

Introduction

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1 REMEMBER SAN FRANCISCO, 1984

"I believe there is great need, and much support can be found, to establish an International Decade of Hazard Reduction. This special initiative would see all nations joining forces to reduce the consequences of natural hazards....What better way to start the new millennium than a world better organized to reduce suffering," said Frank Press, the President of the U.S. National Academy of Sciences, in his keynote address during the Opening Ceremony of the Eighth World Conference on Earthquake Engineering (8WCEE) held in San Francisco in July 1984.

This was the inception of IDNDR (International Decade for Natural Disaster Reduction), and has naturally given IAEE a special responsibility for the Decade.

In its resolutions adopted by the Executive Committee and the Assembly of National Delegates, IAEE enthusiastically endorsed the idea under the leadership of the international earthquake engineering community, and recommended prompt action for implementation. During the following four years, however, IAEE did not make any positive, coordinated action. Although the Press' proposal gained the general attention among many academic institutions and associations, it seemed too big and heavy for most of the scientists and engineers, who were at a loss how to realize the idea.

Therefore, it was a surprise to most of them that the forty-second General Assembly of the United Nations unanimously adopted a resolution on IDNDR on December 11, 1987. In the resolution, the General Assembly decided to designate the 1990's as a decade in which the international community, under the auspices of the

United Nations, would pay special attention to fostering international cooperation in the field of natural disaster reduction.

2 THEN, TOKYO & KYOTO IN 1988

When 9WCEE was held in Japan in 1988, we were aware that IDNDR was to begin in 1990. The IAEE Executive Committee and the Assembly of National Delegates again expressed their strong involvement in promoting, organizing and participating in the activities of the IDNDR. This time, the IAEE Committee on IDNDR was formed with the following three members: G.W. Housner (Chairman), J Petrovski and K. Toki. It was also recommended that a Joint Committee on Geotechnical Hazards for IDNDR be established with membership from other organizations concerned with mitigation of the earthquake risk. Eventually, three members joined the Joint Committee: K. Ishihara (ISSMFE), E. Kausel (IASPEI) and L. Xie (IASPEI).

The creation of these Committees, however, turned out to be superficial, in spite of the good will of the members. IAEE is an unaffiliated organization with a small staff, no dues, and no large sources of incomes. In addition, the responses of the IAEE's national organizations were meager. The Central Office sent out, several times, questionnaires asking what were the state-of-the-art of the IDNDR-related activities in each of the member countries. However, replies were received from only less than one third of the national organizations.

There had not even a chance for the IAEE and the Joint Committee members to get together until October 1991, when T. Katayama, the Secretary General of IAEE, or-

ganized a workshop in Tokyo on the occasion of IDNDR Summit Conference on Earthquake and Natural Disaster Countermeasures co-hosted by the Tokyo Metropolitan Government and the Land Agency of Japan.

Unfortunately, some members of the Joint Committee were unable to attend the meeting, which, however, brought together some twenty people from Japan and abroad who are concerned with the development of IDNDR. The items discussed during the one-day workshop were present status of IDNDR activities, their rate of progress, role of IAEE, and its possible Decade activities.

The meeting turned out to be an occasion of harsh self-examination for IAEE. It was pointed out that IAEE is the only international organization representing the earthquake engineering community and that it has high visibility through its World Conferences. It was felt imperative that IAEE play an active role in the Decade program. A number of suggestions were made with the objective of increasing the effectiveness of IAEE in the Decade. The recommendations of the workshop included that the IAEE Committee should prepare a working paper on earthquake engineering for and the role of IAEE in the Decade, and that a discussion of the working paper by the National Delegates of IAEE should be scheduled for an appropriate time during the 10WCEE in Madrid.

To prepare an IAEE's working paper within a limited period, the Secretary General, with the approval of President, asked in January, 1992, the US National Organization to form a small group of people to draft a working paper. The decision was made because it was thought inefficient and impractical to form a committee comprised of international members widely scattered all over the world to meet the deadline, which is the 10WCEE in July, 1992.

The Earthquake Engineering Research Institute (EERI), which is the National Organization of US for IAEE, established a three-person working panel chaired by H.C. Shah with C.C. Thiel Jr. and W.D. Iwan. A working paper "A Time for Action: World Seismic Safety Initiative" was prepared in time for 10WCEE. The paper was reviewed by L. Esteva, G. Grandori, G.W. Housner, T. Katayama and K. Toki before it was

sent to all possible participants of the Special Theme Session on IDNDR to be held in Madrid.

3 ORGANIZATION OF THE SESSION

The session was held on July 21, 1992, with the participation of about 50 invited persons. There were people representing 28 countries. They are Argentina, Australia, Austria, Bulgaria, Canada, Chile, China, Egypt, Ethiopia, France, Germany, Iceland, India, Indonesia, Italy, Japan, Macedonia, Mexico, New Zealand, Peru, Rumania, Russia, Slovenia, Spain, Turkey, United Kingdom, United States of America, and Venezuela. There also were representatives from Scientific and Technical Committee of IDNDR, DHA-UNDRO, UNESCO, IASPEI and ISSMFE.

Dr. Blazquez, the local coordinator of the STS, welcomed the participants and initiated the session by introducing the general information about the IDNDR program. It was followed by the introductory remarks by Dr. Katayama, Secretary General of IAEE and one of the co-organizers of the session, which provided the past involvement of IAEE in the Decade and the purpose of the present session.

Then, the state-of-the-art and comments on IDNDR-related activities, at the international and national levels, were received from the participants. Through the presentations of the national representatives and the comments by other participants, a consensus was reached that progress toward achieving the earthquake disaster mitigation objectives of the IDNDR as established by the UN is far too slow, and that unless drastic changes are made in the organization of international and national programs, the objectives of the Decade will not be met.

Although UN systems and international academic organizations are keenly aware of their responsibilities to implement something solid to realize the goals of IDNDR, their plans at present seem to be merely on paper. Progresses on national levels are even slower in spite of the fact that UN member nations have been urged to develop national programs that would constitute the core of IDNDR effort. The present states for most of the countries are only that national focal points

have recently been established. Even in some of the more actively involved countries such as China, Germany and Japan, what have so far been done are far less than what had been expected at the onset of the Decade.

Some of the keywords repeatedly raised by the participants were: hazard mapping, disaster histories, strong-motion observations, non-engineered structures, developing countries, joint projects, inter-developing countries' program, information flow, database, network, publications, lectures & seminars, training courses, and FUNDS. The discussions clearly indicated that everybody wants to do something but does not know how to do it.

4 WSSI-THE IAEE'S CONTRIBUTION TO THE DECADE

The second part of the session was devoted to the presentation of the World Seismic Safety Initiative (WSSI) proposed in the working paper. Its revised version modified by taking into account written comments from the participants of the session is attached as Annex I of this report. The possibility for IAEE to have a significant impact in the IDNDR program is remote unless a special project is established with the capacity of gathering work force and funds. On one side, there clearly are lacks of leadership and of organization at international level. Funds are lacking at all levels for the IDNDR-related activities. In addition, difficulties exist in coordinating the different disciplines involved in the subject matter because of its extreme broadness.

WSSI is intended to provide an organizational framework capable of raising funds and to undertake projects to fulfill the IAEE's responsibility to meet the goals of IDNDR. WSSI will work as a corporation overseen by the IAEE Executive Committee, with a very reduced staff. It will operate through working groups specifically formed for each project.

The main concept behind WSSI is that the most effective way of reducing earthquake disasters is through better construction practice, and that most of the knowledge necessary to improve building practice already exists. Therefore, the focus is to be placed on the implementation of the plans.

The proposal was thoroughly discussed by the participants. Discussions and suggestions mainly focused on the operational aspects of the program and the possibility of raising the funds required for its execution.

Finally, however, the participants agreed to request the authority of IAEE to endorse the concept of WSSI and to take necessary steps required to realize it (see Annex II). The matter was introduced, discussed and approved during the Executive Committee Meeting (July 22) and the General Assembly of Delegates (July 24), and was included as one of the IAEE Resolutions adopted during the latter meeting.

It should be noted that, through the series of the actions taken during 10WCCE, IAEE has much more strongly committed itself to IDNDR than before. It should be understood, however, that IAEE is only at the real starting point and that WSSI will never be realized without the wholehearted support of concerned people and organizations in the field of earthquake engineering profession. As the organizers of the Special Theme Session, we expect strong and long-term commitment of the IAEE's National Organizations and their individual members.

ANNEX I:



A TIME FOR ACTION: WORLD SEISMIC SAFETY INITIATIVE

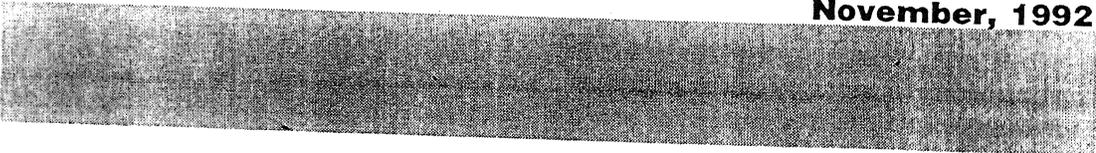
**An Initiative of the
International Association for Earthquake Engineering
in support of the
International Decade for Natural Disaster Reduction**

**Prepared by the IAEE Panel
Haresh C. Shah, Chairman
Charles C. Thiel Jr.
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**Prepared with support from the
Earthquake Engineering Research Institute**

November, 1992



A TIME FOR ACTION

*The International Association
for Earthquake Engineering*

WORLD SEISMIC SAFETY INITIATIVE

Building collapse is the principal cause of deaths in earthquakes. Buildings don't have to collapse. Building damage is the principal cause of social and economic impacts of earthquakes. The level of building damage observed in most world earthquakes does not need to continue. Building collapse or unacceptable damage occurs because they are either poorly engineered or constructed or they do not incorporate earthquake resistant engineering knowledge that is known.

About one-third of the world's population lives in earthquake prone areas, most in buildings with little seismic resistance compared to what we know. The *only* way to make them safer in an earthquake is to make their buildings safer. Engineering practice is very good in some parts of the world, very poor in others. Where it is poor, buildings suffer damage and collapse even in small and moderate earthquakes. In strong earthquakes, poorly engineered buildings collapse by the hundreds, sometimes thousands, causing substantial death and damage that takes years to recover from. Where there is good practice, moderate earthquakes often cause little damage and large earthquakes principally cause damage not large loss of life.

The International Association for Earthquake Engineering (IAEE) believes that by improving engineering worldwide, buildings will be much, much safer. Better structures will mean fewer deaths, less damage, and quicker recover. Therefore, the IAEE has founded the World Seismic Safety Initiative, a long-term international cooperative project that will advance earthquake engineering knowledge and spread that knowledge worldwide.

The World Seismic Safety Initiative (WSSI) has three goals:

- Distribute state-of-the-art earthquake engineering information throughout the world.
- Incorporate experience and research findings into recommended practices and codes in earthquake-prone countries.
- Advance engineering knowledge through problem-focused research.

The World Seismic Safety Initiative will make the best engineering knowledge in the world available to every engineer in the world. Through seminars, data banks, newsletters, translations, and more, the WSSI will give engineers everywhere the knowledge they need to design and build safe buildings¹.

The WSSI will sponsor projects, both research and hands-on, that will answer crucial engineering questions such as how to design and construct earthquake resistant structures, and sponsor education, training and technology transfer efforts to bring the

1 The term "building" is used in a general sense and includes not only buildings, but all the structures in a community—pipelines, towers, industrial facilities, highways, power poles, and bridges, to name a few. It is also mean to include structures that are engineered and traditional (non-engineered) construction.

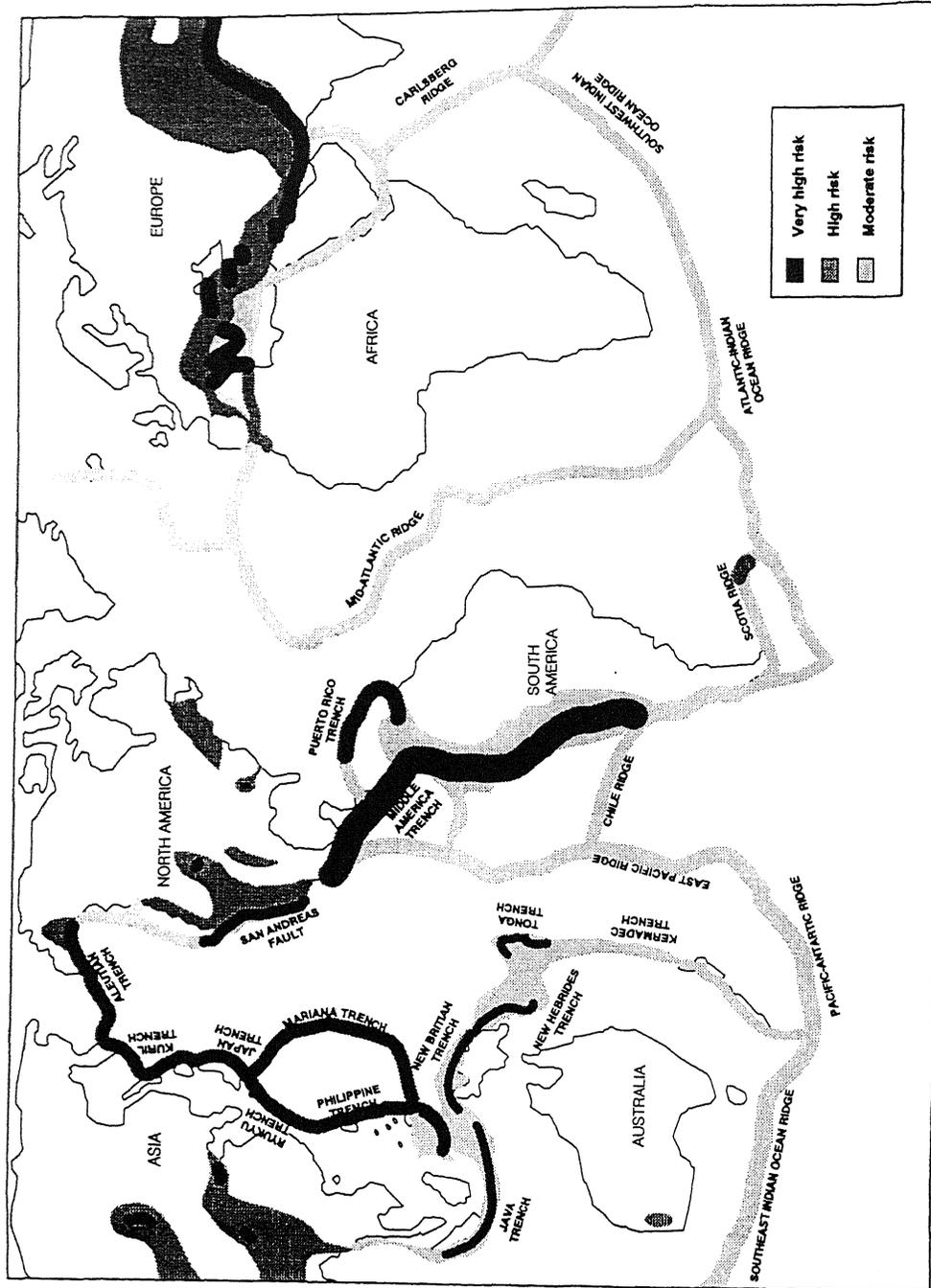


Figure 1. World seismic risk map roughly indicating the principal regions of the world. Because of its scale the map does not show many small regions with substantial seismic risk.

benefits of existing and new knowledge on earthquake resistant design to those who need it. These are questions that must be answered if we are to make buildings safer—questions that require coordinated, global effort to address.

The World Seismic Safety Initiative (WSSI) was endorsed by delegates to the Tenth World Conference on Earthquake Engineering in Madrid, Spain, in July 1992. Delegates pledged to support, participate in, and enlist their countries' participation in WSSI activities. As the World Seismic Safety Initiative begins, these and other engineers worldwide will form the backbone of this unprecedented global effort whose end result will be better engineering knowledge and safer buildings.

The problem of poor buildings requires urgent attention. If we don't act *now*, the situation will only get worse. Unsafe buildings will continue being built. Existing buildings will not be strengthened adequately. Population increases will have more people living and working in unsafe buildings.

What will the result of a vigorously implemented WSSI be? It will be a future with fewer deaths and injuries, and less damage and social and economic disruption from earthquakes than we anticipate if nothing at a world level is done. People and their property will be safer. The benefits will begin immediately with better engineering response and repair actions following earthquakes. The long term benefits can be substantial when building codes and practices around the world incorporate safer standards and building practices, when new buildings are designed and constructed to be earthquake safe, and existing highly hazardous buildings are strengthened to levels that provide adequate safety.

We cannot wait. The time to act is *now*.

Making Buildings Safer

The problem of poor buildings is preventable. And making buildings safer is the only way man can make a future safe from earthquakes. What must be done if we are to have a future safe from earthquakes?

1. Determine the earthquake risk in different parts of the world.
2. Correct unsafe conditions in existing structures.
3. Make sure that all new construction is earthquake-safe.
4. Prepare and plan for response to and recovery from earthquakes.

The problem is that few nations have the financial and technical resources to do all that could be done to satisfy these needs. The challenge to each nation and each community is to find the right mix of actions that will manage the earthquake risk as an integrated strategy, consistent with their resources and aspirations. Balancing present actions against future vulnerability is at the heart of controlling the consequences of earthquakes. Having **the knowledge and capability necessary to select the best mix of actions** is fundamental to making these choices.

World Seismic Risk

Building damage cause almost all deaths and injuries in earthquakes. Worldwide, earthquakes cause almost 60% of deaths due to natural disasters—over half a million deaths in the last two decades. Millions more were injured or rendered homeless. Property damage was well over \$100 billion. All of these factors can be *significantly* mitigated by making buildings safer.

While large earthquakes are widely publicized, moderate earthquakes occur far more often and cause more cumulative life loss and property damage than do the very large ones. Scientists expect about a 1,000 earthquakes of low to moderate magnitude for every major earthquake that occurs, see Table 1.

TABLE 1. Typical ratios of occurrence for potentially damaging earthquakes by their magnitude range, e.g., for every magnitude 8 or greater earthquake about 1000 earthquakes in the magnitude range 5-6 are expected.

Magnitude	Number
8 or greater	1
7-8	16
6-7	150
5-6	1,000

Population increases, combined with poorly built structures and a general lack of pre-earthquake hazard reduction planning, put a staggering number of people at risk worldwide. In fact, the adoption of modern construction has, in some areas, decreased structural safety compared to that of traditional building styles. Table 2 shows the current population of several cities in seismically active areas and their projected population in the year 2000. It is clear that the world's earthquake risk is growing, not decreasing.

TABLE 2. Representative metropolitan areas in seismically active regions that have experienced major earthquakes in the past and will likely experience major damaging earthquakes in the future.

City	Population in	
	1975	2000
Mexico City	11.6	26.0
Tokyo	16.4	20.0
Jakarta	5.5	13.0
Los Angeles	9.0	11.0
Beijing	8.9	11.0
Lima	3.7	9.1
Algiers	1.6	5.1
Baghdad	2.7	7.5
Naples	3.8	4.3
San Francisco	3.0	5.0

A well-engineered and constructed building can survive a severe earthquake quite well, but a poorly engineered or constructed building cannot survive even a moderate earthquake without damage or collapse. And those that are not designed at all, but constructed by its occupants are even vulnerable in small earthquakes. The earthquakes detailed in Table 3 are all earthquakes that better-engineered buildings would have survived with little or no damage.

Table 3. Two representative small to moderate earthquakes that have caused major damage.

Location	Magnitude	Year	# People killed
Agadir, Morocco	5.7	1960	12,000
Managua, Nicaragua	6.2	1972	5,000

Millions of people live in earthquake country throughout the world, and it is clear that the only way they can be safer from earthquakes is for buildings to be safer. The only question is *when* earthquakes will occur, not *if* they will occur. If we do not act now, we are trusting only to chance—and chance will not save lives or property. It is time to act. Earthquakes respect our actions, not our words.

The World Seismic Safety Initiative

The World Seismic Safety Initiative will sponsor projects that will:

- Transfer technology
- Develop professional engineering practice
- Address crucial research questions that constitute gaps in our knowledge of how structures respond to earthquakes and how they can be built to withstand them.

The WSSI will provide an organizational framework capable of raising financial resources, undertaking large-scale projects that require multi-national effort, and providing encouragement to apply better engineering practices.

The WSSI will take advantage of the fact that much of the engineering² knowledge and research capability necessary to improve building practices exists today, although in scattered places around the world. The WSSI will use these resources, match them to needs, and, hopefully, create a forum in which a quantum leap in engineering knowledge and its application will be made.

The goals of the World Seismic Safety Initiative are:

1. Improve the distribution of earthquake engineering information and knowledge so that engineers can design and construct earthquake-safe buildings.
2. Improve earthquake engineering practices for all types of construction by incorporating experience and research findings into codes and recommended practices in earthquake-prone countries.
3. Advance engineering knowledge through problem-focused earthquake engineering research.

Projects in these three areas are long-term in nature. They will require different time frames and levels of effort, depending on their complexity. Though the World Seismic Safety Initiative has been started as part of the International Decade of Natural Disaster Reduction (IDNDR), its term will extend far beyond the term of the IDNDR. The IDNDR is described in the addendum to this paper.

Startup Phase. During the startup phase, initial focus will be on the first goal—spreading state-of-the-art engineering knowledge around the world. Practice improvement and research projects will be planned and begun. In earthquake-prone countries, practices and codes that do not ensure building safety will be targeted for change. The grassroots outreach that will be necessary to involve local engineers in practice improvement activities and in incorporating these practices into local, regional, and national practices and codes will begin.

² The term "engineering" is used to include not only engineering but all other scientific and professional disciplines engaged in identifying, mitigating, responding to, and recovering from earthquakes.

Middle Phase. During the middle phase, research and practical projects will begin. The committee work necessary for improving recommended practices and incorporating them into codes will begin. The information networks set up (newsletters, seminars, data banks, etc.) to distribute information will be in operation.

Final Phase. The final phase of the WSSI will see the results of the research and practical activities. These results will be made available around the world through the information networks established in earlier phases.

Figure 2 graphically shows how soon various types of projects can be expected to show benefits.

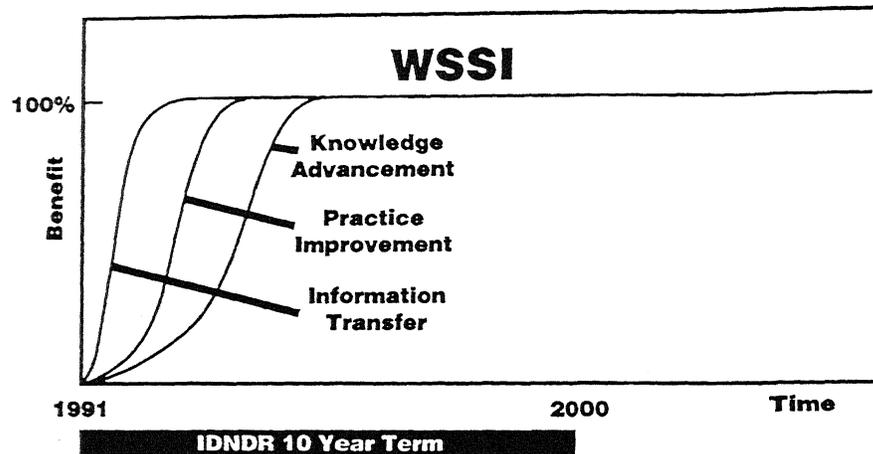


Figure 2. WSSI activities will yield benefits for an extended period of time, well beyond the term of the IDNDR. The chart shows how WSSI activities are expected to yield results that will significantly improve the safety of the world's buildings.

WSSI Benefits

The information transfer that will begin immediately will result in an immediate improvement in engineering practice around the world. Enacting adequate standards and codes will permanently increase the standards of safety to which buildings are designed and constructed. Research results will answer important questions that will enable engineers to build structures that can withstand earthquake forces. This cooperative effort will become a body of knowledge that can be distributed and used worldwide. The practical effect will be safer buildings.

WSSI Will Address Worldwide Seismic Safety Needs

The World Seismic Safety Initiative is driven by ten high-priority seismic safety needs:

1. Distribute state-of-the-art engineering knowledge so that engineers the world over will have the knowledge necessary to build structures that can withstand earthquakes.
2. Make engineering resources—data, technology, library resources, etc.—available at little or no cost to every engineer in the world.
3. Develop reliable ways to characterize earthquake hazards and risks.

4. Bring together the world's experts to develop a consensus on what constitutes adequate building performance in an earthquake.
5. Determine how these desired performance levels can be achieved, including both structural and land use approaches.
6. Develop technical measures to reduce damage to existing buildings.
7. Ensure the continued operation of critical facilities during and following earthquakes.
8. Respond effectively to emergency needs during and after earthquakes.
9. Restore social and economic activity promptly after earthquakes.
10. Reconstruct damaged buildings, facilities, and communities safely and economically.

The World Seismic Safety Initiative will sponsor and endorse projects that advance these goals. Most projects will require international cooperation, but many earthquake-prone countries have unique problems that must be solved by the professionals in that country. The WSSI will also address these unique problems and enhance them with international resources where necessary.

WSSI Will Not Reallocate, But Increase, Resources

The WSSI will not replace, but will supplement and extend participating nations' research and hazard reduction activities by: 1) Developing new supporters of earthquake hazard reduction efforts from among international institutions; 2) Seeking increased commitment from institutions now supporting earthquake hazard reduction efforts; 3) More effectively organizing national efforts to achieve common international goals. The WSSI will not build installations or purchase testing equipment, but will encourage use of existing facilities and equipment.

WSSI Will Propose Problem-Focused Projects

The World Seismic Safety Initiative will achieve its goals through problem-focused projects that have specific objectives and work plans. Projects that will advance the goal of making buildings safer include:

1. Prepare scenarios for earthquake hazards and selected specific earthquakes that will characterize the ground motion, site failure, and damage likely at different locations.
2. Develop land use programs to reduce seismic risk.
3. Provide technical expertise to regions that want to address seismic safety issues, especially following an earthquake when reconstruction and development planning are at issue.
4. Organize an international strike force of technical experts who can quickly obtain perishable data at an earthquake site and develop a system by which this information can be rapidly published worldwide.
5. Develop courses that will train engineering teachers in: (a) State-of-the-art engineering knowledge and construction techniques; and (b) How to incorporate this information into their curricula.
6. Disseminate knowledge about ways to improve the seismic capacity of traditional, non-engineered housing.
7. Collect ground and building motion recordings following an earthquake and distribute them worldwide without delay.
8. Develop education and training programs for skilled and unskilled builders.
9. Prepare an ongoing series of short (8-12 pages) engineering briefs, each one

detailing one aspect of earthquake engineering practice or construction detailing and distribute them worldwide.

10. Develop engineering design practices for retrofit of existing buildings that can be incorporated into local and national building codes.
11. Initiate engineering and research projects on how to upgrade reinforced concrete buildings that are not earthquake-safe.
12. Develop and distribute a comprehensive library of engineering and earthquake engineering articles, research, and resources.
13. Overcome the language barrier by providing dictionaries, translations and technical resource documents for materials published in different languages.

Some of the international resources that will be brought to bear on the above projects include: knowledgeable individuals, special facilities, new technologies, and many strong national engineering organizations. Project proposals may be prepared by any interested party. Projects must be directed toward practical actions that improve seismic safety in wide regions of the world.

The above projects are merely an indication of what could and should be undertaken by the WSSI. The WSSI will provide the world leadership that will enable engineers to work together on activities that will make the world's buildings safer.

We cannot wait any longer to make our environment safer. The time to act is *now*.

WSSI Will Endorse Other Activities

The IAEE believes that many worthwhile projects may receive more favorable consideration by their national funding organizations with WSSI endorsement. The Board of Directors may endorse individual projects that are consistent with the goals of the WSSI, even though these projects are not formally a part of the WSSI.

In addition to the projects the WSSI will be sponsoring directly, it will also serve as a vehicle for IAEE member national organizations to organize and conduct programs that will improve seismic safety and advance technical understanding of earthquake engineering principles. The WSSI will facilitate IAEE members' joint actions, not be a substitute for their individual efforts. The WSSI will also advise public and private institutions on seismic safety issues, and endorse actions taken by other national or international organizations in support of WSSI goals.

WSSI Will Encourage Individual Country Initiatives

While WSSI projects are expected to be international in character, WSSI can and will assist national groups in obtaining financial and technical support for their national activities. WSSI recognizes that initiatives conducted by individual countries are the primary means of improving that country's seismic safety. Most countries have unique problems that are best solved by professionals from that region. Therefore, WSSI will encourage and assist national groups as they develop seismic safety projects for their individual country's needs.

Implementation Plan

The World Seismic Safety Initiative has been established by the IAEE as a not-for-profit corporation. It is governed by an eight-member Board of Directors. A Managing Director will operate the WSSI, and Working Groups will be established to conduct individual projects. Figure 3 shows an organizational chart for the WSSI. The IAEE Executive Committee will oversee Board activities.

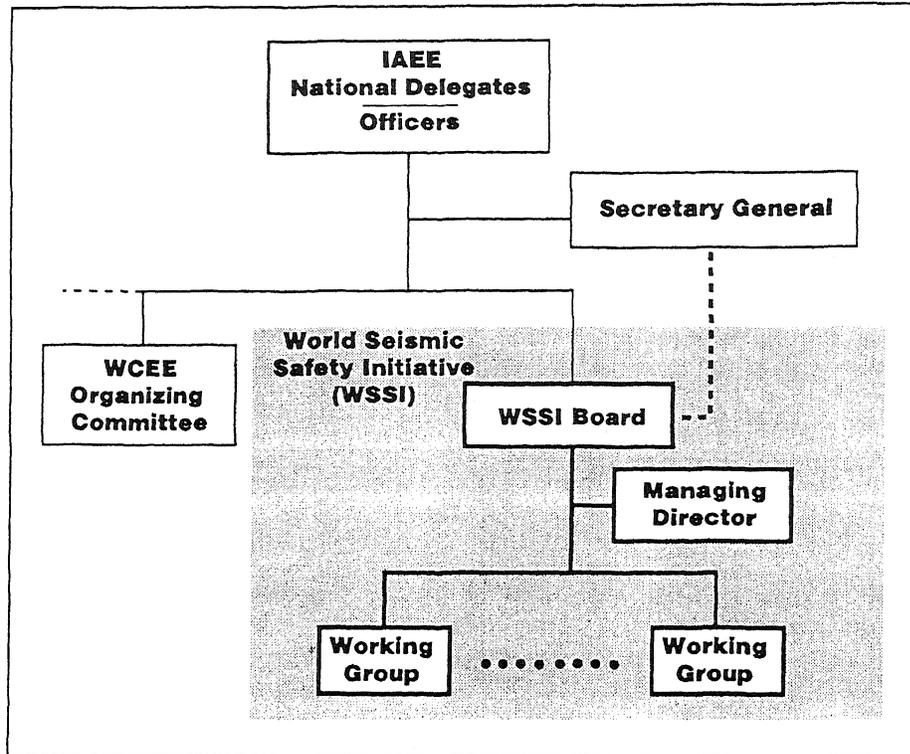


FIGURE 3. Organizational chart for the IAEA and WSSI. The shaded area indicates the new WSSI organization.

The WSSI Board of Directors will be responsible for the operations of the WSSI. The Board of Directors consists of eight members. They will serve three-year terms, and can be reappointed once. Two members are appointed each year. The Board of Directors will establish policy, hire a Managing Director, approve projects, retain consultants, enter into contracts, and otherwise conduct the affairs of the WSSI. The Board of Directors will delegate authority to the Managing Director for conduct of day-to-day WSSI operations. The Board, however, will retain ultimate responsibility for all WSSI activities and will have primary responsibility for obtaining the financial resources required to carry out the goals of the WSSI.

WSSI Managing Director

The WSSI Managing Director will be recruited and appointed by the Board of Directors and will be under contract to the Board. The WSSI Managing Director will be a recognized world leader who has the technical expertise and standing in the engineering community to lead major international research and practice development programs.

The duties of the Managing Director will include:

1. Provide leadership and management direction to the WSSI.
2. Prepare and maintain program plans, budgets, and schedules for the WSSI.
3. Encourage worldwide participation in the WSSI activities and programs.
4. Assist the Board in obtaining the resources required to implement the WSSI.
5. Appoint Working Group leaders and members.

6. Assist Working Group leaders in obtaining resources necessary to conduct their projects.
7. Provide policy guidance for conduct of Working Group activities.
8. Provide for coordination and cooperation among Working Groups.
9. Represent the WSSI before international organizations.
10. Prepare quarterly reports to the Board and annual reports to the IAEE.
11. Coordinate publication of WSSI products and provide for their wide dissemination.
12. Foster cooperation among IAEE members.

Working Groups

Working Groups are the backbone of the WSSI. A Working Group will be formed for each project undertaken by the WSSI. A project proposal may be prepared by any interested party. In order to be eligible for support or endorsement by WSSI, a project must be directed towards practical actions that improve seismic safety in wide regions of the world. Proposals, must at a minimum, contain the following information:

1. Objectives to be achieved.
2. Technical work plan and schedule of how objectives will be achieved.
3. Who will participate, including their technical expertise, qualifications, and time commitments.
4. Financial resources required and a plan for obtaining these resources.
5. Endorsement by the national societies of the participating countries.

Proposals will be reviewed by the Board of Directors. A proposal will be selected based on its quality and whether it contributes to overall WSSI goals. Working Groups will be established for approved projects. The Managing Director may appoint additional members to the Working Groups. Working Group membership must ensure multi-national participation of qualified and knowledgeable individuals. Approved proposals will generally involve individuals and activities in several cooperating countries.

Working Group leaders will be responsible for the conduct of their project, subject to review and approval by the Managing Director, and will perform all appropriate management functions. The Managing Director will be a member of all Working Groups.

Financing the World Seismic Safety Initiative

The World Seismic Safety Initiative will require financial resources to achieve its goals. There are two financial requirements: first, funds to support the administrative operations of the WSSI, and second, funds to support individual Working Group projects.

The financial and administrative plan for the WSSI is based on increasing worldwide resources for earthquake engineering research and practice improvement activities. The WSSI will expand the resources available by developing new funding sources, and will not reallocate financial resources from other earthquake engineering activities.

It will be the responsibility of the Managing Director, working with the Working Group leaders and the Board of Directors, to develop the resources needed to successfully complete approved projects. This will entail the financial, personnel, and facilities commitments necessary to complete specific projects approved by the Board of Directors. The Board of Directors will act as advocates for Working Groups so that local funding can be facilitated. It is possible that, after the initial start-up period, the WSSI will have the

resources to directly fund projects. Initially, however, sponsorship will be sought for each individual project. Depending on the type of project to be supported, the following funding sources will be explored:

1. National organizations that sponsor earthquake engineering projects involving participants from several countries.
2. Internationally-oriented agencies that sponsor cooperative projects. This includes both international organizations and national governmental agencies.
3. International financial institutions. These include institutions that provide development loans and grants and those that are major writers of international property and casualty insurance and reinsurance.
4. Philanthropic foundations, including those that have special purposes and those that are affiliated with large industrial organizations.
5. Private for-profit corporations that have a stake in improving performance of constructed facilities, primarily manufacturing and construction firms.

The most difficult financial period for the WSSI will be the start-up phase. All of the above categories of sponsors are likely to consider providing support for specific projects, but only after the WSSI is an operating organization with an active Board of Directors and a Managing Director.

ADDENDUM

International Decade for Natural Disaster Reduction

On December 11, 1987, the United Nations General Assembly approved Resolution 42/169 and voted to designate the 1990s as the International Decade for Natural Disaster Reduction (IDNDR). In the last 20 years, the United Nations reports that natural disasters have claimed almost three million lives and have adversely affected more than 800 million people worldwide. From 1900-1976, earthquakes were responsible for almost 60% of deaths due to natural disasters (see figure below). By creating the International Decade for Natural Disaster Reduction, the United Nations has recognized that natural disasters are an international concern, a part of life that must be planned for and prepared for by those in areas at risk.

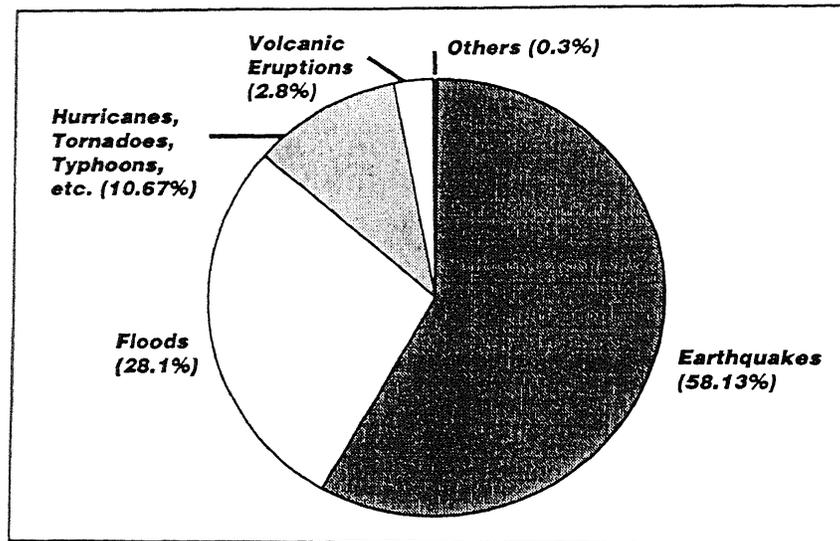


Figure 4. Estimates of the total number of lives lost due to natural disasters from 1900 to 1976, not including drought. Source Science Today, July 1980

In enacting the IDNDR, the Secretary-General of the United Nations called on the people of the world, as well as their governments, to work towards greater security against natural disasters. "The governments of all countries should participate actively in the Decade by educating and training their citizens and [should] make available the power of science and technology to reduce disaster losses..."

The concept of an International Decade for Natural Disaster Reduction was first proposed by Dr. Frank Press, President of the U.S. National Academy of Sciences in his keynote speech at the Eighth World Conference on Earthquake Engineering in San Francisco in 1984. This was followed, over the next four years, by preparation of a plan by the U.S. National Research Council, its consideration by the international community, and its further development and ultimate adoption by the United Nations. Recently, the United Nations (General Assembly Resolution 44/236, March 20, 1990) formulated the international framework of action for the IDNDR, the policy measures to be taken at the national level, actions for the United Nations system, and defined financial

arrangements. The resolution also encourages non governmental organizations to participate in the IDNDR.

The International Association for Earthquake Engineering (IAEE) recognizes the IDNDR as an opportunity to launch the World Seismic Safety Initiative (WSSI). The goal of the WSSI is to improve the built environment so that it can better withstand earthquakes. By establishing the World Seismic Safety Initiative, IAEE is calling the world engineering community to action, to participate in improving the built environment by working together—as no single individual or nation can do—to address problems common to all seismically active areas.

**PROPOSAL ADOPTED AT THE SPECIAL THEME SESSION
ON "THE INTERNATIONAL DECADE FOR NATURAL DISASTER REDUCTION"
DURING THE TENTH WORLD CONFERENCE ON EARTHQUAKE ENGINEERING
IN MADRID, SPAIN (21 JULY, 1992)**

*The participants of the Special Theme Session on the IDNDR,
Considering that earthquakes are among the most fearsome of natural disasters, and
Bearing in mind that the damage and destruction caused by earthquakes can be substantially
reduced through the appropriate application of earthquake engineering, and*

*Recognizing that there is an urgent worldwide need, particularly in developing countries, to
improve the dissemination of knowledge, to improve earthquake engineering practice through
the incorporation of experience and research findings, and to advance knowledge through prob-
lem-focused research, and*

*Recognizing also that addressing this need requires the concerted effort of the world commu-
nity, and*

Emphasizing that timely implementation is crucial, and

*Expressing their appreciation for the work done by the IAEE/IEERI panel members, which pre-
pared the working paper "A Time for Action: The World Seismic Safety Initiative" for the Spe-
cial Theme Session on the IDNDR,*

*1. Request the authority of the International Association for Earthquake
Engineering to endorse the concept of the World Seismic Safety Initiative;*

*2. Request the authority of the International Association for Earthquake
Engineering to authorize the IAEE Executive Committee*

*(a) To establish the World Seismic Safety Initiative (WSSI) as a
legal entity according to the guidelines set forth in the
aforementioned document;*

*(b) To appoint an interim committee to perform such duties as
required to establish the WSSI until the members of the
Board of Directors are appointed;*

*(c) To appoint initial members, giving consideration to
geographical distribution and with terms staggered, to
the Board of Directors of the WSSI;*

*3. Recommend that the document "A time for Action: The World Seismic
Safety Initiative" be published as an official publication of the IAEE.*