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Keynote Address:

INTERNATIONAL VISIONS AND GOALS FOR THE EARTHQUAKE ENGINEERING RESEARCH INSTITUTE

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ABSTRACT

The Earthquake Engineering Research Institute (EERI) has recently added public advocacy for seismic safety to its rich history of facilitating the discussion amongst earthquake scientists and engineers. In recognition of its unique role as the authoritative source for information in the United States, EERI also seeks to partner with other nations to develop information for use worldwide. In 2002, EERI began forming cooperation agreements with organizations in other countries that encourage the exchange of information, collaborative efforts in learning from earthquakes, joint memberships, development of mitigation tools and techniques, and access to seminars, conferences, and technical publications. The ultimate goal of the program is to arrest the growth of seismic vulnerability worldwide and thereby save lives, protect capital investments, and minimize economic impacts.

1 INTRODUCTION

The current economic recovery that is sweeping the United States and the unprecedented number of natural disasters in the last decade have brought us to an important crossroads. On the one hand, there are calls for less government and less environmental control and heightened entrepreneurialism. At the same time, the escalating cost of recovering from disasters has created a demand to mitigate the effects of natural disasters on the built environment. FEMA's Project Impact initiated a program that illustrates this concern by issuing a call for nation-wide action to achieve disaster resilience with greater roles and responsibility given to the local communities and private sectors.

At the same time, dramatic technological developments have made our ability to gather, analyze, and share information and knowledge with others throughout the globe more rapidly, extensively, and effectively than we would have even dreamed a few years ago. We are able to capture and transmit images around the world instantaneously and to transmit technical programs and information to thousands of individuals, far from universities and other centers of learning. It truly is an exciting time, a new millennium filled with opportunity.

The Earthquake Engineering Research Institute (EERI), as a national, nonprofit, technical society of engineers, geoscientists, architects, planners, public officials, and social scientists has the opportunity to play a major role in creating a safer society. Originally organized to advocate for development of earthquake engineering technologies, the Institute has also become a significant information provider, coordinator of post-earthquake reconnaissance, sponsor of fellowships, and manager of applied research projects funded by various agencies and the EERI Endowment Fund.

The EERI Board of Directors gathered in December 2000 to review EERI's accomplishments over the past half-century as a leader in the earthquake field, and identify areas in which there were opportunities to be more effective. Their subsequent plan recognizes the need to continue to champion research and the development of programs for the professional engineering community, but also recognizes the need to reach policy makers, the media, and the general public at the regional, national, and international levels to achieve a safer world.

In order to create a clear focus on the activities needed to implement the new plan, the Institute adopted a Vision,

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Role, and a set of Five Year Goals. The Vision stands as a benchmark for what the Institute is striving to accomplish, even though it may take as long as a hundred years. The Role is a statement of what the Institute will become in order to carry out its vision. The 2001-2005 Five Year Goals are the first steps being taken.

EERI's Vision: A world in which potential earthquake losses are understood and steps have been taken to reduce them to an acceptable level.

EERI's Role: EERI is recognized as the authoritative source for earthquake risk reduction information in the U.S. and, in partnership with other nations, will develop earthquake risk reduction information worldwide.

EERI will fulfill its role through the following activities:

- Fostering a sense of shared commitment among the diverse communities dedicated to earthquake risk reduction
- Encouraging research
- Facilitating the exchange of information between members and others, and
- Forging a consensus and speaking with a common voice to public forums and legislative bodies on behalf of the diverse risk reduction community.

EERI's Five year Goals for 2001-2005:

1. **Strengthen EERI's position as the primary advocate of earthquake safety and risk reduction.** Strengthen EERI's position throughout the U.S., and in partnership with others throughout the world, by actively building a better understanding of earthquake loss potential and the range of mitigation options that exist in the pre- and post-earthquake environment in the U.S. and in other countries and cultures, in a manner consistent with, and in support of, professional practice.
2. **Identify and support seismic advocates at all levels of society and in all the disciplines**. Substantially expand the number of engineers and other design professionals, earth scientists, public policy officials, risk managers, and social scientists, representing all affected communities and involved in research and other professional activities that contribute to reduced earthquake risk in the U.S. and abroad.
3. **Galvanize a cadre of seismic risk reduction experts with lessons that are learned in earthquakes**. Establish EERI as the U.S. leader in post-earthquake investigations through coordination of public and private efforts, early reporting, and as an advocate for complete documentation and follow-on research.
4. **Generate government support for all forms of pre- and post-earthquake-mitigation.** Generate support from government decision-makers and the private sector to assure adequate levels of seismic safety in all newly constructed facilities and to improve the safety of existing buildings, bridges, and lifelines.
5. **Achieve financial independence**. Develop a strategy and implement a plan by 2005 to make EERI financially self-sufficient by 2010, to endow the programs outlined in this Plan, for the long term.

EERI was founded over 50 years ago as a California-based organization of American scientists and engineers. Over the years, EERI's reputation and membership has grown to include an international constituency that eventually led to the founding of the International Association for Earthquake Engineering (IAEE). As EERI strives to become the authoritative source for earthquake information in the U.S., it also is working proactively to encourage its international members to assist in the development of partnerships around the world. These efforts are expected to yield a reduction of earthquake losses to acceptable levels; levels that are to be established by each local community. EERI's international activities are structured to compliment and support the activities of the IAEE.

International membership in EERI has grown continuously over the life of the Institute. In 1990, 16% of the membership was international, in 1995, the number grew to 17%. Today, about 20% of the EERI members are from the international community, and the representing 54 countries and speaking nearly 30 native languages. Over 50% are structural engineers, 20% are civil engineers, and the balance a mix of lifeline engineers, seismologists, risk analysts, and emergency responders. English, Japanese, and Spanish are the most prevalent native languages spoken by EERI's members.

2 AN INTERNATIONAL VISION FOR EERI

By virtue of its organizational structure and focus on learning, EERI brings to the international community a number of key "assets" related to earthquake safety that can be used to develop risk reduction information for use worldwide.

- EERI has over 50 years of experience working to reduce the impact of earthquakes.
- EERI provides a forum for discussion of all matters and disciplines related to earthquake engineering. It provides a committee structure for the development of solutions and a variety of vehicles for dissemination of earthquake engineering information and knowledge.
- EERI has internationally-recognized documents, journals (now also available online), earthquake reconnaissance reports, slide sets, CD ROMs, monthly newsletter, and popular website.
- EERI congregates volunteers who serve as members of committees and who are experts in all related fields, including structural and geotechnical engineering, geology, geophysics, seismology, social science, and risk analysis.
- EERI has successfully supported and participated in reconnaissance studies after major earthquakes around the world.
- EERI is a role model for multi-disciplinary participation in earthquake engineering organizations.
- EERI maintains relationships with earthquake engineering organizations through IAEE.

In 2001, EERI demonstrated its commitment to international collaboration with the election of two international members as directors, Svetlana Brzev of Canada and Sergio Alcocer of Mexico. Both have brought a fresh, international view to the Institute and both have been active in initiating new international activities. Svetlana was the key advocate on the board behind the World Housing Encyclopedia Project and also served as the project manager. Sergio was the advocate for leveraging EERI's resources internationally and, as the chair of the newly formed International Activities Committee, began the implementation of EERI's international vision.

2.1 World Housing Encyclopedia

The Encyclopedia of Housing Construction Types in Seismically Prone Areas of the World was initiated and funded by the EERI Endowment Fund. Organized as a web-based information resource, the encyclopedia catalogues the various styles and types of housing construction used throughout the world in terms of their construction type, resilience to earthquakes, and typical seismic strengthening approaches. Also included is information about the earthquake hazards that affect the region and related documents and links. The program receives information from a host of in-country volunteers that, on occasion, have met and discussed topics of mutual interest. This project has benefited from a grant from the Earthquake Engineering Foundation. A work-in-progress, the Encyclopedia can be viewed at www.world-housing.net.

The housing project developed as a natural outgrowth of EERI's Learning from Earthquakes program. It is a very popular and valuable resource for designers, insurance companies, researchers, and public officials from all over the world. Visits to the website continue to increase with thousands of visitors viewing 100,000's of pages each month. There is no doubt that the availability of this information worldwide will eventually lead to safer construction and fewer losses in future earthquakes.

2.2 International Activities Committee (IAC)

Based on the recommendations of Sergio Alcocer, speaking on behalf of over 400 international members, EERI organized and chartered a new International Activities Committee in the Summer of 2002. Membership includes earthquake experts from a variety of countries and engineering disciplines. Their initial focus is to identify how the following EERI activities could be directly leveraged for international benefit.

- Scheduling international activities during the EERI Annual Meeting.
- Expanding the EERI technical committees to include international members and operate in a style that allows remote participation.
- Adapting EERI's expertise to the problems faced by other countries, especially those with rural communities.
- Diminishing the language barrier.

The International Activities Committee began meeting in the Summer of 2002 and began with the development of the following Mission Statement and Statement of Objectives, which have been endorsed by the EERI Board of Directors.

2.2.1 *Mission*

To develop and coordinate ways and means to promote communication, cooperation, and collaboration between EERI and organizations, institutions, or individuals of other nations with common interests.

2.2.2 *Long-term Objectives of IAC*

- Contribute to the development of sustainable earthquake risk mitigation in our countries.
- Build a better understanding of earthquake loss potential and the range of mitigation options in the pre- and post-earthquake environment.
- Improve the dissemination and application of scientific and engineering knowledge and information among countries.
- Establish lines of communication between international and U.S. members.

2.2.3 *Objectives of IAC*

- Develop international activities and events during Annual Meetings and the National Conference and improve international member attendance by helping to identify ways of improving the perceived benefit of conference attendance.
- Establish exchange of knowledge and technology transfer between the United States and countries of the international community, with emphasis on the special problems faced by developing countries.
- Act as an interface between international members and the Institute to increase the participation of international members in Institute activities, including technical committees, workshops, and events such as distinguished lectures, and work to diminish language barriers.
- Improve awareness of the national EERI membership of important developments and individual contributions occurring in countries outside the United States and facilitate the participation of EERI representatives in important international events.
- Assist in promoting international chapters, support international student chapter activities, and increase the visibility of international members.

2.3 International Activities

Because the opportunities for collaboration and cooperation abound, three levels of priority were established to direct EERI's involvement internationally. The first level includes areas that can be developed within current funding levels and with existing information. The second level requires modifications to some of EERI's operating procedures and the third priority requires additional funding. All are of interest and will be developed as interested participants step forward and funding is secured.

The high priority activities that EERI is committed to developing include:

1. Establish agreements:

There are a number of sister organizations throughout the world that have very common interests to EERI's and that belong to countries either with a large seismic hazard and exposure, or with a well-established earthquake engineering community. Canada, Chile, the European Association of Earthquake Engineering, India, Iran, Italy, Japan, Mexico, New Zealand, and Turkey are, in alphabetical order, among them. Formal technical and scientific cooperation agreements should be established with organizations in these countries that include areas of mutual interest.

2. Collaborate on the Learning from Earthquakes (LFE):

The LFE program is, perhaps, one of the most successful and visible programs EERI has conducted over the years. Through its well-documented earthquake reconnaissance efforts, EERI's international members and their countries have benefited from the lessons and observations.

When an earthquake occurs in countries other than in the U.S., EERI typically finds a "partner" group or organization led by an EERI international member or friend, who in turn participates in and facilitates the reconnaissance missions. However, such a group is generally established in the aftermath of the quake, with little information on the assessment techniques and technology used by both EERI and that group. Formal links should be established prior to earthquake occurrence with "partner" groups and individuals in different countries that are interested in participating in EERI reconnaissance efforts.

3. Develop cooperative memberships:

International members of EERI come from some 60 countries and comprise over 20 percent of EERI's current membership. Most international members are engineers, and among them, structural engineers constitute the largest group. Unfortunately, membership is often limited due to the Institute's fee structure.

In order to attract more international members, EERI recognizes that some modifications are needed in the membership fee structure in addition to those currently available. The International Activities Committee has suggested that the following ideas be considered.

- Establish an international E-membership with fewer privileges than those for normal members. According to an informal survey among international members, the *EERI Newsletter* and *Earthquake Spectra* are the two EERI publications that they value the most highly. It is proposed that eMembers would receive both the *EERI Newsletter* and *Spectra* in electronic format, and would have the privilege to purchase other publications at a member rate.
- Reduced fees for joint membership with sister organizations which have signed the general agreement referenced in item 1.
- Dues discounts (e.g., 50%) for developing countries.
- Corporate memberships for universities, where they would pay a corporate membership fee on behalf of their faculty and students.
- Provide international members with a membership certificate suitable for framing and displaying.
- Provide scholarships to deserving individuals in the international earthquake engineering community.
- Offer special membership renewal rates to international members who have dropped their membership.
- Extend larger discounts (sell at production cost plus shipping) on two or three publications per year.
- Reduce conference/meeting rates for international members.

4. Expansion of the Mitigation Resource Center:

The EERI Earthquake Mitigation Center (EMC) is a rapidly developing training and information resource that will provide the tools needed by professionals and community leaders. The usefulness of this information to the international community depends on the quantity, quality, and adequacy of the material provided. IAC strongly believes that international members should play a role in the selection of information intended for use internationally. An *ad hoc* group within IAC will be established to develop a list of members who may provide information or sources of information from organizations and individuals. This group would also check the adequacy of the information provided by international members to be included, and identify where new material is needed.

5. Translation of Publications and the Websites:

EERI publications are deemed one of the most valuable assets of the Institute. Monographs, reconnaissance reports, *Spectra*, as well as the slide and video collections, are among the publications that get most attention from international members. The available publications are only purchased by those who can read English, often members of the academic community. However, there are many people interested in earthquakes and in mitigation activities in other countries that do not have adequate information in their native languages. A particular example of this are lay design and construction practitioners.

EERI, with help from its international partners, intends to translate its publications into other languages, which will have a large potential to influence other countries, and improve EERI's visibility. Appropriate articles from the *Newsletter*, Monograph Series, EERI Endowment Fund Reports, *Spectra* Issues, Earthquake Basic Series, and Series on Applied Seismic Design of Buildings will be selected.

Other translation activities will include:

- Publications from selected sister organizations that could be of interest to EERI members, but which need to be translated into English.
- Establish translated links to websites from sister organizations on EERI website, beginning with Canada, Italy, Japan, Mexico, New Zealand, and Turkey.
- Establish a permanent section for international members in the *EERI Newsletter*. This space should

be considered as a window to learn about earthquake engineering in other countries. Possible topics are changes in code provisions, societal response in past events, mitigation programs (successes, failures), country's organization to cope with an emergency, notable designs, among others.

- Translate the abstract of papers from *Spectra* into Japanese and Spanish and post them on the EERI website.

6. Seminars and Conferences

EERI's visibility and influence worldwide would be improved if more international members participate in EERI seminars and conferences, and if EERI would participate more actively in important international meetings.

The following activities will stimulate the desired inter-organization exchange:

- Include at least one international speaker each year in the EERI Annual Meeting program.
- Develop LFE training sessions for international members within EERI events.
- Identify the international conferences, preferably organized by sister organizations, in which EERI should participate as a speaker and/or as an exhibitor.
- Identify the technical seminars, courses, and conferences to jointly organize with sister organizations.
- Extend the Distinguished Lecture program to other countries.

2.4 Inaugural Cooperative Agreement

On November 30, 2002, EERI and the Mexican Society for Earthquake Engineering signed the first cooperative agreement under this program. The agreement was tailored to the areas of common interest between the United States and Mexico, including topics related to their common border. The objectives and activities contained in the agreement include:

"The objective of the present agreement is to promote and sponsor collaboration between both parties, with the goal of participating jointly in scientific and technical activities in areas of common interest related to earthquake engineering.

In order to achieve the objective of this agreement, the parties agree to carry on the following activities.

- Develop an agenda of common problems and areas of opportunity in earthquake engineering.
- Exchange and translate selected publications and other information.
- Develop joint publications and information on mitigation measures.
- Carry out joint research programs.
- Organize seminars and conferences.
- Exchange scholars to participate in conferences, colloquia, symposia, and special short-term courses.
- Encourage the organization and participation in technical committees.
- Promote the participation of social scientists from both countries in the development of earthquake mitigation policies.
- Encourage a multi-disciplinary approach in the activities to be developed."

EERI is actively soliciting other international organizations, through their international members, to work with the IAC to develop similar agreements and forge ahead in the areas of mutual interest and applicability.

3 BENEFITS OF INTERNATIONAL ACTIVITIES

Earthquakes and the processes needed to minimize their impacts are one of the topics that knit the world into a global community. For decades, the earthquake science and engineering communities have been sharing information and experiences worldwide in an effort to advance the state of understanding as quickly as possible. The advent of global communications networks, including television and the Internet, have raised new opportunities for expanding this collaboration to countries and peoples that have been unable to participate in the past. The opportunities are very attractive.

The Earthquake Engineering Research Institute has embraced an expanded program in the last few years to add public advocacy for seismic safety to its rich tradition of professional collaboration. EERI is striving to become the authoritative source for earthquake risk reduction information in the United States and a partner in the development of such information worldwide. This international vision has lead to the development of a growing partnership program that seeks mutually beneficial areas of cooperation with other earthquake scientists, engineers, emergency responders, and public officials.

The benefits of this expanded collaboration include the acceleration of learning from earthquakes, the expansion of the techniques available for risk reduction, and the worldwide transfer of information that can significantly arrest the growth of earthquake vulnerability worldwide through proper planning, design, construction, and response. Eventually, lives will be saved and economic losses will be minimized because of these collaborative efforts.