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Q. 1.1 Please provide a list of major disasters your country has experienced during the past five (5) years.

A. N.A.

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Q. 1.2 What were the impacts of the above listed disasters? (i.e. direct damage to assets vs. long-term damage to the local economy, health, etc)

A. N.A.

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Q. 1.3 Which measures were taken to reduce the impact of the disaster? What measure will be taken to avoid impacts of future disasters?

A. (1) The Japan Meteorological Agency (JMA) issues warnings when a serious disaster is anticipated because of storm, snowstorm, heavy rain, heavy snow, storm surge, high waves, and/or flood.

(2) Immediately after the occurrence of an earthquake, JMA quickly announces information on its epicenter, magnitude and the distribution of seismic intensity, and tsunami advisory/warning to the public through mass media as well as to the disaster prevention organizations.

(3) The Director-General of JMA forwards the Earthquake Prediction Information to the Prime Minister when appropriate. Then, the Prime Minister issues a Warning Statement based on the JMA information.

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Q. 1.4 Do you believe there can be improvements in preparing for natural hazards in your country and in preventing negative impacts of such hazards? What sort of improvements?

A. Yes. More accurate meteorological information (forecasts and warnings) that is brought by advancing observing system and forecasting system can meet more adequately the diversified requirements from disaster prevention activities.

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Q. 1.5 Do you believe the IDNDR helped your country to give greater attention to disaster reduction?

Yes No Explain

A. Yes. The World Conference on Natural Disaster Reduction in Yokohama 1994 helped us realize the critical situation over the world, in particular in developing countries affected by natural disasters and necessities of international cooperation in the field of disaster mitigation.

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Q. 1.6 Please provide an example(s) an achievement(s) incorporating successful preventive approaches which you consider a "success story".

A. N.A.

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Q. 2.1 Please provide a brief statement of national accomplishment and/or describe current activities related to the achievement of the IDNDR Programme Targets:

(a) Comprehensive national assessment of risks. If an assessment exists, is it published or codified?

A. N.A.

(b) Structured mitigation plans. Do documented comprehensive national disaster management plans exist? Plans at national, provincial and local levels, if available, will be useful to describe the progress.

A. N.A.

(c) Ready access to global, regional, national and local early warning systems. Can you provide examples of early warning practices and demonstrated successes?

A. N.A.

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Q. 2.2 What obstacles do you face which prevent the accomplishment of the Decade targets? What are your recommendations to best overcome these obstacles?

A. N.A.

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Q.2.3 To what extent have you established and implemented educational and information programmes aimed at generating public awareness? What methods of information dissemination have been utilized?

A. JMA is promoting the national awareness of disaster prevention by (1) holding regional seminars on natural disaster and "Weather Festivals" and (2) providing general public with meteorological information materials.

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Q. 2.4 Have you liaised with policy makers and major groups, such as local authorities, NGOs, and the media, in order to ensure support for and effectiveness of disaster reduction programmes?. Please describe your activities.

A. JMA has the established communication systems used for disseminating information to disaster prevention organizations and a broadcasting organization designated by the Meteorological Service Law.

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Q. 2.5 To what extent have you worked with other sectors in incorporating disaster reduction activities into their planning (i.e. insurance, banking, private sector and developed agencies)?

A. (Blank)

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Q. 2.6 The Decade provides an international arena for information exchange as well as an extensive international network of partners, how have these inputs contributed to achieving the goals of the Decade?

A. (Blank)

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Q. 3.1 Please describe important achievements in your region/subregion on disaster preparedness and reduction since the inception of the IDNDR.

A. (1) JMA started in 1995 to provide numerical prediction data and observational data through the RSMC (Regional Specialized Meteorological Centre) Data Serving System to the Members of the Typhoon Committee.

(2) JMA assisted Fiji to established the RSMC Nadi, Tropical Cyclone Centre, and Bangladesh to strengthen its weather warning system.

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Q. 3.2 Do you take part in any regional/subregional mechanism on disaster reduction? If yes, what type of mechanism is it there any linkage to IDNDR? Please describe.

A. As one of leading organs of the ESCAP/WMO Typhoon Committee, JMA is operating RSMC Tokyo-Typhoon Center that is providing typhoon-affected countries in the western North Pacific with meteorological products including satellite imagery and typhoon track forecasts.

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Q. 3.3 Have you participated in any regional/subregional events related to IDNDR? If yes, what are the benefits obtained from these events?

A. Yes. JMA held regional events such as International Training Seminar on Typhoon Monitoring and Forecasting in the western North Pacific in Tokyo 1998 and Training Course on the Use of Satellite data for Typhoon Monitoring and Forecasting in Tokyo 1998 and JMA staff and participants from Asian countries obtained the common understanding on preventing typhoon disasters.

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Q. 3.4 Is there any need to further strengthen regional/subregional cooperation in disaster preparedness and reduction? If yes, Please explain.

A. Yes. It is necessary that we put an emphasis on improving accuracy of typhoon track forecasts issued from RSMC Tokyo-Typhoon Center to the extent possible.

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Q. 4.1 Is there a designated government authority for disaster reduction activities? If yes, is this authority's commitment to prevention embodied in the government structure, priorities, budget and legislation?

A. Yes. Disaster Countermeasures Basic Act designates a certain number of disaster-prevention-organizations (national and local levels) in order to ensure the harmonized activities.

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Q. 4.2 Have budget lines for disaster reduction and preventive activities been made available in your government's budget?

A. Yes.

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Q. 4.3 Have legislative authorities (national, states or local level) established legal frameworks for the implementation of disaster mitigation measures (i.e. land-use planning, water and forest management, building codes?)

A. Yes. For example, the Disaster Countermeasures Basic Act and the Large-Scale Earthquake Countermeasures Act were established.

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Q. 4.4 Have academic institutions and professional schools in disciplines such as engineering, geology, agriculture, architecture, urban planning, business or public administration incorporated in their curricula applicable disaster-reduciton concepts and measures? Please provide examples.

A. The Disaster Prevention Research Institute of Kyoto University carries out researches on the prevention or reduction of natural disasters such as earthquakes, volcanic eruptions, landslides, floods, storm surges, and strong winds.

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Q. 4.5 Have networks been build in order to aid in the transfer and application of existing knowledge and technology, information dissemination and international collaboration? Please briefly describe.

- A. (1) JMA has been operating RSMC Data Serving System in order to provide National Meteorological Services in East Asia with numerical prediction data and observational data through the Internet.
- (2) Under the framework of WMO, JMA provides Asian countries with numerical modeling products and services for environmental emergency response when nuclear facility accidents and radiological emergencies occur or are likely to occur.

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Q. 4.6 Who are your principal working partners? Do they represent an interdisciplinary approach to disaster reduction?

- A. They are the Ministry of Transport, the Japanese Maritime Safety Agency, the Ministry of Construction, the National Land Agency, the Fire and Disaster Management Agency and the National Police Agency .

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Q. 5.1 Given your experience since the inception of the Decade and the new challenges of disasters in the 21st century, please provide comments as to what you believe are the necessary future requirements needed to successfully carry disaster reduction activities into 21st century. Listed below are some criteria for your consideration.

- A (1) JMA has been sophisticating numerical models putting an emphasis on predicting localized heavy precipitation that causes serious disaster.
- (2) JMA is going to introduce a simulation method for tsunami generation and propagation in its new tsunami forecast system.
- (3) JMA is strengthening the nationwide network of seismic observations by collecting seismic intensity data from more than 3000 seismic intensity observation stations of local governments in addition to about 600 stations of JMA.

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Q. 5.2 Please identify priorities in international cooperation, such as the establishment of regional/subregional warning systems, disaster preparedness, technology transfer, financial resources, technical assistance, etc. which you deem pertinent in order to sustain disaster reduction activities in the future.

A. N.A.

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Q. 5.3 What sort of national or international measures would you like to be put in the place in the 21st century.

A. N.A.



## Country Report

**Country:** Japan

**Agency:** Japanese Government Headquarters for IDNDR

(Secretariat: National Land Agency, Disaster Prevention Bureau)

### A) Disaster-reduction Measures in Japan

#### 1. Description of disasters

Japan is located in the typhoon belt, and is also on the Pacific Rim earthquake and volcano belt. This belt extends along the edge of the Pacific Plate and is an area of consistently high seismic and volcanic activity. Because of this, Japan is subject to many natural disasters each year, including earthquakes, typhoons, torrential rains, heavy snowfall, debris flow, land slides, and volcanic eruptions.

The number of those dead or missing from natural disasters in Japan had been in decline since around 1960, but in the 1990's the country has been struck by frequent large and devastating disasters, including several large typhoons, torrential rains, the eruption of Mt. Unzendake (1991, 44 people dead or missing), the Hokkaido Nansei-Oki Earthquake and subsequent *tsunami* (1993, 230 people dead or missing), the Great Hanshin-Awaji Earthquake (1995, 6,433 people dead or missing). Several years during the decade have recorded more than JYE (Japanese yen) 1 trillion in damage to facilities and structures from natural disasters.

#### 2. Disaster-reduction laws, organizations and plans

##### (1) Legal framework

The Disaster Countermeasures Basic Act was passed in 1961 as a result of a typhoon that hit the Bay of Ise in 1959 and caused more than 5,000 deaths. The act aimed to remedy inadequacies in the old disaster-reduction framework and promote comprehensive, systematic efforts by the government to reduce disasters. It had five main thrusts: i) to clarify disaster-reduction responsibilities and implement programs to prepare for, provide emergency response to, and recover from disaster; ii) to promote comprehensive administrative efforts towards disaster-reduction; iii) to promote systematic administrative efforts towards disaster-reduction; iv) to provide public financial resources to cope with disaster; and v) to set out procedures for proclaiming disaster emergencies.

There are other laws besides the very general Disaster Countermeasures Basic Act that impinge on disaster-reduction efforts, including the flood control laws, the Disaster Relief Law, and the Large-scale Earthquake Countermeasures Act.

##### (2) Disaster-reduction organizations

Overseeing efforts at the national level is the Central Disaster Prevention Council, which is chaired by the prime minister. The meeting is responsible for formulating the Basic Plan for Disaster Prevention that serves as the foundation for disaster-reduction programs. It also discusses other important issues related to disaster-reduction. There are, in addition, twenty-nine designated government agencies and thirty-seven designated public institutions

(including Nippon Telegraph and Telephone and all of the electric power companies) that are charged with formulating Operational Plans for Disaster Prevention and implementing disaster-reduction programs.

At the prefectural and municipal levels, there are prefectural and municipal Disaster Prevention Councils. Membership comes from local government agencies, local offices of designated government agencies, police departments, fire departments, designated public institutions and other organizations. These meetings are responsible for implementing disaster-reduction programs according to the Local Plans for Disaster Prevention which they also prepare, and other plans.

Should disaster strike and conditions warrant, the municipal government will first create a Headquarters for Disaster Countermeasures to provide emergency relief. If conditions warrant action at the prefectural level, a Prefectural Headquarters for Disaster Countermeasures will also be created. At the national level, should the scale of the disaster or other conditions warrant designation as a "major disaster" for which national emergency measures is required, a Headquarters for Major Disaster Countermeasures will be set up and comprehensive emergency measures provided, as set out in the Disaster Countermeasures Basic Act.

### (3) Disaster Reduction Plans

The Disaster Countermeasures Basic Act obligates agencies and institutions involved in disaster-reduction to create, in advance, the following disaster-reduction plans:

#### a) Basic Plan for Disaster Prevention

Created by the Central Disaster Prevention Council, this plan defines basic guidelines for the establishment of disaster-reduction organizations and systems, promotion of disaster-prevention programs, timely and appropriate recovery and reconstruction from disaster, pursuit of scientific and technical research into disaster-reduction, and items of priority in Operational Plans for Disaster Prevention and Local Plans for Disaster Prevention.

#### b) Operational Plans for Disaster Prevention

Formulated by designated government agencies and designated public institutions in accordance with the Basic Plan for Disaster Prevention, these plans define measures to be taken to reduce the disasters for which the agency or institution is responsible or to which it may be subject.

#### c) Local Plans for Disaster Prevention

Formulated by the prefectural and municipal Disaster Prevention Councils or heads of municipalities in accordance with the Basic Plan for Disaster Prevention and local conditions, these plans contain specific measures to be taken by local disaster-reduction institutions.

### (4) Changes to the system during the International Decade for Natural Disaster Reduction

Below are the major changes to the Japanese disaster-reduction system that have taking place during the International Decade for Natural Disaster Reduction.

a) Legislative measures resulting from the Great Hanshin-Awaji Earthquake

The Great Hanshin-Awaji Earthquake resulted in enormous damage to the residential and social infrastructure of the area. Laws were therefore speedily amended and passed to provide support both for the rebuilding of victims' lives and for the reconstruction of industry and urban services. The basic law for recovery from the quake is the "Law Concerning Basic Guidelines and Organizations for Reconstruction from the Great Hanshin-Awaji Earthquake" (passed in February 1995, effective immediately). This law defines the basic principles for reconstruction from the Great Hanshin-Awaji Earthquake, mandates the establishment of a "Headquarters for Reconstruction of the Hanshin-Awaji Area" as the government organization to oversee these efforts, and urges speedy reconstruction in the affected area. There were fifteen other laws related to the earthquake passed within a period of just over two months, including laws for special tax breaks, a "Special Fiscal Assistance Law," and a "Law Concerning Special Measures for Reconstructing Urban Areas in the Disaster Zone."

b) Immediate disaster response system (including the strengthening of the crisis management functions of the Cabinet)

Reflecting the experiences through the Great Hanshin-Awaji Earthquake, measures have been taken to provide more timely information on the overall scale and extent of disaster at the initial stages by reinforcing the primary information gathering system for large-scale disasters and establishing a chain of communications leading up to the prime minister himself. The specific decisions taken were:

- i) To gather early information from local sources and to utilize aircraft, ships and other sources in information-gathering activities;
- ii) To clarify information liaisons so as to establish a speedy chain of reporting leading up to the prime minister's official residence;
- iii) To gather primary information from public institutions and report that information to the prime minister;
- iv) To provide the equipment necessary for the transmission of information between competent ministries and agencies and the prime minister's official residence; and
- v) To convene emergency meetings of competent officials in the prime minister's official residence and to concentrate information there.

The ministries and agencies involved in disaster-reduction also strengthened their systems to provide for speedier information gathering.

In addition, the Cabinet established the position of Deputy Chief Cabinet Secretary for Crisis Management within the Cabinet Secretariat (April 1998) to strengthen its crisis management functions. The officer's job is to make the judgments for the Cabinet on measures needed to respond to emergency situations, and to provide relevant government ministries and agencies with coordination regarding initial measures.

c) Special Measure Law on Earthquake Disaster Prevention

The Special Measure Law on Earthquake Disaster Prevention (passed June 1995, effective July), which came out of the experiences of the Great-Hanshin-Awaji Earthquake, was established to protect the lives, health, and property of the people of Japan from earthquake damage. The law mandates the creation of "Five-year Plans for Urgent Earthquake

Disaster preparedness Projects" for all prefectures in the country, provides special central-government funding for projects based on these plans, and sets up a system for conducting surveys and research on earthquakes.

d) Revisions to the Disaster Countermeasures Basic Act

One of the biggest problems seen in the Great Hanshin-Awaji Earthquake was that vehicles abandoned on the roads and obstruction of non-emergency vehicles became a major impediment to the emergency vehicles sent to provide primary care. This resulted in amendments to the Disaster Countermeasures Basic Act (passed June 1995, effective September) that provide for more stringent traffic regulation during times of disaster, define compulsory measures to be taken by the police, Self-Defense Forces, and fire departments in dealing with abandoned vehicles and the like, and define compensation for any physical damages resulting therefrom.

Other revisions to the Disaster Countermeasures Basic Act have been made (passed December 1995, effective immediately), including i) a relaxation of the criteria for establishing emergency disaster headquarters and enhancements to headquarters' organizations; ii) stronger powers for the chair of the Headquarters for Emergency Disaster Countermeasures (the prime minister); iii) definition of the legal status of local disaster headquarters; iv) provision of the authority to engage in relief activities to personnel of the Self-Defense troops dispatched for disaster relief; v) necessary disaster-reduction measures to cover volunteer activities, aid to those most vulnerable to disaster, and acceptance of overseas assistance; and vi) measures to provide for mutual assistance among local public agencies and organizations.

e) Revisions to the Basic Plan for Disaster Prevention

The Basic Plan for Disaster Prevention, which was created in 1963 and partially amended in 1971, provides the basis by which disaster-reduction measures have been enhanced. Subsequently, disaster-reduction has been enhanced principally by the Essentials of Earthquake Countermeasures for Large Cities and General Principles Relating to Countermeasures for Earthquakes Directly Below the Southern Kanto Region.

However, in July 1995 the plan underwent major revisions to reflect subsequent changes in socioeconomic conditions. The new Basic Plan for Disaster Prevention clarifies the roles of the central government, public institutions, local governments and organizations, and residents in basic, required disaster-reduction programs, providing specific and practical guidelines for disaster-response in chronological order. To provide more accessible references for specific kinds of disasters, it contains chapters on programs for earthquakes, wind and flood damage, and volcanic damage, as well as a chapter on items that all disasters have in common.

Though the revisions are broad, they can be categorized as follows: i) utilization of various means to quickly gather information including the extent of the damage; ii) enhancements to the emergency disaster-response system, including establishment of a broad-based response system; iii) assurance of emergency transport; iv) enhancements to the stockpile and procurement systems and assurance of appropriate supplies; v) enhancements to the living environments of places of refuge and provisions for speedy supply of emergency temporary housing; vi) measures for the acceptance of overseas assistance and volunteer activities; and vii) cares for those most vulnerable to disaster. Further amendments in June

1997 provided for response to large accidents such as marine fires, air disasters, and road disasters.

f) Law concerning the Promotion of Seismic Rehabilitation of Buildings

Given the damage caused by the Great Hanshin-Awaji Earthquake we find it essential to improve the seismic performance of existing buildings which do not conform to "New Seismic Performance Standards" in order to protect lives and property against damage resulting from collapsed buildings. A law on ways to improve the seismic rehabilitation of buildings was enacted in 1995 to this end.

g) Creation/revision of General Principles Relating to Countermeasures for Earthquakes Directly Below the Southern Kanto Region

To provide for effective earthquake countermeasures in Southern Kanto Capital Region, where population and many socio-economic functions are concentrated and headquarters of various functions should be kept from disasters, the Central Disaster Prevention Council approved the "General Principles Relating to Countermeasures for Earthquakes Directly Below the Southern Kanto Region" in August 1992. Prior to this, in December 1988, it had also approved an "Outline of Emergency Countermeasure Activities against Earthquake Disaster in the Southern Kanto Region." Both documents were revised in June 1998 in light of the experiences of the Great Hanshin-Awaji Earthquake and the action plan was settled for medical care and conveyance of patients to save seriously injured persons soon after the earthquake.

h) Act for Densely Inhabited Areas Improvement for Disaster Mitigation

The "Act for Densely Inhabited Areas Improvement for Disaster Mitigation" was passed in 1997 and aims to comprehensively promote enhancements to densely inhabited areas that pose a danger from the perspective of disaster-reduction because they have the potential to start large conflagrations during major earthquakes.

i) Creation of a handbook for strengthening *tsunami* countermeasures

"Handbook for Strengthening *Tsunami* Countermeasures in Local Plans for Disaster Prevention" was created with the intention of encouraging communities to formulate stronger *tsunami* measures by providing suggestions on basic guidelines and formulation procedures for *tsunami* disaster-prevention plans. The "*Tsunami* Damage Forecasting Manual" similarly provides procedures for creating *tsunami* penetration area forecast maps.

j) Act concerning support for reconstructing livelihoods of disaster victims

The Law to Support the Rebuilding of Lives of Disaster Victims aims to provide disaster victims who have difficulty in independently rebuilding their lives with fast and certain support in the form of financial assistance.

k) Development of the NLA's Disaster Prevention Radio Communication System

Based on the experiences through the Great Hanshin-Awaji Earthquake, the Japanese Government developed urgently the communication systems for disasters. For example, the

Video Transmission System ( the system for transmitting visual information of disaster field through cameras in helicopters and the video conference system) and the Satellite Communication System for large earthquakes in Tokyo metropolitan area (the system for functioning as the back-up system for the Fixed communication system of the Disaster Prevention Radio Communication System).

### *3. Disaster-reduction programs*

#### (1) Disaster-reduction budget

The total central government budget for disaster-reduction programs in fiscal 1998 was JYE 3.2 trillion, including expenditures for scientific and technical research, disaster-preparedness, land conservation, and disaster recovery.

#### (2) Outline of disaster-reduction programs

##### a) Promotion of scientific and technical research on disaster-reduction

Disaster-reduction research and development is governed by the Disaster-reduction Research and Development Basic Plan (approved by the prime minister in December 1993), which provides a framework for comprehensive and effective research from a long-term vantage point. Related institutions play their roles in pursuing research on earthquake in an effective manner with guidance from the Basic Plan and the Proposition on Earthquake Prediction Plan of the Geodesy Council. They also promote research on earthquake in close cooperation with each other under the Headquarters for Earthquake Research Promotion, and perform general evaluations of the results obtained.

##### b) Strengthening of disaster prevention and preparedness

Japan pursues disaster prevention and preparedness programs on a continual basis in order to prevent disasters from happening. The main focus of these programs is maintaining and enhancing disaster-preparedness systems and facilities and equipment.

##### i) Promoting awareness of disaster-preparedness and training voluntary disaster-preparedness organizations

For people to be able to protect themselves from disaster they must, as individuals, have a greater awareness of disasters before they happen, and must master correct disaster-prevention knowledge and skills.

To accomplish this, Japan has declared September 1 to be "Disaster Prevention Day," August 30 to September 5 to be "Disaster Prevention Week," and January 15-21 to be "Disaster Prevention and Volunteers Week." During these times in particular, a series of events is held in cooperation with disaster organizations and local governments.

Japan also has about 88,000 voluntary disaster-preparedness organizations (as of April 1997) around the country through which local residents engage in disaster-preparedness activities in conjunction with related institutions. Roughly 53.3% of all households in Japan belong to these organizations.

##### ii) Disaster drills

Full readiness and repeated training are of the utmost importance if disaster

organizations are to work in close coordination and cooperation to implement programs quickly and accurately with the aid of local residents. Japan therefore holds disaster-preparedness drills around the country each year, envisioning such scenarios as earthquake, typhoon, major fire, or landslide.

iii) Development of disaster-reduction facilities and equipment

Japan maintains and enhances measurement and warning systems, disaster-proof telecommunications and broadcasting systems, fire-fighting and flood-fighting systems, and disaster-resistant road networks and ports. In an effort to build more disaster-resistant urban structures, we also maintain places of refuge, evacuation roads, and open spaces; engage in land readjustment and redevelopment work, and build and maintain facilities to protect buildings from earthquake, fire, and flood damage.

c) Promotion of land conservation

Land conservation programs protect land, life, limb, and property from damage during such natural disasters as flood, land slide, earthquake, and fire. Necessary as these programs are, however, they also require enormous, long-term investments. Japan pursues land conservation on the basis of long-term (generally seven-year) plans for each major aspect of conservation: forest conservation, flood control, sabo, coastal land conservation, prevention of landslides on steep inclines, sewer construction, agricultural disaster-reduction, and sink-hole prevention.

d) Disaster emergency response and recovery

Should disaster strike, information on the nature and size of the damage must be quickly gathered and communicated to relevant authorities and agencies, and organizations must be put in place as warranted by this information. After information is gathered and communicated, specific disaster response measures are triggered: rescue, emergency treatment, medical treatment, fire fighting, evacuation, steps to prevent secondary disasters, and assistance for victims (provisions of water and food, for example). Once the immediate crisis has been dealt with, measures are enacted to maintain sanitation and social order, to rebuild lifelines and public facilities, and to provide information to victims. Depending on the nature of the disaster, programs under the Disaster Relief Law and Law Concerning the provision of Disaster Condolence Grant may also be triggered.

Public facilities damaged by disaster are repaired and rebuilt speedily, either directly by the central government or through subsidies. The government may also provide loans to disaster victims and special provisions to affected local governments, usually in the form of tax rebates and local government bond issues. When damage is severe, the area is designated as being subject to "extreme-severity disaster," which opens the way to higher subsidy rates for reconstruction, relaxed lending conditions for disaster loans to the victims, and other special measures.

e) Development of information and telecommunications systems; enhancements in *tsunami* forecasting, earthquake information, and other disaster information systems

To gather accurate information on disasters and transmit it quickly, institutions involved in disaster-reduction develop and maintain disaster monitoring and warning systems.

In addition to this, disaster-reduction agencies have built a Central Disaster-Prevention Wireless Network to serve as a dedicated wireless communications network for disaster-related activities, and also a Fire Disaster Wireless Network, and a Prefectural and Municipal Government Disaster Wireless Network.

Japan constantly monitors seismic activity in order to prevent and mitigate damage from earthquakes and *tsunamis*. Disaster-related agencies are provided with the information they need to respond through quick announcements of *tsunami* forecasts and earthquake information. The seismometers installed by the central government are supplemented by seismometers installed by local governments, and the data from both is useful and fed to numerical simulation systems where it is used to make *tsunami* forecasts. This data enhances the content and reliability of *tsunami* forecasts, earthquake information, and other disaster-related information.

### (3) Areas to be worked on

Section 2 above describes the programs that Japan has implemented, but there are limits to what can be done to eradicate disasters, and there are times when massive loss of life and property is inevitable. The mitigation of disaster damage requires both permanent disaster countermeasures and effective response to actual disasters. This will only be achieved with ongoing, down-to-earth efforts to foster mutual cooperation and positive, systematic disaster-prevention activities at the central government, public institution, local government, business, and residential levels. As our social structures change, as we become increasingly urbanized, increasingly "aged," and increasingly computerized, the nature of disaster is changing, and continual efforts will be needed to improve our responses. These efforts are spearheaded by the Central Disaster Prevention Council, which leads Japan's consideration and implementation of effective disaster-prevention systems.

## **B) International Cooperation in Disaster-reduction**

Geographically, Japan is located in an area in which natural disaster is common, but it has managed to overcome this handicap to simultaneously achieve economic growth and a reduction in disasters. It is one of the few developed countries to do so, and as such it is important that it transfer the disaster-reduction knowledge and technology that it has accumulated

### *1. Programs for the International Decade for Natural Disaster Reduction*

#### (1) The Japanese Government Headquarters for IDNDR

Japan was one of the principal proponents of the International Decade for Natural Disaster Reduction and has used the decade as an opportunity to advance both international cooperation in the area of disaster-reduction and domestic disaster-reduction programs. To better accomplish this, the government established in May 1989 the "Japanese Government Headquarters for IDNDR." The headquarters is located within the National Land Agency, and operates as a national committee chaired by the prime minister.

#### (2) Specific programs



The first meeting of the Japanese Government Headquarters for IDNDR, which was held in November 1989, approved basic government guidelines for programs to be conducted during the decade. On the international level, the guidelines mandate active participation in and cooperation for the programs planned for the decade by the United Nations and others. In particular, they call for contributions to the mitigation of damage from natural disasters in developing countries by providing from a long-term vantage point: i) technical cooperation to assist in raising the levels of disaster-reduction science and technology and disseminating that information, and assistance for human resources development and improved disaster-reduction systems; ii) assistance for specific projects that will contribute to disaster-reduction; iii) communication of Japanese experiences and knowledge at international conferences and other fora for the exchange of experiences and knowledge among countries; and iv) enhancement of international emergency assistance. Alongside these efforts to promote international cooperation and exchange, Japan is also engaged in an active publicity campaign, including exhibitions and lectures on disaster-reduction. In 1994, Japan hosted and actively participated in a United Nations-sponsored "World Conference on Natural Disaster Reduction" in the city of Yokohama and the Japanese Government Headquarters for IDNDR held international conferences in 1990, 1991, 1992, 1993, 1995, 1996, 1997.

## *2. International disaster-reduction cooperation today and future directions*

### (1) Outline

There are five categories of international disaster-reduction cooperation in which Japan is engaged:

- i) Technical cooperation, including acceptance of trainees, dispatch of experts, and implementation of development studies;
- ii) Grant aid, including grants for disaster-reduction facilities and equipment, and emergency assistance in times of disaster;
- iii) ODA loan cooperation, including loans for disaster-reduction facilities;
- iv) Cooperation through the UN IDNDR Secretariat and other international institutions;
- v) Dispatch of Japan Disaster Relief Team and provision of emergency relief supplies.

These international disaster-reduction cooperation programs are an important part of Japanese international cooperation and efforts are being made to enhance and expand them.

### (2) Major international disaster-reduction cooperation programs today

Below is a review of the major international disaster-reduction cooperation programs in which Japan is currently engaged.

#### a) Technical cooperation

Japan enthusiastically accepts trainees from abroad. The Japan International Cooperation Agency (JICA) provides a large number of group training courses, including the Seismology and Earthquake Engineering II course, the Seminar on Administration for Government Managers Disaster-prevention, Meteorology II, Volcanology and Volcanic Sabo Engineering Course, River and Dam Engineering II, and the Seminar on Earthquake Engineering, and Urgent Disaster Restoration System course, and Fire Service for

Administrative Officers, Fire Prevention Techniques and Maritime Search and Rescue Operation and Maritime Disaster Prevention Course. These courses are held with the cooperation of government ministries and agencies involved in disaster-reduction activities. In fiscal 1997, forty-nine people from seventeen Asian countries participated in them, and the courses have been extremely well-received.

Japan also sends experts in disaster-reduction technology to Asian countries to contribute to the improvement of their disaster-reduction technology. Among their main responsibilities are training of local personnel by the transfer of technology, and the implementation of development studies from the perspective of disaster-reduction.

Examples of these studies include the Study on the Disaster Prevention Plan for Severely Affected Areas by 1993 Disaster in the Central Development Region of Nepal, the Study on Road Structure Disaster Prevention Plan in the Kingdom of Thailand, the Study on the General Disaster Prevention Plan for the Mayon Volcano Region in the Philippines, and the Development Study of the Seawall Construction Project for Male Island in the Republic of Maldives.

In addition, Japan provides project-type technical cooperation that combines, in an organic manner, the acceptance of trainees, the dispatch of experts, and the provision of equipment. These projects foster technology development and engineering skills, and, in doing so, improve recipient countries' ability to deal with flood damage, land slide disaster, forest fires, and mountain-area disasters. Examples include technical centers on sabo in Indonesia and Nepal, and the Forest Fire Prevention Management Project in the Republic of Indonesia and the Pilot Scheme for Technological Development on River Information System Project in China, and the Beijing Fire Fighting Training Center Project.

#### b) Grant aid

Grant Aid for general projects is provided in view of disaster reduction. Examples include the Project for Watershed Management and Irrigation Development in Mithawan of Pakistan, the Project for Building of a Multipurpose Cyclone Shelter and the Project for Improvement of Weather Warning Services Related to Natural Disaster in Bangladesh, the River Embankment Project and River Disaster Prevention and Road Conservation Equipment Improvement Project in Nepal, the Ormoc Flood Control Project in the Philippines, and Urgent Sediment and Flood Control for the Rio Choloma in the Rio Chamelecon Basin in the Republic of Honduras.

Disaster Relief of Emergency Grant Aid is humanitarian financial aid provided in emergencies to assist victims of natural disasters. In FY1998, the government of Japan extended grants to victims of natural disasters such as flood and hurricane in China, Bangladesh, Honduras, Nicaragua and so on.

#### c) ODA loan cooperation

ODA loan cooperation, which involve long-term loans at subsidized interest rates, is implemented on a bilateral basis and is the largest component of disaster-reduction ODA. Examples include the Commodity Loan and Emergency Reconstruction Project for Mt. Pinatubo Disaster Rehabilitation and Reconstruction in the Philippines, the Lower Solo River Improvement Project and Mt. Merapi and Mt. Semeru Volcanic Disaster Countermeasures Project (Phase II) in Indonesia, and Commodity Loan for Flood Disaster Relief in Pakistan.

d) Cooperation administered through the UN or other international institutions

Japan contributes to the UN IDNDR Secretariat. In fiscal 1998, it contributed approximately JYE 78 million.

Japan also contributes funding and personnel to projects to prevent mountain fires and other disasters administered by such organizations as the International Tropical Timber Association.

e) Emergency relief

Japan provides disaster relief teams under the Law Concerning the Dispatch of Japan Disaster Relief Team of 1987 and relief supplies. Among the activities engaged in during 1998 was the dispatch of Self-Defense Forces to Honduras to help people affected by a hurricane, which was the first time for Japanese forces to be dispatched abroad as a Japan Disaster Relief Team. Five teams, including the Self-Defense Force team, were dispatched. A total of about JYE 582 million in emergency supplies was provided during the year. The latest examples are a joint rescue team from the Fire and Disaster Management Agency and the National Police Agency and a medical team, both of which were dispatched as Japan Disaster Relief Teams to Colombia, which was affected by an earthquake in January 1999. (P)

(3) Major international cooperation programs and future directions

Japan is engaged in many international disaster-reduction cooperation programs that involve a number of countries. The major ones are described below.

a) Eastern Asia Natural Hazards Mapping Project

This project will use global resource satellites to collect information on geological disasters in East Asian countries, creating a database and eventually a map from that data. So far, we have been sponsoring an international forum and workshops and seeking the cooperation of research institutes in putting together the geological disasters map. We expect to be able to provide a finished map to countries by 1999.

b) Improvement of early warning systems

Japan exchanges meteorological data and technical information on observation, analysis, and forecasting that are useful in disaster-reduction with national meteorological services in other countries. It also serves as the hub of the exchange of meteorological information in the Asian region under the auspices of the World Meteorological Organization(WMO), and makes active contributions to the mitigation of tsunami damage by exchanging tsunami warnings and observations of earthquakes occurring in Japanese coastal waters and in the Pacific region.

For typhoons, Japan provides information over the WMO's dedicated Global Telecommunication System(GTS) and other networks. In the future, we plan to provide active technology transfer assistance to countries interested in improving their typhoon monitoring and forecasting.

c) Research and development of Advanced Land Observing Satellite (ALOS)

We are engaged in the "ALOS" project to develop the technology for precise, fast

observation of natural disasters and changes in the natural environment regardless of weather conditions or time of day. We are currently at the stage of basic research, with a launch target of fiscal 1999.

d) Third-country training

Third country training is a program to train people from neighboring countries at sites in developing countries that, as a result of Japanese technical cooperation, have reached requisite levels of technology. For example, Japan provides financial and technical cooperation to the Sabo Engineering Course by the Sabo Technical Center of the Directorate General of Water Resources Development in the Ministry of Public Works in Indonesia and promotes technical transfer to neighboring countries.

e) Contributions to the International Center for Integrated Mountain Development (ICIMOD)

Between 1993 and 1997, Japan contributed a total of \$500,000 to ICIMOD, an institution that conducts comprehensive information gathering, analysis, and training on development, disaster-reduction, and environmental conservation in the Hindu Kush-Himalaya Mountains. Japan also dispatched JICA landslide experts to the center to help to make, using satellites, a map of dangerous areas and make manuals on landslide prevention.

f) Joint research on disaster-reduction in the Asia-Pacific region

During the October 1995 Asian-Pacific Economic Cooperation Minister's Conference on Regional Science and Technology Cooperation, Japan proposed the promotion of joint research on disaster-prevention with priority on earthquakes. In 1999, a joint multilateral international research project on "Development of Earthquake and Tsunami Disaster Mitigation Technologies and their Integration for the Asia-Pacific Region" began.

g) Promotion of Multilateral Disaster-Prevention Cooperation in the Asian Disaster Reduction Center

In July 1998, the Asian Disaster Reduction Center, located in the city of Kobe, Hyogo Prefecture, began activities to promote multilateral disaster-prevention cooperation at the regional level among Asian countries that share similar forms of disasters and disaster countermeasures. The Asian Disaster Reduction Center will continue in the future to promote multilateral disaster-prevention cooperation in the Asian region by, under close ties between participating countries, gathering and providing disaster-related information, and promoting studies and research into disaster-prevention cooperation and other activities.

h) International symposia

Japan holds international symposia every year on disaster prevention countermeasures for public facilities, the roll of information in disaster prevention and studies and research into disaster damage mitigation. These symposia provide an opportunity to discuss international cooperation in the field of disaster prevention and to exchange information about scientific and technological findings in this field and disaster prevention activities in each country.

(4) Basic stance on future in disaster-reduction cooperation

Japan has been active in international cooperation in the area of disaster-reduction,

particularly in the Asian region, where we have deep historical, economic, and social ties, and where we share many of the same geographical and meteorological vulnerabilities to natural disaster. Countries in this region often experience large disasters that may in some cases damage economic development and social stability. Japan engages in a wide variety of international cooperation in disaster-reduction in this region, utilizing its experiences with natural disaster and the disaster-reduction technology that it has accumulated.

Japan will continue to provide active cooperation in the area of disaster-reduction. Our basic stance in this is summed up in the following principles:

- a) The "Yokohama Strategy for a Safer World" that was adopted at the World Conference on Natural Disaster Reduction in Yokohama in May 1994 underscores the importance of disaster-reduction cooperation at the regional level. Japan will be promoting disaster-reduction cooperation in the Asian region in particular, making use of the Asian Disaster Reduction Center, which began operations in 1998.
- b) Japan will be moving forward with a wide range of projects to prevent, prepare for, and mitigate natural disasters. These projects include the improvement of disaster-reduction systems and programs in Asian countries, the formulation of disaster-reduction plans, dissemination of disaster-reduction knowledge, enhancement of information communication networks, research and development of disaster-reduction science and technology, land conservation projects, and disaster-reduction drills. To this end, we will continue to enhance bilateral assist through technical cooperation, ODA loans assistance, and grant aid.
- c) Japan will do all in our power to mitigate the damage and to relief affected people when disaster strikes and we are requested by the affected country, Japan will take emergency relief activities in a flexible and timely manner by dispatching the Japan Disaster Relief Teams and providing relief supplies and emergency grant assistance.
- d) In light of the importance of reinforcing disaster-reduction policies among Asian countries, Japan will work to further enhance its assistance in the area of disaster-reduction for developing countries.
- e) In the event that there is an international institution established to continue on with the work that was begun in the International Decade for Natural Disaster Reduction, Japan would like to have close ties with this institution.

