them to address the development of approaches to achieving system effectiveness in hazard reduction. First, they recognized the barriers to system effectiveness among the various disciplines within the hazard research community and between researchers and practitioners. Those barriers include: 1) inaccurate perceptions of other groups; 2) incompatible attitudes between groups and individuals; 3) lack of understanding between disciplines; 4) vested interests as an inhibiting factor to integration and cooperation; 5) a lack of balanced contributions from physical scientists, engineers, and social scientists in the decision-making process, and 6) lack of effective communication and translation between the groups.

A resolution of these issues, according to the working group, can be brought about by focusing on *system effectiveness*. For example, each discipline or group involved in hazards will typically look out for its own interests and well-being, perhaps lessening the effectiveness of the entire system of hazard reduction. If communication is increased, factional interests can be overcome, and total system effectiveness can be increased. Therefore, communication among physical science, social science, and engineering disciplines, is, the group felt, more important and attainable than integration. The group discussed the elements of successful communication among physical science, social science, and engineering hazard researchers as well as communication between the research community and those in the operational or applications areas of hazard reduction.

The working group posited several conceptual models for establishing better working relationships among the disciplines and various practitioner groups in order to promote total system effectiveness. One possible model for integrating physical science, social science, and engineering hazard researchers with the government, nongovernmental, and private sector organizations dealing with hazards was discussed (Figure 1).

### A Natural Disaster Reduction Policy Act

The working group also recommended a “Natural Disaster Reduction Policy Act” (NDRPA) that would build upon, but not supplant, existing hazard reduction efforts by various disciplines, agencies, and groups already involved in hazard reduction (Figure 2). A NDRPA would mandate:

- An assessment of national risk due to natural disasters along with an identification of policy options for hazard reduction;
- Substantial augmentation of hazard reduction capabilities (as opposed to recovery activities) of federal agencies;
- A proactive component to agency hazard reduction activities;
- A long-range component to postdisaster recovery;
- Evaluation of the level of success of NDRPA efforts;
- Exploratory analysis and development of an integrated information system for decision makers;

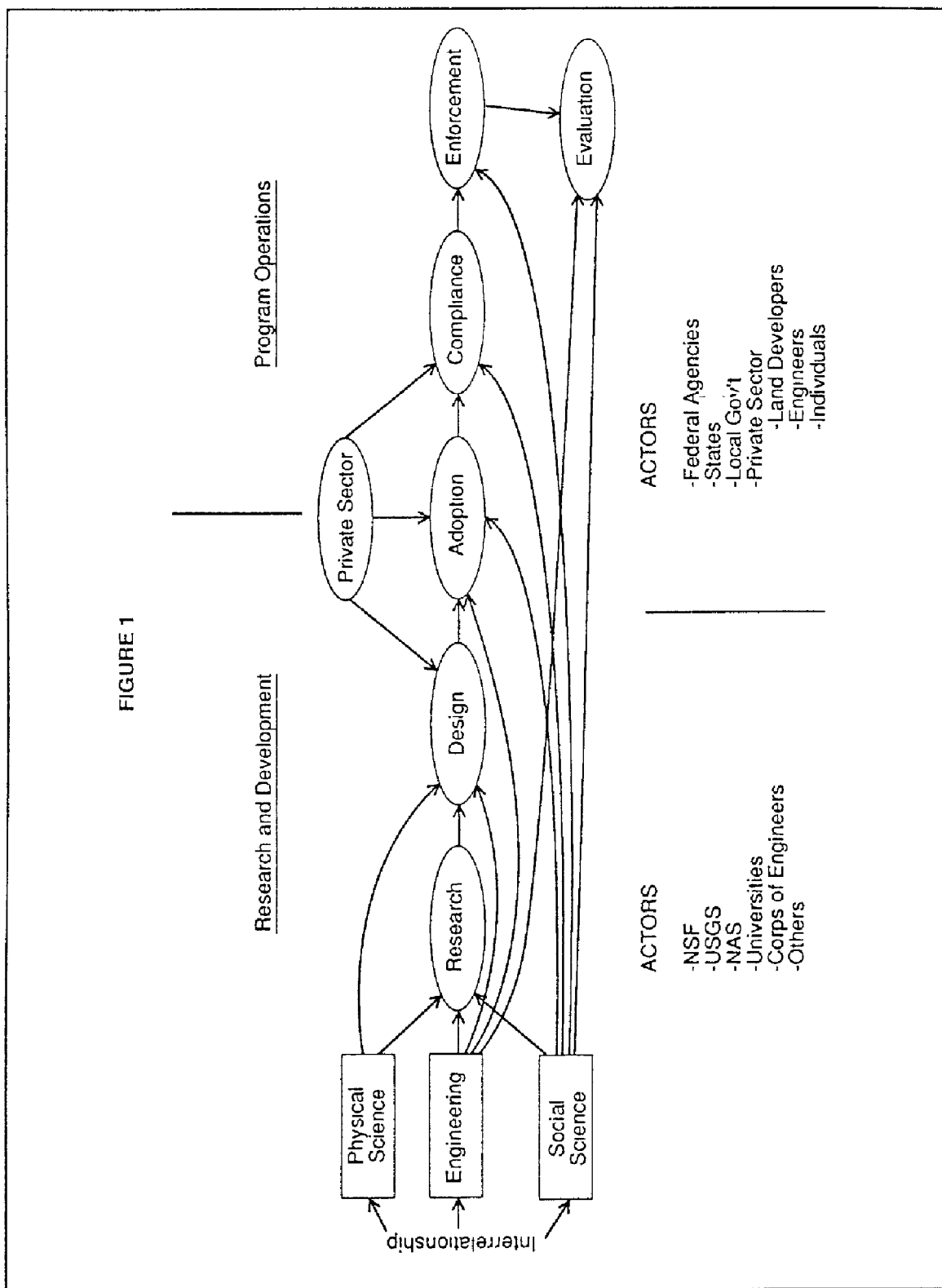
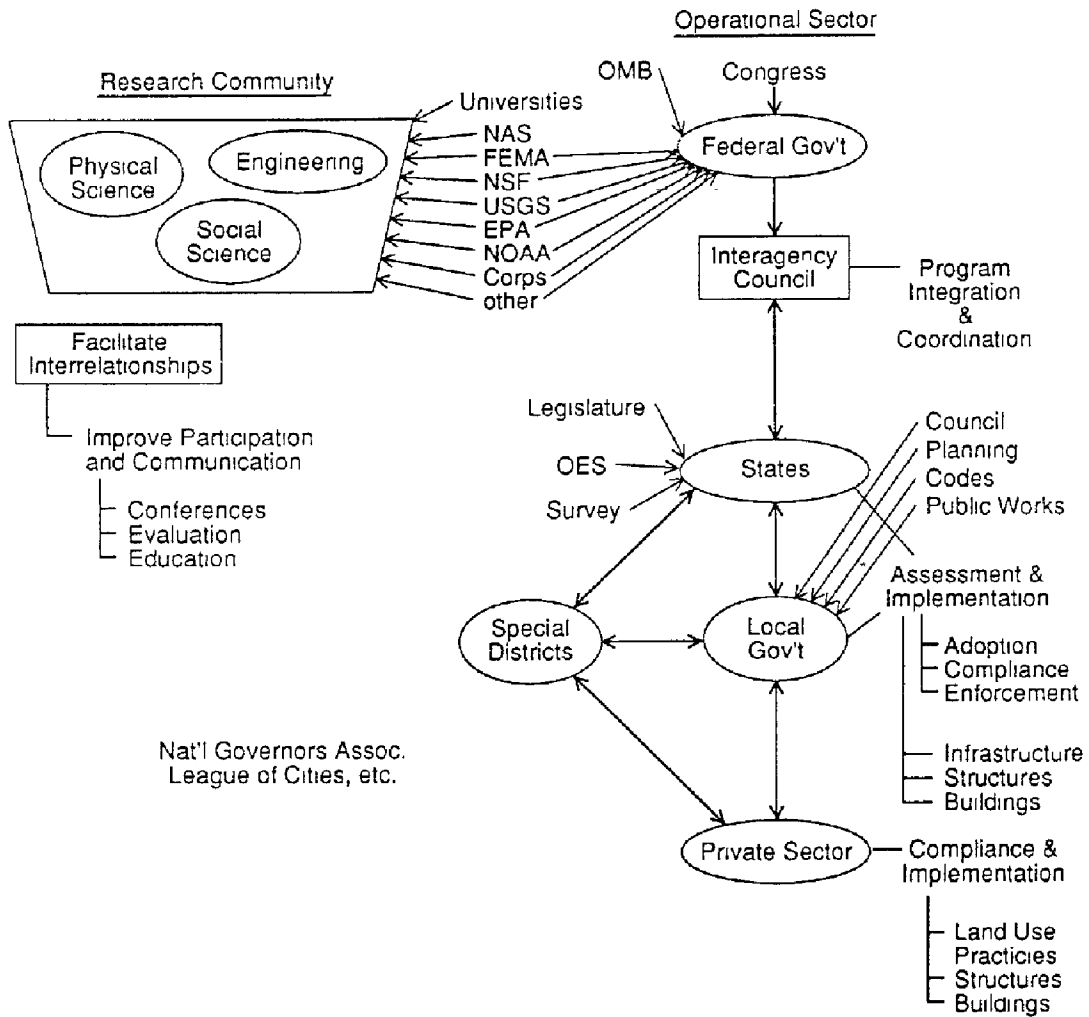


FIGURE 2



- A strong program of public education;
- A sharing of information internationally.

The working group suggested examining and evaluating a set of successful projects to determine the nature and strength of interrelationships that arise in the development, adoption, and implementation of hazard reduction programs. Projects for evaluation could be nominated by an interagency council and by federal, state, and local governments.

The group also recommended the development and implementation of a demonstration project to study these processes. An examination of barriers to achieving effective interaction and communication among disciplines and among the research, hazards application, and policy-making communities could be undertaken as part of such a project. The working group recommended an assessment be undertaken during the next three years.

#### Other Recommendations

To achieve hazard reduction, the working group stressed the importance of overcoming inaccurate perceptions among the different groups in the hazard reduction research and applications field as well as among the public, policy makers, and those dealing directly with hazards. The participants stressed the importance of balancing hazard reduction and economic viability when presenting the issue of hazard reduction to policy makers and the public.

With regard to the U.S. Decade for Natural Disaster Reduction, the working group proposed an integrated program that stresses:

- The development of an action agenda;
- The development of a research agenda;
- The development of a public information component.

Figure 3 shows a possible organizational model for the U.S. Decade that includes organizational and leadership elements considered important by the working group. For example, the establishment of a presidential commission in the federal executive branch was considered important to the Decade because strong leadership from the federal government is necessary for the success of the program. By the same token, vital sectors such as private industry, nongovernmental agencies, and local governments are also included in the organizational scheme. The working group deemed this consortium of hazard-related organizations vital to the overall success of the U.S. Decade for Natural Hazards Reduction.

FIGURE 3

