# IDNDR Aichi/Nagoya International Conference 1993 JAPAN

— Disaster Management in Metropolitan Areas for the 21st Century —

# REPORT

# Introduction

As the fourth year of the International Decade for Natural Disaster Reduction (IDNDR), 1993 was characterized by the unprecedented frequency of natural disasters worldwide. Japan experienced an earthquake off-Kushiro, another southwest off-Hokkaido, and landslides in Kagoshima and neighboring prefectures. Numerous disasters occurred overseas, including extensive flooding along the Mississippi and an earthquake in India. Throughout the year, recognition of the significance of IDNDR was further heightened.

The IDNDR Aichi/Nagoya International Conference 1993 JAPAN was held in Nagoya, Aichi Prefecture from November 1 to 4 under the theme "Disaster Management in Metropolitan Areas for the 21st Century." The contemporary theme drew the interest of many specialists; the number of participants totaled 1,095 from 45 countries and 9 international organizations.

The conference opened with a keynote speech followed by a plenary session in which a summary of the worldwide loss of life and property from natural disasters was presented. Three sessions developed the discussion by focusing on disaster prevention in metropolitan areas, such as urbanization and natural disasters, potential loss of urban infrastructures from natural disasters, and local disaster management and people's participation. On the final day, recent research was introduced and a session was held to seek means of disaster prevention in metropolitan areas. The conference concluded with the adoption of the concluding statement of the IDNDR Aichi/Nagoya International Conference 1993 JAPAN.

In the concluding statement, the current situation concerning 'complex emergency" was recognized; namely, that such factors as post cold-war political, economic and social upheavals, population growth, poverty and environmental destruction work in synergy with natural disasters to magnify their effect. Eight specific items and recommendations that the national and local government bodies and researchers should address were presented. Four propositions were put forth to ensure the success of the World Conference in 1994 and IDNDR activities in general.

It was a great cause of joy for us organizers to make this conference successful. We believe that this conference greatly contributed to the progress of future disaster prevention initiative in metropolitan areas as well as of promotion of IDNDR.

Four events and a fundraising campaign were conducted in conjunction with the conference; these, sponsored by the Aichi Prefectural Government and City of Nagoya were intended to enhance public awareness of disaster prevention. These events ended in a great success thanks to a large number of citizens' participation in the events and their contribution to the fundraising campaign.

This report summarizes the discussions and recommendations made during the IDNDR Aichi/Nagoya International Conference 1993 JAPAN. We hope that this report will be of value to those involved in the field of disaster prevention and to the United Nations' World Conference on Natural Disaster Reduction scheduled for on May 1994 in Yokohama

Finally, we would like to express our deep appreciation to many people who made efforts to hold this conference, enthusiastic participants and all who worked to make this conference a success. We would like to solicit your further cooperation in promoting worldwide disaster prevention efforts.

March 1994

Japanese Government Headquarters for the IDNDR
Aichi Prefectural Government
City of Nagoya
Japan National Committee for the IDNDR
The World Bank
United Nations Centre for Regional Development

# Contents

# General Information

■ **Title & Theme :**
IDNDR Aichi/Nagoya International Conference 1993 JAPAN
- Disaster Management in Metropolitan Areas for the 21st Century -

■ **Dates** : 1 - 4 November 1993

■ **Venue** : Nagoya Congress Center and Nagoya Kanko Hotel

■ **Objective :**
In support of IDNDR, the conference will encourage the exchange of ideas and experiences toward the preparation of strategies for disaster preparedness, mitigation and recovery in metropolitan areas, whose vulnerability to natural disasters is acute. It is expected that effective measures for implementing disaster management policies, especially in the developing countries, will be discovered and that the IDNDR will be further promoted.

■ **Participants :**
A total number of participants: 1,095
* Overseas participants: 131 (45 countries, 9 international organizations)
* Japanese participants: 964
From
- Government organizations: 77
- Local Governments: 415
- Organizations concerned with disaster prevention: 236
- Universities: 49
- Private enterprises and others: 187

■ **Organized by :**
Japanese Government Headquarters for the IDNDR
Aichi Prefectural Government
City of Nagoya
Japan National Committee for the IDNDR
International Bank for Reconstruction and Development (The World Bank)
United Nations Centre for Regional Development (UNDDSMS/UNCRD)

■ **With the Cooperation of :**
The Japanese Red Cross Society
United Nations Development Programme (UNDP)
United Nations Centre for Human Settlements (UNCHS-Habitat)

■ **Supported by :**
Japan International Cooperation Agency (JICA)
Japan Broadcasting Corporation (NHK)
Japan Newspaper Editors and Publishers Association
The National Association of Commercial Broadcasters in Japan
International Federation of Red Cross and Red Crescent Societies
Department of Humanitarian Affairs (DHA)/IDNDR Secretariat of the United Nations
United Nations Educational, Scientific and Cultural Organization (UNESCO)
Department of Humanitarian Affairs (DHA)/ Geneva Office
Economic and Social Commission for Asia and the Pacific (ESCAP)
World Meteorological Organization (WMO)
Gifu Prefectural Government
Shizuoka Prefectural Government
Mie Prefectural Government

■ **Official Languages** : English and Japanese
(Simultaneous interpretation was provided.)

## Planning Committee

| | | |
|---|---|---|
| ■ Chairman : | Shinjiro Mizutani | Professor, School of Science, Nagoya University |
| ■ Members : | Keizo Okabe | Professor, Faculty of Literature, Teikyo University/ Professor Emeritus, University of Tokyo |
| | Hideki Kaji | Director, United Nations Centre for Regional Development (UNDDSMS/UNCRD) |
| | Tsuneo Katayama | Professor, Institute of Industrial Science, University of Tokyo |
| | Hiroyuki Kameda | Professor, Disaster Prevention Research Institute, Kyoto University |
| | Tadateru Konoe | Vice-President, The Japanese Red Cross Society |
| | Fusetsu Takagi | Professor, School of Engineering, Nagoya University |
| | Naotsune Taga | Professor, School of Engineering, Nagoya University |
| | Atsushi Takeda | Director, Earth Science Research, National Research Institute for Earth Science and Disaster Prevention (NIED), Science and Technology Agency/Member, Scientific and Technical Committee for the IDNDR |
| | Takao Takeda | Professor, Institute for Hydrospheric Atmospheric Science, Nagoya University |
| | Kenzo Toki | Professor, Faculty of Engineering, Kyoto University /President, Japan Society for Natural Disaster Science |
| | Yasuo Nishiyama | Associate Professor, Faculty of Engineering, Nagoya Institute of Technology |
| | Yoshio Fukao | Director/Professor, Earthquake Research Institute, University of Tokyo President, the Seismological Society of Japan |
| | Yoshiro Yanagawa | News Commentator, Japan Broadcasting Corporation (NHK) |
| | Hiroshi Higashiura | Deputy Director General, Disaster Relief and Social Welfare Department, Operation Sector, The Japanese Red Cross Society |

## Promoting Committee

| | | |
|---|---|---|
| ■ Chairman : | Reiji Suzuki | Governor, Aichi Prefectural Government |
| ■ Vice-Chairman : | Takeyoshi Nishio | Mayor, City of Nagoya |
| ■ Members : | Jiro Kubota | Director, IDNDR Promotion Office, Disaster Prevention Bureau, National Land Agency |
| | Hideji Aoyama | Director-General, Department of General Affairs, Aichi Prefectural Government |
| | Nobuyoshi Tsuji | Commissioner, Chief Executive, Fire Department, City of Nagoya |
| | Hideki Kaji | Director, United Nations Centre for Regional Development (UNDDSMS/UNCRD) |
| | Tsukasa Tago | Director-General, Security Department, Aichi Prefectural Police Headquarters |
| | Yoshihiko Ishida | Vice-Chairman, Aichi Prefectural Fire Fighters Association |
| | Atoo Tsunooka | Chairman, Aichi Association of City Mayors |
| | Toshio Kato | Chairman, Aichi Association of Town and Village Mayors |
| | Nobutaro Hattori | Chairman, Nagoya Municipal Association of Chairmen of Ward Administrative Cooperation Committee |
| | Hiromichi Yamamoto | Director-General, Nagoya Branch, Japan Broadcasting Corporation (NHK) |
| ■ Auditors : | Masayuki Saji | Treasurer, Aichi Prefectural Government |
| | Atsuo Horiuchi | Treasurer, City of Nagoya |

# Concepts of the Sessions

Each session of this conference was held based on the following concepts.

**Keynote Speech : The IDNDR - Its Importance for Metropolitan Areas**

Speaker : James P. Bruce
Chair, Canadian Climate Program Board
Chair, Scientific and Technical Committee for the IDNDR (STC)

The International Decade for Natural Disaster Reduction has resulted in a number of general initiatives which will contribute to reducing loss of life and property damage. In addition, a number of IDNDR projects pay special attention to the problems posed in limiting disaster losses in large urban areas. A brief description is given of the more significant of these initiatives.

The IDNDR, in its second half, will provide a valuable framework for increasing efforts to protect our cities from disaster losses. The outcome of the Nagoya Conference, focusing on cities, will be an important preparatory input to the mid-term World Conference on Natural Disaster Reduction, Yokohama, May 1994 and help to shape the second 5 years of the IDNDR program.

**Plenary Session : Worldwide Loss of Life and Property from Natural Disasters**

Coordinator : Kenzo Toki
Professor, Faculty of Engineering, Kyoto University
President, Japan Society for Natural Disaster Science

The world is now coming to a turning point; the urban population, only one-seventh of the world population 100 years ago, will soon surpass the rural population. Over the past 100 years, this heavy urban population growth has dramatically increased the potential for loss of life and property from natural disasters.

Concrete estimates of possible loss from disasters are essential to the development of effective disaster responses. These estimates must consider the varied requirements of particular nations and regions.

In the Plenary Session, we will discuss the potential for loss of life and property in urban areas by studying quantitative analysis, evaluations, and statistics from past catastrophes.

**Session 1 : Urbanization and Natural Disasters**

Coordinator : Yasuo Nishiyama
Associate Professor, Faculty of Engineering,
Nagoya Institute of Technology

Demographic currents, cultural transitions, technological innovation, changes in values and social norms, and shifts in political structures have all contributed to the evolution of city As part of this evolutionary process, planning decisions are normally made according to criteria that focus on the daily lives of the population; these criteria include amenity, efficiency and economy

Assuring safety during times of emergency, however, has not always been a major consideration. When a city is hit by a large-scale natural disaster, the impacts is severe because of the dense concentration of population and urban facilities. For this reason, it is necessary that an effective disaster-preparedness plan be formulated that encompasses urban development and land use. It is clear that this aspect should receive close attention particularly in the planning of an urban megalopolis.

Session 1 will address, from various perspectives, the identification of the vulnerability caused by urbanization and the disaster-preventive consideration in formulating a sustainable urban planning and controlling urban development projects through specific administrative approaches to reduce disasters.

**Session 1-1 : Increase in Vulnerability Accompanying Rapid Urban Development**

Chairman . Atsushi Takeda
Director, Earth Science Research, National Research Institute for Earth Science and Disaster Prevention (NIED), Science and Technology Agency
Member, Scientific and Technical Committee for the IDNDR

In recent years, the severe and rapid concentration of population in many developing countries has prevented city administrators from formulating appropriate disaster-prevention plans. The implementation of uniform urbanization programs that disregard local differences in disaster risk has left many cities vulnerable to disaster. In recent years, natural disasters have frequently occurred in developing countries; these disasters have indicated the characteristics of urban disasters. Specifically, the emergence of settlements in high-risk areas; the wholesale transplantation of urban technology from developed countries; the delay in infrastructure improvement; and the loss of a sense of community in cities have intensified the risks and have resulted in damage not only to the physical environments but also to the societies and economies of developing countries. The extent of these problems may endanger these countries' economic foundations.

Topics for this session will cover the kinds of risks that exist in mega-cities and how these risks lead to urban damage in accordance with the changes in urban activities. Information on the impact of urban disasters will also be exchanged.

**Session 1-2 : Urban Planning to Reduce Damage from Natural Disasters**

Chairman . Hideki Kaji
Director, United Nations Centre for Regional Development (UNCRD)

Urban planning has tended to emphasize such goals as the efficiency, economy and amenity of urban systems; safety, however, has been relatively neglected. This tendency has been more prevalent in developing countries, where economic development and social advancement have been rapid. It is therefore necessary to assess quantitatively the disaster risk inherent in cities, including the socioeconomic impact of a disaster, as the first step in implementing the appropriate anti-disaster measures needed in urban development Relevant assessment techniques, such as micro-zoning and hazard mapping, are now available. With such techniques, it is possible to devise disaster-prevention plans, applied through comprehensive urban planning programs, that specify appropriate building standards and dictate changes in land-use control. Furthermore, it is necessary to formulate policies that are based not only on economic need but also on long-term disaster prevention, such as resistance to hazards and damage reduction.

In this session, approaches to assessing disaster risk and devising ideal urban planning programs based on such assessments will be reported and discussed, with appropriate application to the current situations surrounding the world's cities.

**Session 2 : Potential Loss of Urban Infrastructures from Natural Disasters**

Coordinator . Hiroyuki Kameda
Professor, Disaster Prevention Research Institute, Kyoto University

Disaster preparedness and emergency response in metropolitan areas with concentrated populations and social infrastructures should focus primarily on the protection of the lives and the property of the inhabitants, and on protection of urban functions, including the political, economic, administrative, information, and cultural infrastructures.

The long-term stagnation of the core of a mega-city would have a serious social and economic impact on the surrounding area, the nation, and possibly the world. In devising a response to such a risk, the following two major areas should be considered: (1) The main arteries of a metropolis comprise its lifeline system, which includes delivery, processing, transportation, and communication networks that extend throughout the urban area. If the lifeline system remains vulnerable to a

natural disaster, the area will sustain serious damage and loss; (2) Major public facilities such as schools and hospitals can serve as important centers for evacuation, aid, and early restoration of a city.

In Session 2, we will discuss concrete measures for protecting the social infrastructure and reducing hazards in urban areas to maintain the essential functions of a city core following a natural disaster.

### Session 2-1 : Protection and Early Restoration of Lifeline Facilities, Including Transportation Networks

Chairman : Fusetsu Takagi
Professor, School of Engineering, Nagoya University

Lifeline systems constitute indispensable infrastructures for socio-economic activities and citizens' lives in large modern urban regions. Lifelines are constructed to form networks extending throughout urban areas, providing thereby a means to overcome the barriers of space and time efficiency arising from the growth of mega-cities. To realize this objective, lifeline systems are composed of central node facilities and complex link network facilities. The failure of a single component of a lifeline system can cause a complete malfunction of the entire system. Therefore it is necessary for lifeline systems to be highly resistant to such system failures, and it is also important for these systems to be able to limit the effects of component failure, if any, to local regions. To achieve these objectives, it is necessary not only to enhance the physical resistance of individual components but also to implement disaster countermeasures developed on the basis of system management to maintain lifeline functions such as supply-disposal, transportation, and communications. They also include the capability of avoiding cascade effects in the event of a disaster; being equipped with emergency substitute systems; and being equipped with measures for fast physical and functional restoration.

Under these notions, this session will deal with measures for disaster resistance and efficient recovery processes of lifeline systems. This will include avoiding cascade effects and substitute systems during emergencies. Discussion will focus on design concepts and emergency management.

### Session 2-2 : Disaster Management in Public Facilities, Including Schools and Hospitals

Chairman : Naotsune Taga
Professor, School of Engineering, Nagoya University

Activities at key public facilities under disaster emergencies are categorized along a time axis into emergency response, restoration, and reconstruction. Emergency responses activated immediately following the outbreak of a disaster are of vital importance in that their implementation greatly affects the total amount of damage sustained. In particular, rescue, evacuation and refuge, and emergency medicare are important and to achieve them, quick and efficient activities taken by administrative authorities, fire departments, and medical organizations are essential. In addition, enough space must be provided for evacuation and refuge at public facilities such as schools For this reason, core public facilities such as administrative buildings, hospitals, and schools in large heavily populated urban regions should be utilized as the "bases for disaster operations." This will require the incorporation of higher levels of disaster protection in these critical facilities compared to general standards.

It should be noted that such places as hospitals and schools which accommodate the physically handicapped and their supporters must be firmly protected against the effects of disasters. This point should be well recognized in policy decisions. In developing countries this problem will be more serious than in developed countries because of the insufficient number of these key facilities.

This session will deal with disaster protection of these critical public facilities. Discussion will focus on two aspects: their safety assurance and their roles as bases for disaster operations.

**Session 3 : Local Disaster Management and People's Participation**

Coordinator : Hiroshi Higashiura
Deputy Director General, Disaster Relief and Social Welfare Department, Operation Sector, The Japanese Red Cross Society

When a metropolitan area is hit by a natural disaster, it is vitally important that the response of local administrations be supported in a spirit of mutual assistance by community members and corporate initiatives as well as by the volunteer activities of NGOs

It is, however, difficult to establish practical local support networks due to the diminishing initiatives of people in urban areas in alleviating the impact of a disaster The massive population inflow to urban areas has fragmented community networks, and many residents are unfamiliar with their living environments.

It is therefore essential that information on the potential hazards and losses of disasters be provided to community members and corporations to increase awareness of and initiatives for disaster prevention and management.

In Session 3, we will discuss effective measures for local disaster management, information control, people's participation in disaster countermeasures, and the role of volunteer activities

**Session 3-1 : Information Control and Disaster Management by Local Administrations**

Chairman : Keizo Okabe
Professor, Faculty of Literature, Teikyo University
Professor Emeritus, University of Tokyo

Local administrations play a principal role in reducing loss of life and property damage due to disasters. They must take the responsibility for formulating and implementing a local disaster preparedness plan. It is also important that information on existing risks be disseminated among individuals and private enterprises

Session 3-1 will be devoted to reports on the lessons learned from past disasters and to discussion of effective strategies for local disaster management and information control.

**Session 3-2 : People's Participation and Disaster Management**

Chairman : Yoshiro Yanagawa
News Commentator, Japan Broadcasting Corporation (NHK)

It is vitally important that community members, in a spirit of mutual assistance, prevent the spread of damage caused by a disaster. There is, however, a lack of community spirit in urban areas where many residents are unfamiliar with their surroundings.

Session 3-2 will comprise paper presentations and discussions on the importance of people's participation in disaster management and the role of civil defense organizations, NGOs and volunteers.

**Session 4 : Recent Research on Disasters and Reducing Disasters**

Coordinator : Takao Takeda
Professor, Institute for Hydrospheric Atmospheric Sciences, Nagoya University

Thorough research and examination of abnormal natural phenomena and potential hazards, comprehensive responses to early warning, and reducing natural disasters according to the characteristics of each urban area are essential for effective disaster management.

In Session 4, we will discuss new disaster reduction systems for the coming century by taking advantage of computer simulations and worldwide observation networks, such as satellites for detecting floods and earthquakes.

**Session Reports and Concluding Remarks**

Coordinator : Shinjiro Mizutani
Professor, School of Science, Nagoya University

Based on the session reports, we will comprehensively discuss the effective countermeasures against the natural disasters and summarize the concluding remarks on "Disaster Reduction Measures in Metropolitan Areas for the 21st Century" which include proposals and advice to the administrative organizations, research institutes, and local inhabitants.

# Background, Characteristics and Results of the Conference

## 1. Background of the Conference

### (1) Background

To achieve sustainable growth and ensure a comfortable and safe life by reducing the damage of natural disasters is a common concern shared by all people in the world. At the 42nd United Nations General Assembly in 1987, all countries adopted unanimously a resolution to designate the 1990s as the "International Decade for Natural Disaster Reduction (IDNDR)" The resolution states that the purpose of the IDNDR is to reduce the loss of human lives and property damages caused by natural disasters throughout the world, particularly in developing countries, through concerted international action, and calls on all countries of the world to make every possible effort in preparing for natural disasters and reducing the various damages caused by natural disasters through international collaboration and cooperation. Nevertheless, natural disasters such as earthquakes, floods and volcanic eruptions have continued unabated, causing serious damage to metropolitan areas in particular.

Many people have been attracted to urban areas for economic reasons in recent years, and disaster preparedness has not caught up with rapidly growing urbanization As a result, increasing numbers of people are living in areas susceptible to disaster. In developing countries in particular, disorderly development is accelerating expansion of slum districts, which, in addition to the self-perpetuating cycle of population growth, population over-concentration in urban areas and poverty, is increasing disaster vulnerability. Almost every year, developing countries suffer a huge loss of human life from natural disasters.

Urban social and economic activity is supported by lifeline systems - of supply, disposal, transportation, communication, and the like - that encompass wide metropolitan areas. If only one part of such a system is disrupted, a tremendous impact is felt throughout the urban area. Moreover, the huge population influx into the city has diluted urban dwellers' solidarity and sense of belonging and of global citizenship, resulting in ineffectual disaster mitigation activities. Thus, the social transformation that is taking place along with urbanization has increased disaster vulnerability.

Urban areas are sites of dense convergence of economic infrastructure and population. Consequently, the damage caused by disasters is not limited to urban areas alone and often spreads over the entire nation or even beyond national boundaries. It is, therefore, all the more important to decrease the disaster hazards to major cities. In developing countries in particular, the social and economic damage caused by disasters is much greater than that experienced by developed countries. Among the major political issues, disaster prevention should be afforded a high priority in the interests of sustainable development.

Against this background, we concluded that it was necessary to convene an international conference to discuss and exchange information on efforts made in metropolitan areas worldwide to research and advance the technology of urban disaster prevention and actual urban disaster prevention projects. Doing so could be expected to promote, aggressively and efficiently, disaster mitigation measures in the world's metropolitan areas Therefore, we held an international conference with the theme Disaster Management in Metropolitan Areas.

### (2) Preparations for the conference opening

In preparation for the conference, a Planning Committee comprising experts on disaster mitigation was established in the Disaster Prevention Bureau of the National Land Agency. The Planning Committee met six times to determine the conference program and overseas guest speakers and to examine the presentations. And Promoting Committee comprising representatives from the Aichi Prefectural Government, the City of Nagoya, the National Land Agency, and UNCRD was established in Nagoya to carry out secretariat work, site management, event management and the like.

Announcements and circulars were distributed to United Nations organs related to disaster prevention, the bureaus in charge of IDNDR in each country, the administrative divisions and disaster-prevention divisions of national authorities, universities, research institutes, private enterprises, and NGOs in Japan. The Promoting Committee carried out public relations initiatives centering around Aichi

Prefecture and City of Nagoya such as the publishing of posters. Through these PR activities, the conference was widely promoted and registration was encouraged.

## 2. Characteristics of the Conference

### (1) Participants from a wide range of fields

As the theme of the conference was contemporary and relevant, many people of diverse backgrounds participated, such as disaster-prevention administrators, researchers, NGO representatives and international organizations from around the world. Their valuable experience in disaster prevention was shared and mutual recognition was deepened.

Participants from 45 nations and 9 international organizations gathered to discuss the current state of natural-disaster preparedness, disaster mitigation measures and public awareness of disaster prevention in various parts of the world. Varied viewpoints and knowledge were shared by and among the participants.

### (2) Comprehensive approach to disaster management in metropolitan areas

In the keynote speech, plenary session and four sessions, participants discussed the topics from a wide perspective, presenting reports on the current situation regarding natural disasters and on the disaster management in metropolitan areas. The discussion included urban planning, lifeline systems, important public facilities, administrative response, citizen participation and advanced technologies.

Reports and discussions were not limited to academic subjects, as participants discussed lessons based on experience and practical issues concerning disaster mitigation. Significantly, the issue of disaster management in metropolitan areas was deepened from a wide perspective.

### (3) Reports based on cases in developing countries

Many issues were introduced, such as volcanic eruptions in the Philippines and resultant earthquakes; flood control in Dhaka; an earthquake in Cairo; lessons from the Loma Prieta earthquake; Mexico City's disaster reduction initiatives; flood surveillance and forecasting systems in China; reports on recent disasters in developing countries; and efforts to mitigate disasters. Presentations on these issues were considered particularly important, as the frequent disasters hitting developing countries are more likely to lead to catastrophe due to urbanization and population growth.

## 3. Results

Reports and discussion results presented during the keynote speech, plenary session, and general sessions were summarized in the Session-Reports and Concluding Remarks held on the afternoon of November 4. The accompanying concluding statement was unanimously adopted.

This concluding statement was widely distributed at the 48th UN General Assembly held in New York in November 1993. It was also presented to the 5th IDNDR Science and Technology Committee held in Geneva the same month.

This summary statement also included an appeal to the World Conference of IDNDR scheduled for May 1994 in Yokohama, under the auspices of the United Nations. The World Conference is expected to reflect the results of this conference.

# Concluding Statement of the IDNDR Aichi/Nagoya International Conference 1993 JAPAN

The IDNDR Aichi/Nagoya International Conference 1993 JAPAN was held in the city of Nagoya, Aichi prefecture from November 1 to 4, 1993, the fourth year of the International Decade for Natural Disaster Reduction, under the theme of "Disaster Management in Metropolitan Areas for the 21st Century." A total of 1,100 experts involved in the field of disaster prevention participated in the conference, from 46 countries and 9 international organizations, including administrators, researchers, and representatives of NGOs.

Disaster occurring in metropolitan areas can have a grave impact on other domestic and international communities and their economies as well as urban residents. Moreover, metropolitan areas have become increasingly vulnerable to disasters as a result of such developments as the over-concentration of population and economic infrastructure, the transformation in urban lifestyles and a lack of citizens awareness. It should be recognized that disaster prevention in urban areas is one of the most important factors contributing to sustainable development in developing countries where urbanization is rapidly advancing.

In confronting these realities, the conference participants presented reports and exchanged views on the following agenda items: disaster risks and the impact of damage in metropolitan areas; disaster countermeasures in urban planning; disaster countermeasures for lifeline facilities, schools, and hospitals, the response of local governments, and information strategies; citizen participation in volunteer activities; advanced disaster research and prevention; and other topics.

It was recognized in this conference that natural disasters now lead to "complex emergencies" in which political, social and economic turmoil in the post cold war era, population growth, poverty, environmental degradation and other factors aggravate the effects of natural disasters, resulting in compounded damage. In developing countries in particular, population and capital inflows rapidly concentrate in urban areas. In this respect, it was pointed out that the risks of a "complex emergency" have become increasingly serious.

As well, it was recognized that the impact of such disasters could destroy an economic infrastructure, and that ethnic, cultural and economic diversity should be considered when extending humanitarian aid to disaster victims. Furthermore, it was pointed out that, in addition to a need for relief measures for disaster-stricken areas, there exists a need to prepare for disasters by improving methods of prediction, forecast, and prior-assessment of hazards with the latest scientific technologies.

Through the reports and discussions undertaken in this conference, specific topics and suggestions were proposed to central and local governments and researchers and other actors. The following major proposals were put forth:

1. To facilitate risk assessment in urban areas where population, capital and resources are concentrated, convenient methods which meet the current needs and capabilities of each region and country should be developed and disseminated.

2. Planners of development projects must take into account "disaster hazards" when formulating and implementing their plans. To raise the awareness of residents, politicians and others, accurate data should be provided through effective presentation methods. For example, the cost of disaster damage should be estimated and methods of visual data analysis should be developed and widely used.

3. The minimum level of functioning of lifeline systems to be maintained during an emergency and their positions in the disaster prevention plans should be clarified, taking into account the characteristics of the nation or region. It is necessary to strengthen the strategic structures of lifeline systems.

4. To ensure the safety of hospitals, schools and other important public facilities and to maintain their functioning as bases in an emergency, effective regulations on building design should be established and disseminated. The awareness of administrators of such facilities and citizens should be enhanced through education on the importance of ensuring the security of critical facilities.

5. The importance of disseminating information and maintaining a communications system during an emergency was pointed out. The accuracy of information monitoring systems concerning meteorology, river levels, volcanoes and other phenomena should be improved and the swift transmission of such information to citizens should be encouraged.

6. Voluntary disaster prevention activities by private volunteers are important. Volunteer disaster prevention organizations and their activities should be encouraged and efficiently utilized. The conditions surrounding these activities should be improved. Particularly, the necessary staff should be assembled and trained regularly in communication, first-aid and other specialized fields, thereby encouraging their organizational activities. Their priority should be clarified in the disaster prevention plan. Affiliations with public organizations should be strengthened.

7. Global networks and global projects related to disaster monitoring, prediction, and prevention technologies should be established with an emphasis on international cooperation.

8. Adequate technologies for predicting disasters should be developed. These technologies should reflect the properties of natural phenomena as well as the geographical and societal features of the regions and cities in which they will be applied.

The International Decade for Natural Disaster Reduction began in 1990. In order to review the previous activities and to formulate future action programs, the World Conference on Natural Disaster Reduction is scheduled for Yokohama from May 23 to 27, 1994. This World Conference is highly significant, as it will accelerate the progress of future IDNDR activities.

The participants of IDNDR Aichi/Nagoya International Conference 1993 JAPAN make the following appeals to ensure the success of the coming World Conference.

1. To enhance assistance of donor countries and international organizations to disaster prevention systematically, in light of the insufficient involvement of developing countries in disaster-prevention activities.

2 To promote IDNDR international demonstration projects and other disaster-prevention projects, which will be completed during the IDNDR and which are expected to attain significant success.

3. To establish a network comprising national governments, international organizations, universities and other establishments to exchange information and data for use in the assessment and planning of disaster reduction. A center serving as the core of such a network should be set up.

4. Although emergency aid should be targeted at supporting self-help efforts, a system should be formulated that responds swiftly to a disaster emergency with humanitarian assistance.

We expect that above appeals will be taken up by the World Conference on Natural Disaster Reduction and that the conference will achieve much progress

It is impossible to prevent natural hazards from occurring; however, it is possible to minimize their damage through the application of wisdom and effort.

We hope that every nation, local government, researcher, international organization and others will make further efforts to cooperate in the activities of IDNDR, with the aim of solving the problems and realizing the proposals addressed in this conference. To achieve success, each of us must fully recognize the importance of disaster prevention.

We hope that disaster countermeasures for metropolitan areas will be swiftly and efficiently developed, with this conference as a steppingstone, and that the damage caused by natural disasters will be steadily, if not totally, alleviated.

November 4, 1993
IDNDR Aichi/Nagoya International
Conference 1993 JAPAN

# Schedule at a Glance

| Date | 10:00 11:00 12:00 13:00 14:00 15:00 16:00 17:00 | Venue |
|---|---|---|
| Nov. 1 (Mon.) | 11:30 **Registration** — 13:25 **Opening Ceremony** — 14:15 **Keynote Speech** — 15:15 **Plenary Session** Worldwide Loss of Life and Property from Natural Disasters — 17:15 | NCC Century Hall |
| Nov. 2 (Tue.) | **Session 1** URBANIZATION AND NATURAL DISASTERS | NCC Room 402 403 |
| | 9:30 Session 1-1 Increase in Vulnerability Accompanying Rapid Urban Development — 12:30 Lunch Break — 14:00 Session 1-2 Urban Planning to Reduce Damage from Natural Disasters — 17:00 | |
| | **Session 2** POTENTIAL LOSS OF URBAN INFRASTRUCTURES FROM NATURAL DISASTERS | NCC Room 302–305 |
| | Session 2-1 Protection and Early Restoration of Lifeline Facilities, Including Transportation Networks — Lunch Break — Session 2-2 Disaster Management in Public Facilities, Including Schools and Hospitals | |
| | **Session 3** LOCAL DISASTER MANAGEMENT AND PEOPLE'S PARTICIPATION | NCC Century Hall |
| | Session 3-1 Information Control and Disaster Management by Local Administrations — Lunch Break — Session 3-2 People's Participation and Disaster Management | |
| Nov. 3 (Wed.) | **Tour to Disaster Prevention Facilities for Overseas Participants** | |
| Nov. 4 (Thu.) | 9:30 **Session 4** RECENT RESEARCH ON DISASTER AND REDUCING DISASTERS — 12:30 Lunch Break — 14:00 Session Reports and Concluding Remarks — 16:30 Closing Ceremony — 16:45 | Nagoya Kanko Hotel Nago-no-Ma (3F) |

NCC……Nagoya Congress Center