arranged, and soil tests for verification of the elasto-plastic theory, one of such procedures, were started.

(3) 1) Application of Typhoon Model.

For provision of useful guidance for forecasting the track of typhoons. Typhoon Models is applied. The accurancy of typhoon track forecasts has steadily improved by repeated upgrade of the model since the operation was started in FY1982. In paticular the accuracy of the forecast was extremely enhansed by entire improvement of the model with renewal of computer system in FY1987.

2) Development of basic technology for advancing remote sensing technology by use of microwave sensor data.

In the study on risk assessment of geomorphic disasters, techniques for extracting environment condition and survey disaster situation in all weather by use of composit aperture radar is developed. In the study on techniques for efficient use of meteorological and oceanographical observation, preliminary analysis by existing data and the software for setting up an objective analysis system are developed.

Participating institutions in the country and/or on the international level:

(1) 1) ——.

2) Institute di Idraulica Universlis di Genova, Italy.

(2) 1) Universities.

2) Nikko Sabo Works Office, Kanto Regional Construction Bureau, Ministry of Construction.

3) Fukushima Construction Works Office, Tohoku Regional Construction Bureau, Ministry of Construction.

4) —— .

(3) 1) Member countries of ESCAP Typhoon Committee.

2) National Aeronautical Laboratory, Science and Technology Agency; National Institute for Environmental Studies, Environment Agency; National Institute of Agro-Environment Sciences, Ministry of Agriculture, Forestry and Fisheries; Forest and Forest Products Research Institute, Forestry Agency, Ministry of Agriculture, Forestry and Fisheries; Saikai Regional Fisheries Research Laboratories, Fisheries Agency, same as above; Deep-see Fisheries Research Laboratories, Fisheries Agency, same as above; Geological Survey of Japan, Agency of Industrial Science and Technology, Ministry of International Trade and Industry; Research Institute for Resource Environment Technology, Agency of Industrial Science and Technology, Ministry of Intrnational Trade and Industry; Hydrographic Department, Maritime Safety Agency, Ministry of Transport; Public Works Research Institute, Ministry of Construction; Geographical Survey Institute, same as

above; Communications Research Laboratory, Ministry of Posts and Telecommunications; Remote Sensing Technology Center; Ocean Science and Technology Center; Tokai University.

Costs of project:

(1) 1) 4 million yen for FY1993; 19 million yen for FY1989-FY1993.

2) 15 million yen for FY1990-FY1992 (total cost).

(2) 1) About 40 million yen for FY1993.

2) 12 million yen for FY1993.

3) 7 million yen for FY1993.

4) 9 million yen for FY1993.

(3) 1) —— .

2) 13 million yen for FY1993.

Sources of funding:

(1)-(3) Central Government: 100%.

Implementing agencies:

(1) Development and Public Works Laboratory, Hokkaido Development Bureau, Hokkaido Development Agency.

(2) Public Works Research Institute, Ministry of Construction.

(3) 1) Meteorological Agency, Ministry of Transport.

2) National Research Institute for Earth Science and Disaster Prevention, Science and Technology Agency; Meteorological Agency, Ministry of Transport.

Address (telephone and fax-number) of the agency in charge:

(1) Development and Public Works Laboratory, Hokkaido Development Bureau, Hokkaido Development Agency

1-jo 3 chome, Hiragishi, Toyohira-ku, Sapporo-shi, Hokkaido 062

Tel 011-841-1111; Fax 011-824-1226.

(2) 1) Erosion Control Division, Erosion Control Department, Public Works Research Institute, Ministry of Construction

1, Asahi, Tsukuba-shi, Ibaraki 305

Tel 0298-64-2211; Fax 0298-64-0903.

2)-4) Slope Failure Division, Erosion Control Department, Public Works Research Institute, Ministry of Construction

1, Asahi, Tsukuba-shi, Ibaraki 305

Tel 0298-64-2211; Fax 0298-64-0903.

(3) 1) Meteorological Agency, Ministry of Transport

1-3-4, Otemachi, Chiyoda-ku, Tokyo 100

Tel 03-3212-8341; Fax 03-3211-2032.

2) Aerospace Development Division, Research and Development Bureau, Science and Technology Agency

2-1-1, Kasumigaseki, Chiyoda-ku, Tokyo 100

Tel 03-3581-1679; Fax 03-3501-3683.

b) Monitoring, prediction and warning (prediction of earthquakes)

Title of project:

(1) Promotion of the earthquake prediction study (operation of the Earthquake Prediction Promotion Headquarters and meetings of the Coordination Committee for Earthquake Prediction).

(2) Promotion of the studies concerning prediction of inland earthquakes of a class of magnitude 7 (completed).

(3) Promotion of the comprehensive study for advancement of the method of predicting earthquakes immediately below the national capital region.

(4) Promotion of the studies concerning deep crust.

(5) Promotion of the studies concerning earthquake prediction (study on seismicity in the southern part of the national capital region; study on the crustal movements in Kanto and Tokai Districts; study on the mechanism of occurrence of earthquake; study on prediction of trench type great earthquakes; study on electromagnetic emissions as a precursor of crustal failure [completed]; study of crustal chemistry by deep borings [completed]; and basic study on dynamics of interplate region [completed]).

(6) Implementation of the survey of submarine topography and geology by submarine survey boat.

(7) Promotion of basic researches concerning earthquake prediction (promotion of the 6th earthquake prediction plan).

(8) Promotion of the studies concerning the field and mechanism of earthquake generation.

(9) Implementation of the surveys of submarine topography and geological structure.(promotion of the 6th earthquake prediction program.)

(10) Promotion of the studies on earthquake prediction.

(11) Development of earthquake prediction support systems.

(12) Other (study on the method of prediction of ground movement disasters).

Status:

(1) 1) Operation of the Earthquake Prediction Promotion Headquarters:

For promotion of the earthquake prediction, discussions are made of the method of promoting the studies for practical application of the earthquake prediction, improvement of the system required for promotion of the earthquake prediction including concentration of data, etc.

2) Meetings of the Coordination Committee for Earthquake Prediction:

Main conference and meeting of the intensification panel are respectively called four times every year and the ad hoc panel called as required for exchange of information on earthquake prediction and academic and specialized discussions in the country.

(2) For promoting the studies on prediction of inland earthquakes of a class of

magnitude 7, new observation and study methods of high accuracy and efficiency were developed, and concentrative observations and researches were carried out in the north-western area of the Sagami Truff where the crustal deformations were active.

(3) For earthquakes immediately below the national capital region, investigation and research are carried out by the vibroseis reflection method and VSP method using the existing deep layer observation well for clarification at a high resolution of the structure of the upper crust, which is a field of generation of earthquakes, and assessment of the activity of the active faults in use of the method for determining he order of seismic shears.

(4) For contribution to the development of earthquake prediction technology, resources exploration technology, etc., it is designed to analyze the structure of the deep crusts in the plate subdiction zone in use of various non-destructive measurement methods, and now the investigation of the deep crusts is made by the MT method (terrestrial magnetism earth-current method).

(5) 1) Study on seismicity in the southern part of the national capital region:

Seismological analyses are made upon the data of continuous observations of micro-earthquakes and crustal tilts by the deep crust activity observation facilities reaching the bedrock at 3 places (Iwatsuki, Shimofusa and Fuchu) surrounding the national capital region, and now the 4th deep layer well observation facility is being constructed.

2) Study on the crustal movements in Kanto and Tokai Districts:

By immediately processing and analyzing a mass of highly accurate continuous observation data obtainable by a crustal movement observation network disposed in a high density in Kanto and Tokai Districts, there are promoted i) study of crustal movements, ii) study for analysis of earthquake precursors, iii) maintenance and reinforcement of observation capacity, and iv) study of wide-area crustal movements by the Global Positioning System (GPS).

3) Study on the mechanism of occurrence of earthquake:

For clarification of the processes to occurrence of an earthquake and accompanying physical and chemical phenomena, the study is promoted from three fields of i) Experimental study of the mechanism of occurrence of an earthquake in the source region, ii) study on the behaviors of deep ground water, and iii) experimental study on the mechanism of occurrence of an inland earthquake.

4) Study on prediction of trench type great earthquakes:

By the multichannel reflection method, the study of the unbalancedness of the plate and crustal structure in the plate subdiction zone which is a

field of generation of trench type earthquakes.

5) Study on electromagnetic emissions as a precursor of crustal failure:

Applicability of the phenomenon of electromagnetic emission to the study of the interior movements of the earth and study for prediction of volcanic eruptions through examination of the mechanism of generation of electromagnetic emissions as precursors of intracrustal rupture phenomena, timely relationship between micro-rupture of electromagnetic emission and main rupture, and characteristics of emitted electromagnetic waves, route of propagation and damping characteristic.

6) Study of crustal chemistry by deep boring:

Combining the crustal chemical data obtained by the academic borings carried out by Japan and Germany in the Archipelago and Continent, examination was made of the process of formation of the crust and crustal movements in the global scale.

7) Basic study on dynamics of interplate region:

Carrying out the study concerning the form of generation of earthquakes in the interplate region, changes with time of the mutual action of the plates before and after a great earthquake occurring in the trench was examined along with the form of occurrence of earthquakes in the subdiction zone. Further, for the ocean basing having the expanding bottom in the back of the Archipelago, examination was made of the relationship between the seismic motion and the crustal movement/volcanic activity and the form of the bottom expanding system and the fluidity in the upper mantle.

(6) Close relationship was confirmed between the intensity of crustal movement and that of the gamma ray at the sea bottom. At the site where a colony of " Shirourigai" was seen, presence of cold spring water apparently accompanying the plate subdiction was confirmed.

(7) The observations and researches for earthquake prediction in the country were promoted cooperatively by the national universities, Meteorological Agency, Geographical Survey Institute and other related organs according to the 6th earthquake prediction project (1989-1993) which the Geodesy Council proposed in 1988. Those researches yielded many fruitful results, including high accuracy geodetic survey through application of GPS and other space technologies, improvement of the capacity of detection of precursory abnormal phenomena, furtherance of the understanding of the plate structure in the South Kanto district., progress in development of deep observation wells and cable type submarine earthquake observation facilities in the national capital region, exact knowledge of the earthquake swarm, crustal deformation and other crustal movements in the Izu Peninsula, progress of the basic study on inland earthquakes, and great progress in the experimental study on rock

fracture.

(8) Detailed geological maps of Adera Fault and other major active faults were provided, while investigation and research for clarification of the forms of activities of active faults are being carried out. Also, the ground water observation data are utilized as data for earthquate prediction in the Tokai District.

(9) In 1993, submarine topographical and geological structure surveys in the offing of Akita and Yamagata, and active structure surveys of the Nankai Truff, were carried out, and basic data for earthquake prediction were obtained.

(10) With a database of precursory phenomena prepared, development of a seismic motion prediction support system is made. Also, a study of the method of observation of earthquakes and crustal deformations is undertaken.

(11) For furtherance of the use of earthquake related information and other fuzzy required for earthquake prediction, a prototype of fuzzy information processing system was prepared for expansion of the functions.

(12) For development of a prediction method of earthquake ground motion characteristics and ground motion disasters for different areas in ground characteristics in a great earthquake, the study is promoted from three aspects of i) study on pediction method of earthquake ground motions, ii) micro-zoning of the distribution of vibrations of surface grouns, and iii) investigation of the topographical and geological features and seismic behaviors of slopes.

Participating institutions in the country and/or on the international level:

(1) 1) —— .

2) National Universities; National Astronomical Observatory; Geological Survey of Japan, Ministry of International Trade and Industry; Meteorological Agency, Ministry of Transport; Hydrographic Department, Maritime Safety Agency, same as above; National Research Institute for Earth Science and Disaster Prevention, Science and Technology Agency.

(2)-(3) - —— .

(4) United States of America.

(5) 1)-5) —— .

6) Germany.

7) —— .

(6) —— .

(7) Meteorological Agency, Ministry of Transport; Hydrographic Department, Maritime Safety Agency, Ministry of Transport; Geographical Survey Institute, Ministry of Construction; National Research Institute for Earth Science and Disaster Prevention, Science and Technology Agency; Geological survey of

Japan, Ministry of International Trade and Industry; Communications Research Laboratory, Ministry of Posts and Telecommunications.

(8) Earthquake prediction related organs.

(9) Earthquake prediction related organs.

(10) Seismological and Volcanological Department, Meteorological Agency, Ministry of Transport.

(11)-(12) — - .

Costs of project:

(1) 1) 5 million yen for FY1993.

2) 12 million yen for FY1993; 172 million yen for FY1969-FY1993.

(2) 60 million yen for FY1991.

(3) 59 million yen for FY1993.

(4) 25 million yen for FY1993.

(5) 1) 124 million yen for FY1993.

2) 606 million yen for FY1993.

3) 120 million yen for FY1993.

4) 53 million yen for FY1993.

5) 58 million yen for FY1992.

6) 18 million yen for FY1991 (total cost).

7) 13 million yen for FY1991 (total cost).

(6) 3 million yen for FY1991.

(7) 2,027 million yen for FY1993; 9,502 million yen for FY1989-FY1993.

(8) 102 million yen for FY1993.

(9) 26 million yen for FY1993; 128 million yen for FY1989-FY1993.

(10) 31 million yen for FY1993.

(11) 2 million yen for FY1993; 56 million yen for FY1989-FY1993.

(12) 21 million yen for FY1993.

Sources of funding:

(1)-(12) Central Government: 100%.

Implementing agencies:

(1) 1) Secretariat - Research and Development Bureau, Science and Technology Agency.

2) Secretariat - Geographical Survey Institute, Ministry of Construction.

(2) Meteorological Research Institute, Meteorological Agency, Ministry of Transport; Magnetic Observatory, same as above; Research and Development Bureau, Science and Technology Agency; National Research Institute for Earth Science and Disaster Prevention, same as above; Geological Survey of Japan, Ministry of International Trade and Industry; Geographical Survey Institute, Ministry of Construction.

(3) Seismological and Volcanological Department, Meteorological Agency, Ministry

of Transport; Meteorological Research Institute, same as above; Research and Development Bureau, Science and Technology Agency; National Research Institute for Earth Science and Disaster Prevention, same as above; Geological Survey of Japan, Ministry of International Trade and Industry; Geographical SurveyInstitute, Ministry of Construction.

(4)-(6) National Research Institute for Earth Science and Disaster Prevention, Science and Technology Agency.

(7) Earthquake Research Institute, The University of Tokyo; Disaster Prevention Research Institute, Kyoto University; and Science Departments of five National Universities (Hokkaido University, Tohoku University, The University of Tokyo, Nagoya University and Kyushu University).

(8) Geological Survey of Japan, Agency of Industrial Science and Technology, Ministry of International Trade and Industry.

(9) Hydrographic Department, Maritime Safety Agency, Ministry of Transport.

(10)-(11) Meteorological Research Institute, Meteorological Agency, Ministry of Transport.

(12) National Research Institute for Earth Science and Disaster Prevention, Science and Technology Agency.

Address (telephone and fax-number) of the agency in charge:

(1) 1) Disaster Prevention Science and Technology Promotion Section, Policy Division, Research and Development Bureau, Science and Technology Agency
2-2-1, Kasumigaseki, Chiyoda-ku, Tokyo 100
Tel 03-3581-5271; Fax 03-3506-1960.

2) Crustal Dynamics Department, Geographical Survey Institute, Ministry of Construction
1, Kitasato, Tsukuba-shi, Ibaraki 305
Tel 0298-64-1111; Fax 0298-64-1658.

(2)-(3) Research and Development Bureau, Science and Technology Agency
2-2-1, Kasumigaseki, Chiyoda-ku, Tokyo 100
Tel 03-3581-5271.

(4)-(6) Natinal Research Institute for Earth Science and Disaster Prevention, Science and Technology Agency
3-1, Tennodai, Tsukuba-shi, Ibaraki 305
Tel 0298-51-1611; Fax 0298-51-1622.

(7) International Scientific Affairs Division, Ministry of Education, Science and Culture
3-2-2, Kasumigaseki, Chiyoda-ku, Tokyo 100
Tel 03-3581-4211(ext 2565); Fax 03-3592-1027.

(8) Geological Survey of Japan, Agency of Industrial Science and Technology, Ministry of International Trade and Industry

1-1-3, Higashi, Tsukuba-shi, Ibaraki 305
Tel 0298-54-3572(Policy Division); Fax 0298-54-3571.

(9) Hydrographic Department, Maritime Safety Agency, Ministry of Transport
5-3-1, Tsukiji, Chuo-ku, Tokyo 104
Tel 03-3541-3811; Fax 03-3542-7174.

(10)-(11) Meteorological Research Institute, Meteorological Agency, Ministry of Transport
1-1. Nagamine,Tsukuba-shi, Ibaragi 305
Tel 0298-53-8535; Fax 0298-53-8545.

(12) National Research Institute for Earth Science and Disaster Prevention, Science and Technology Agency
3-1, Tennodai, Tsukuba-shi, Ibaraki 305
Tel 0298-51-1611; Fax 0298-51-1622.

b) Monitoring, prediction and warning (prediction of volcanic eruptions)

Title of project:

(1) Promotion of international joint study for development of a method of preventing sediment disasters in volcanic areas.

(2) Promotion of the studies on volcanic eruption prediction.

(3) Promotion of basic researches concerning volcanic eruption prediction (promotion of the 4th volcanic eruption prediction plan).

(4) Promotion of the geological, geoscientific and geophysical studies of volcanos.

(5) Promotion of submarine volcanic eruption prediction (promotion of the 4th volcanic eruption prediction plan).

(6) Promotion of the studies for volcanic eruption prediction.

(7) Promotion of the studies concerning volcanic eruption prediction.

Status:

(1) Exploration of the geological structure by minute geological survey and boring and investigation of the internal structure of volcanic edifice are carried out to clarify the conditions for location of occurrence of debris flow.

(2) To look into the relation between wide area tectonics and volcanic activity, the study is promoted from two fields: (a) volcanic activity monitoring study; and (b) study of volcanic eruption prediction and disaster prevention by thermionic monitoring method.

(3) In the country, the volcanic eruption prediction observations and researchesstudies are promoted through cooperation of the National Universities, Meteorological Agency, Geographical Survey Institute and other related organs according to the 4th Volcanic Eruption Prediction Plan (1989-1993) proposed by the Geodesy Council in 1988. Observations and researchers were intensified through multi-item real time observation, use of GPS and other new technologies and concentrative observation of some particular volcanos to accumulation of basic data, with the results that it became possible to grasp some precursors in recent eruptions, that there were developed prediction methods such as repeated observation of volcanic gas, real time volcanic activity processing system, etc. and that the clarification of the structure of volcano was promoted through basic studies.

(4) The studies include preparation of ageological map of volcano for the Bandai Volcano, structural survey by artificial earthquakes in the Aso caldera, and observation of crustal deformations by optical distance measurement in the Unzen Volcano.

(5) In 1993, periodic circuit monitoring by aircraft was made of the Southern Islands and Southwestern Islands, and aerial magnetic survey was made of the Mikura Sea Mount and Myojin Cay.

(6) Studies carried out include detection of volcanic tremors and gravity changes, gravitational tides, energy emission mechanism and quantification of volcanic activities.

(7) Volcanic area ground tilting measurements, volcanic deformation measurements and mobile continuous observation were executed, and compilation of basic volcanic maps for 36 volcanos were planned and 21 of them completed.

Participating institutions in the country and/or on the international level:

(1) United States of America.

(2) ——.

(3) Meteorological Agency, Ministry of Transport; Hydrographic Department, Maritime Safety Agency; Geographical Survey Institute, Ministry of Construction; National Research Institute for Earth Science and Disaster Prevention, Science and Technology Agency; Geological Survey of Japan, Ministry of International Trade and Industry.

(4)-(5) Organs related to volcanic eruption prediction.

(6) Seismology and Volcanology Research Department, Meteorological Research Institute, Meteorological Agency, Ministry of Transport.

(7) ——.

Costs of project:

(1) 35 million yen for FY1993.

(2) 45 million yen for FY1993.

(3) For Ministry of Education: 396 million yen for FY1993; 1,993 million yen for FY1989-FY1993.

(4) 20 million yen for FY1993.

(5) 2 million yen for FY1993; 7 million yen for FY1989-FY1993.

(6) ——.

(7) 24 million yen for FY1993; 265 million yen for FY1979-FY1993.

Sources of funding:

(1)-(7) Central Government: 100%.

Implementing agencies:

(1)-(2) National Research Institute for Earth Science and Disaster Prevention, Science and Technology Agency.

(3) Earthquake Research Institute, The University of Tokyo ; Disaster Prevention Research Institute, Kyoto University; and the Science Departments of 6 National Universities (Hokkaido University, Tohoku University, The University of Tokyo, Nagoya University, Kyoto University and Kyushu University).

(4) Geological Survey of Japan, Agency of Industrial Science and Technology,

Ministry of International Trade and Industry.

(5) Hydrographic Department, Maritime Safety Agency, Ministry of Transport.

(6) Meteorological Research Institute, Meteorological Agency, Ministry of Transport.

(7) Geographical Survey Institute, Ministry of Construction.

Address (telephone and fax-number) of the agency in charge:

(1)-(2) National Research Institute for Earth Science and Disaster Prevention, Science and Technology Agency

3-1, Tennodai, Tsukuba-shi, Ibaraki 305

Tel 0298-51-1611; Fax 0298-51-1622.

(3) Science Division, Science and International Affairs Bureau, Ministry of Education, Science and Culture

3-2-2, Kasumigaseki, Chiyoda-ku, Tokyo 100

Tel 03-3581-4211(ext 2565); Fax 03-3592-1027.

(4) Geological Survey of Japan, Agency of Industrial Science and Technology, Ministry of International Trade and Industry

1-1-3, Higashi, Tsukuba-shi, Ibaraki 305

Tel 0298-54-3572(Policy Division); Fax 0298-54-3571.

(5) Hydrographic Department, Maritime Safety Agency, Ministry of Transport

5-3-1, Tsukiji, Chuo-ku Tokyo 104

Tel 03-3541-3811; Fax 03-3542-7174.

(6) Meteorological Research Institute, Meteorological Agency, Ministry of Transport

1-1, Nagamine, Tsukuba-shi, Ibaraki 305

Tel 0298-53-8535; Fax 0298-53-8545.

(7) Geographical survey Institute, Ministry of Construction

1, Kitasato, Tsukuba-shi, Ibaraki 305

Tel 0298-64-1111; Fax 0298-64-1658.

b) Monitoring, prediction and warning (prediction of snow falls)

Title of project:

(1) Promotion of the prediction of occurrence of dry snow surface avalanches and studies on the impact force (completed).

Status:

(1) Measurement of the impact forces of artificial snow avalanches by pylons was made in U.S.A., and efforts were made for improvement of the prediction of snow avalanches on the adjacent land to a skiing ground located at a high altitude in the country.

Participating institutions in the country and/or on the international level:

(1) —— .

Costs of project:

(1) 5 million yen for FY1992 (total cost).

Sources of funding:

(1) Central Government: 100%.

Implementing agencies:

(1) National Research Institute for Earth Science and Disaster Prevention, Science and Technology agency.

Address (telephone and fax-number) of the agency in charge:

(1) National Research Institute for Earth Science and Disaster Prevention, Science and Technology Agency
3-7, Tennodai, Tsukuba-shi, Ibaraki 305
Tel 0298-51-1611; Fax 0298-51-1622.

b) Monitoring, prediction and warning (prediction of other disasters)

Title of project:

(1) Study on coastal disaster prevention (study on coastal disaster prevention using remote sensing technology, and study on global environment remote investigation technology).

Status:

(1) 1) Study on coastal disaster prevention using remote sensing technology:

With the observations made simultaneously by ocean meteorology observation ship, ocean meteorology buoy robot and satellite, analysis of the results is under way.

2) Study on global environment remote investigation technology:

In the study with microwave scattermeter, the relation btween accuracy of wind observation and characteristics of ocean surface, e.g. quantity of photoplankton, is investigated by observing the ocean with scattermeter set on the coast. In the study with composit aperture radar, the caracteristics of reflection of microwave on ocean surface under various conditions is investigated by simultaneous observation from ships.

Participating institutions in the country and/or on the international level:

(1) 1) Marine Department, Meteorological Agency, Ministry of Transport.

2) National Aeronautical Laboratory, Science and Technology Agency; National Institute for Environmental Studies, Environment Agency; Tohoku Regional Fisheries Research Laboratories, Fisheries Agency, Ministry of Agriculture, Forestry and Fishries; Hydrographic Department, Maritime Safety Agency, Ministry of Transport; Communications Research Laboratory, Ministry of Posts and Telecommunications.

Costs of project:

(1) 1) 6 million yen for FY1993.

2) 16 million yen for FY1993.

Sources of funding:

(1) Central Government: 100%.

Implementing agencies:

(1) 1) Meteorological Research Institute, Meteorological Agency, Ministry of Transport.

2) National Research Institute for Earth Science and Disaster Prevention, Science and Technology Agency; Meteorological Research Institute, Metoerological Agency, Ministry of Transport.

Address (telephone and fax-number) of the agency in charge:

(1) 1) Meteorological Research Institute, Meteorological Agency, Ministry of Transport

1-1, Nagamine, Tsukuba-shi, Ibaraki 305

Tel 0298-53-8535; Fax 0298-53-8545.

2) Aerospace Development Division, Research and Development Bureau, Science and Technology Agency

2-2-1, Kasumigaseki Chiyoda-ku, Tokyo 100

Tel 03-3581-1679; Fax 03-3501-3683

b) Monitoring, prediction and warning (maintenance of warning systems for natural disasters)

Title of project:

(1) Development of disaster information system (completed).

(2) Maintenance, etc. of meteorological observation facilities (renewal and maintenance of meteorological data transmission network, and maintenance of warning simultaneous communication facilities [completed]).

(3) Promotion of the concept of developing a regional satellite communication network.

(4) Maintenance of fire defense and disaster prevention radio communication facilities.

(5) Other (investigation and research of an advanced disaster prevention multiple address radio communication system for urban areas, and maintenance of an emergency warning broadcasting system [EWS]).

Status:

(1) Studies were carried out for development of a disaster information collection, transmission and processing system intended for promptly and exactly grasping the damage conditionin use of helicopters and remote sensors at the time of an earthquake, sediment or flood disaster and thus contributing to sooner rehabilitation. Presently, a disaster information system adjusted to the practical level is being developed.

(2) 1) Renewal and maintenance of meteorological data transmission network:

To comply with diversifying and increasing information concerning the meteorological services and for prompt offer of neteorological data, a data communication network is formed by connecting the central system installed in each of District Meteorological Observatories to the meteorological offices in its area and to the comprehensive meteorological data processing system by communication circuits. With extension to the Okinawa District in 1993, the development of the second generation system throughout the country is completed.

2) Maintenance of warning simultaneous communication facilities:

For exact transmission of warnings and meteorological information to the stipulated transmission organs and related outside organs, simultaneous dispatch devices by means of facsimile are installed in prefectural offices responsible for warnings and are operated. With the system developed in the Fukuoka District in 1990, in the Osak District in 1991, and in the Sapporo, Sendai, Tokyo and Okinawa Districts in 1992, it was completely deployed throughout the country.

(3) Using the private communication satellites, a communication network intended for transmission of disaster prevention information and areal information has

been built to connect the local public corporations and disaster prevention related organs. It is presently operated in 14 prefectures andis being developed in 11 prefectures (as of the end of August 1993).

(4) Developing radio communication networks connecting State-Prefecture, Prefecture-Municipality and Municipality-Community, augmentation of the nation-wide fire defense, disaster prevention administrative radio communication network is contemplated.

(5) 1) Investigation and research of an advanced disaster prevention multiple address radio communication system for urban areas:

In 1992, analysis was made of the problems involved in transmission of disaster prevention information to inhabitants, present state of the municipal disaster prevention administrative radio communications, and operation of the current disaster prevention information multiple address radio communication system and examination made of the basic functions required of an advanced disaster prevention information multiple address radio communication system. In 1993, examination has been made, upon the foregoing study, of the advanced disaster prevention information multiple address radio communication system from the aspects of technical condition and legal system, and with a model system fabricated and through the outdoor experiments, the problems and effects in the technical and operational aspects have been verified for practical application of the new system.

2) Maintenance of an emergency warning broadcasting system (EWS):

EWS to radio, television and broadcasting satellite has already been maintained by Nippon Hoso Kyokai (NHK) and 43 private broadcasting companies among 203 companies have already done, and as many as about 75,000 receivers have been customized.

Participating institutions in the country and/or on the international level:

(1) Ministry of Construction and Regional Construction Bureau.

(2) 1) —— .

2) Local autonomous bodies, NHK, NTT, National Police Agency, Maritime Safety Agency, and other disaster prevention organs.

(3) Autonomous Body Satellite Communication Organization, Incorporated.

(4)-(5) ——

Costs of project:

(1) 344 million yen for FY1987-FY1991 (total cost).

(2)-(3) —— .

(4) 23,229 million yen for FY1993.

(5) 1) 2 million yen for FY1993.

2) —— .

Sources of funding:

(1)-(2) Central Government: 100%.

(3) —— .

(4) Central Government: 41%; local governments: 59%.

(5) 1) Central Government: 100%.

2) —— .

Implementing agencies:

(1) Public Works Research Institute, Building Research Institute and Geographical Survey Institute of the Ministry of Construction.

(2) Meteorological Agency, Ministry of Transport

(3) Prefectures.

(4) Fire-Defence Agency, Ministry of Home Affairs, and local governments.

(5) 1) Ministry of Posts and Telecommunications.

2) NHK and private broadcasting enterprisers.

Address (telephone and fax-number) of the agency in charge:

(1) Engineering Affairs Management Section, Minister's Secretariat, Ministry of Construction

2-1-3, Kasumigaseki, Ciyoda-ku, Tokyo 100

Tel 03-3580-4311; Fax 03-5251-1925.

Disaster Prevention Survey Section, River Bureau, Ministry of Construction

2-1-3, Kasumigaseki, Ciyoda-ku, Tokyo 100

Tel 03-3580-4311; Fax 03-5251-1946.

(2) Meteorological Agency, Ministry of Transport

1-3-4, Otemachi, Chiyoda-ku, Tokyo 100

Tel 03-3212-8341.

(3) Fire-Defence Agency, Ministry of Home Affairs

2-1-2, Kasumigaseki, Chiyoda-ku, Tokyo 100

Tel 03-3581-5311; Fax 03-3581-5299, 03-3593-1757.

(4) Fire-Defence Agency, Ministry of Home Affairs

2-1-2, Kasumigaseki, Chiyoda-ku, Tokyo 100

Tel 03-3581-4076; Fax 03-3593-1757.

(5) 1) Trunk Communications Division Telecommunications Bureau, Ministry of Posts and Telecommunications

1-3-2, Kasumigaseki, Chiyoda-ku, Tokyo 100

Tel 03-3504-4868; Fax 03-3580-5758.

2) Engineering Division, Broadcasting Bureau, Ministry of Posts and Telecommunications

1-3-2, Kasumigaseki, Chiyoda-ku, Tokyo 100

Tel 03-3504-4930; Fax 03-3506-0634.

b) Monitoring, prediction and warning (maintenance of warning systems for wind and flood disasters)

Title of project:

(1) Development of flood-fighting facilities (development of flood warning facilities).

(2) Announcement and transmission of forecasts, warnings and other information.

(3) Promotion of the river information transmission system.

(4) Other (study on establishment of the landslide warning and evacuation system[completed]).

Status:

(1) Development is made of the observation facilities for exactly grasping the conditions of flooding and storm surge of Class A rivers and promptly and exactly transmitting flood forecasts and warnings (radio telemeter stations, meteorological facsimile, warning devices and gauge forecastingdevices).

(2) For flood-fighting activities, forecasts and warnings are issued for the weather, storm surge and flood, and of the rivers designated for flood forecasts, the Meteorological Agency, Ministry of Transport and the Ministry of construction jointly issue flood forecasts (cautions and warnings) and flood information, and for the other rivers, the Meteorological Agency ofthe Ministry of Transport independently issues flood forecasts, and such information is transmitted to the organs related to disaster prevention and news agencies.

(3) In October 1985, a River Information Center, Incorporated was established, and to data, 9 local centers and 1 branch office were installed to implement a system of providing river information throughout the country. Under the system, the river informations are offered to organs concerned with flood-fighting. As of July 1993, a system of providing river information such as water- level is maintained in the NHK Headquarters and 10 local stations of NHK, and so it is possible to offer river information through NHK to the inhabitants in 25 prefectures. Since 1992, examination has been made of the double polarization Doppler radar. For the communication network, it is expected that the volume of information will considerably increase, and so the investigation will be made from 1994 for introduction of the optical fiber cable allowing transmission of a mass of information in addition to the existing communication network by micro-radio.

(4) It was thought that the precipitation would hardly be usable as a standard of warning and evacuation for landslides and that it would be more exact to examine the condition of deformation of the surface. Then, examination was made of a landslide warning and evacuation system by checking deformations of the landslide sites by circuiting and grasping the surface displacements by

means of an extensometer. The precipitation was reflected in the circuit manual (draft), and a cheap and easy-to-use extensometer was developed.

Participating institutions in the country and/or on the international level:

(1) —— .

(2) Maritime Safety Agency of the Ministry of Transport , Prefectures, NTT, NHK and disaster prevention related organs.

(3) River Information Center, local governments, Incorp., NHK, etc.

(4) —— .

Costs of project:

(1) 152 million yen for FY1993.

(2)-(3) —— .

(4) 75 million yen for FY1990-FY1992 (total cost).

Sources of funding:

(1)-(4) Central Government: 100%.

Implementing agencies:

(1) Ministry of Construction.

(2) Meteorological Agency, Ministry of Transport.

(3) Regional Construction Bureaus, Ministry of Construction.

(4) Public Works Research Institute, Ministry of Construction.

Address (telephone and fax-number) of the agency in charge:

(1) Flood Control Division, River Bureau, Ministry of Construction
2-1-3, Kasumigaseki, Chiyoda-ku, Tokyo 100
Tel 03-3580-4311; Fax 03-5251-1943.

(2) Meteorological Agency, Ministry of Transport
1-3-4, Otemachi, Chiyoda-ku, Tokyo 100
Tel 03-3212-8341.

(3) River Planning Division, River Bureau, Ministry of Construction
2-1-3, Kasumigaseki, Chiyoda-ku, Tokyo 100
Tel 03-3580-4311.

(4) Landslide Division, Public Works Research Institute, Ministry of Construction
1, Asahi, Tsukuba-shi, Ibaraki 305
Tel 0298-64-2211; Fax 0298-64-2840.

b) Monitoring, prediction and warning (maintenance of warning systems for earthquake disasters)

Title of project:

(1) Announcement and transmission of tsunami forecasting and earthquake information.

Status:

(1) Upon occurrence of an earthquake, the results of observation of the earthquake and tsunami are announced as information.

Participating institutions in the country and/or on the international level:

(1) Ministries and Agencies related to disaster prevention, Prefectures and news agencies.

Costs of project:

(1) —— .

Sources of funding:

(1) Central Government: 100%.

Implementing agencies:

(1) Meteorological Agency, Ministry of Transport.

Address (telephone and fax-number) of the agency in charge:

(1) Meteorological Agency, Ministry of Transport
1-3-4, Otemachi, Chiyoda-ku, Tokyo 100
Tel 03-3212-8341.

b) Monitoring, prediction and warning (maintenance of warning systems for volcanic disasters)

Title of project:

(1) Announcement and transmission of volcanic information.

Status:

(1) Observing the volcanic phenomena, and from the results of such observation, the volcanic information is periodically or specially for dissemination to the general public and the organs related to disaster prevention.

Participating institutions in the country and/or on the international level:

(1) Ministries and Agencies related to disaster prevention, Prefectures and news agencies.

Costs of project:

(1) —— .

Sources of funding:

(1) Central Government: 100%.

Implementing agencies:

(1) Meteorological Agency, Ministry of Transport.

Address (telephone and fax-number) of the agency in charge:

(1) Meteorological Agency, Ministry of Transport
1-3-4, Otemachi, Chiyoda-ku, Tokyo 100
Tel 03-3212-8341.

b) Monitoring, prediction and warning (maintenance of warning systems for snow disasters)

Title of project:

(1) Promotion of the study on countermeasures to snow disasters (study on development of a wide area prediction method of snow storms and practical application of a wide area warning system).

(2) Other (testing and investigation for systematization of snow fall forecasting data).

Status:

(1) For practical application of the wide area warning system mainly by Doppler radars, there has been developed a wide area forecasting method taking into consideration the time-space variation features of the snow storms.

(2) It is intended to improve the accuracy of the long-term forecast information of the long-ranging tendency of snow fall as well as the medium-term forecast information predicting the snow fall of the day and grasp the actual condition and method of use of the long-term forecast information and the short-term forecast information predicting when the snow fall will begin.

Participating institutions in the country and/or on the international level:

(1)-(2) —— .

Costs of project:

(1) 30 million yen for FY1993.

(2) 7 million yen for FY1993.

Sources of funding:

(1)-(2) Central Government: 100%.

Implementing agencies:

(1) National Research Institute for Earth Science and Disaster Prevention, Science and Technology Agency.

(2) Public Works Research Institute, Ministry of Construction.

Address (telephone and fax-number) of the agency in charge:

(1) National Research Institute for Earth Science and Disaster Prevention, Science and Technology Agency
3-1, Tennodai, Tsukuba-shi, Ibaraki 305
Tel 0298-51-1611; Fax 0298-51-1622.

(2) Niigata Experimental Laboratory, Public Works Research Institute, Ministry of Construction
2-6-8, Nishiki-cho, Arai-shi, Niigata 944
Tel 0255-72-4131; Fax 0255-72-9629.

c) Short-term protective measures and preparedness (arrangement of disaster prevention shelter base facilities)

Title of Project:

(1) Arrangement of flood-fighting facilities.

(2) Arrangement of regional disaster prevention bases (development of the Tachikawa Medical Base Facility for Regional Disaster, establishment of the Tachikawa Regional Disaster Prevention Base - Maritime Disaster Prevention Facilities -, and establishment of Yokohama Maritime Disaster Prevention Base).

(3) Arrangement of disaster prevention bases.

(4) Promotion of urban disaster preventive structuring (arrangement of disaster prevention shelter bases).

(5) Others (arrangement of the Funabashi Disaster Prevention Center, and arrangement of the Saitama National Government Building).

Status:

(1) Flood-fighting equipment and materials indispensable for the flood-fighting activities are secured, and flood-fighting activities shelter base facilities having the functions of on-the-spot supervision, flood-fighting team stand-by stations are arranged for smoothly and efficiently executing the flood-fighting activities during emergency such as floods or others.

(2) 1) Development of the Tachikawa Medical Base Facility for Regional Disaster.

Within the Tachikawa Basic Facilities for Regional Disaster, as the offer core activities in the event of the occurrence of a regional disaster in the South Kanto District, a principal facility for medical care in the Eastern District of Japan are being developed with the aims to undertake clinical researches, education and training mainly in the area of disaster medicine as well as to provide medical treatment for suffered patients after the occurrence of a regional disaster, thereby contributing to the improvement of medical treatment abilities to respond to disasters in this country.

2) Establishment of the Tachikawa Regional Disaster Prevention Base (Maritime Disaster Prevention Facilities).

Facilities are being arranged at the Tachikawa Regional Disaster Prevention Base (Maritime Disaster Prevention Facilities) in order to use the Base for emergency countermeasure activities such as the base for mobilized helicopters after the occurrence of a large-scale earthquake in the South Kanto District and also to use the Base as an advanced base when the National Disaster Counter measure Headquarters will be located in Tachikawa. The arrangement of the relevant facilities excluding the joint arrangement facilities with other organizations will be completed by fiscal 1990, and survey and design are performed for the joint arrangement

portion related to helicopters in fiscal 1992.

3) Establishment of the Yokohama Maritime Disaster Prevention Base.

Moreover, the arrangement of the Yokohama Maritime Disaster Prevention Base as a strong point for the maritime disaster prevention in the Tokyo Bay and the whole Kanto District is being carried out, survey and design were carried out in fiscal 1991, and the construction work was started in fiscal 1992.

(3) Construction of Disaster Prevention Centers which function as the shelter base for disaster countermeasure activities during disaster in built-up areas and function as the fields of community activities such as PR, education and drills related to the disaster prevention during ordinary time is being promoted and 8 centers have been already completed.

(4) Particularly for the areas having high degrees of danger during earthquake, the redevelopment of nearby housing lots together with the arrangement of refuge sites is being promoted, thereby arranging the disaster prevention shelter base and improving the disaster prevention performance in built-up areas through the arrangement as one united base. At present, the projects were completed or in progress at 6 places (total area of 570 ha) in Tokyo Metropolis.

(5) 1) Arrangement of the Funabashi Disaster Prevention Center.

As a base for providing stock-piling and storage system for disaster restoration equipment and materials and also for facility inspection and material transportation, the Funabashi Disaster Prevention Center is being developed and the percentage of progress is now 32%.

2) Arrangement of the Saitama National Government Building.

In the mass movement of the national administrative organs to the Saitama National Government Building, the facilities and equipment required for the regional disaster prevention shelter base are being arranged so as to assure the comprehensive and effective tie-up system among the organizations during earthquake disaster and sophisticated disaster prevention functions are being added; a master plan for the arrangement of the national government buildings was determined in FY1993 and now site survey and design are being carried out.

Participating institutions in the country and/or on international level:

(1) —— .

(2) 1) —— .

2) National Land Agency, Defense Agency, Metropolitan Police Department, Metropolitan Fire Board.

3) —— .

(3)-(5) —— .

Cost of Project :

(1) 16 million yen for FY1993.

(2) 1) 11,653 million yen for FY1993; 14,748 million yen for FY1991-FY1993.

2) 4 million yen for FY1992; 0 million yen for FY1993; 3,453 million yen for FY1987-FY1993.

3) 6,650 million yen for FY1993; 10,178 million yen for FY1991-FY1993.

(3) 73 million yen for FY1993.

(4) — - - .

(5) 1) 635 million yen for FY1993.

2) 85 million yen for FY1993.

Sources of Funding:

(1) Central Government: 4/10; municipalities: 6/10.

(2) 1) Central Government: 100%.

2) Central Government: 1/5; Metropolitan Police Department: 2/5; Metropolitan Fire Board: 2/5.

3) Central Government: 100%.

(3) Central Government:1/3; local governments: 2/3.

(4) Central Government:1/2; local governments: 1/2 or Central Government:1/3; local governments: 2/3, etc.

(5) Central Government: 100%.

Implementing agencies:

(1) Municipalities

(2) 1) Ministry of Health and Welfare

2) Ministry of Construction

3) Ministry of Transport and Ministry of Construction

(3)-(4) local governments

(5) 1) Kanto Regional Construction Bureau, Ministry of Construction

2) Ministry of Finance and Ministry of Construction

Address (telephone and fax-number) of the agency in charge:

(1) Flood Control Division, River Bureau, Ministry of Construction

2-1-3, Kasumigaseki, Chiyoda-ku, Tokyo 100

Tel 03-3580-4311; Fax 03-5251-1943

(2) 1) Facility Arrangement Management Section, Management Guidance Division, Medical Policy Making Division, Department of National Hospital, Ministry of Health and Welfare

1-2-2, Kasumigaseki, Chiyoda-ku, Tokyo 100

Medical Policy Making Division: Tel 03-3501-4872; Fax 03-3595-1939.

Management Guidance Division: Tel 03-3501-4873, Fax 03-3595-1937.

2) Maritime Disaster Prevention Division, Guard and Rescue Department, Maritime Safety Agency, Ministry of Transport

2-1-3, Kasumigaseki, Chiyoda-ku, Tokyo 100

Tel 03-3591-6361; Fax 03-3591-9819.

3) Maritime Disaster Prevention Division, Guard and Rescue Department, Maritime Safety Agency, Ministry of Transport

2-1-3, Kasumigaseki, Chiyoda-ku, Tokyo 100

Tel 03-3591-6361; Fax 03-3591-9819.

Government Buildings Department, Minister's Secretariat, Ministry of Construction

2-1-3, Kasumigaseki, Chiyoda-ku, Tokyo 100

Tel 03-3580-4311; Fax 03-5251-1926.

(3) Earthquake Disaster Countermeasure Division, Disaster Prevention Bureau, National Land Agency

1-2-2, Kasumigaseki, Chiyoda-ku, Tokyo 100

Tel 03-3501-5693; Fax 03-3503-5690.

(4) Urban Disaster Prevention Section, Urban Policy Division, City Bureau, Ministry of Construction

2-1-3, Kasumigaseki, Chiyoda-ku, Tokyo 100

Tel 03-5251-1853; Fax 03-5251-1939.

(5) 1) Planning Division, Planning Department, Kanto Regional Construction Bureau, Ministry of Construction

1-3-1, Ohtemachi, Chiyodaku, Tokyo 100

Tel 03-3211-6261; Fax 03-3211-8197.

2) Special Planning Section, Government Buildings Planning Division, Government Buildings Department, Minister's Secretariat, Ministry of Construction

2-1-3, Kasumigaseki, Chiyoda-ku, Tokyo 100

Tel 03-3580-4311(ext 2484); Fax 03-5251-1926.

c) **Short-term protective measures and preparedness (preparedness against natural disasters)**

Title of Project:

(1) Arrangement of facilities, equipment and materials for police activities against natural disasters.

(2) Arrangement of first aid and rescue facilities and equipment (general arrangement projects for first aid and rescue equipment and materials).

(3) Stockpiling of foods, etc. (stock-piling of hard biscuits).

(4) Arrangement of disaster prevention systems.

(5) Promotion of sophisticated first-aid services (promotion of sophisticated first-aid services, and emergency arrangement project for advanced equipment and materials for first-aid services).

(6) Promotion of the activation of fire-fighting teams (comprehensive arrangement projects for activating fire-fighting teams, arrangement projects for shelter bases for fire-fighting teams).

(7) Arrangement of regional aerial fire-fighting and Disaster Prevention systems.

(8) Others (arrangement of emergency power supply unit for traffic signals, and execution of pre-reporting of emergency transport vehicles).

Status:

(1) Arrangement of facilities, equipment and materials against disasters such as helicopters is being promoted.

(2) Arrangement of rescue equipment and materials such as rescuing machines is being carried out and we arranged equipment at 669 fire defence headquarters at the end of fiscal 1992.

(3) From the viewpoint of stable supply of citizens' foods during disaster, 260,000 packs of hard biscuits as emergency food for disaster measures until the completion of the acquisition of drinking water, fuels and cooked rice foods are stockpiled in governmental warehouses and government-designated warehouses in seven areas outside Tokyo.

(4) Guidance to local disaster prevention conferences and regional disaster prevention planning, Arrangement of autonomous disaster prevention systems and the enhancement of the awareness of disaster prevention are being carried out.

(5) 1) Promotion of sophisticated first-aid services.

In order to improve the lifesaving rate of wounded persons during emergency transportation, various measures required for executing advanced first-aid services such as the Arrangement of education and drill systems for first-aid teams are being promoted.

2) Emergency arrangement projects for advanced equipment and materials for first-aid services.

To promote the sophistication of first-aid services and improve the lifesaving rate of wounded persons, high standard ambulances and the equipment and materials required for advanced first-aid treatment will be promoted. These will be arranged in 86 fire-fighting headquarters in fiscal 1993.

(6) Activation of fire-fighting teams is being promoted by providing government subsidies to the arrangement facilities and equipment to be carried out in accordance with the comprehensive plan for activating fire-fighting teams formulated by each municipality.

(7) In order to arrangement the execution systems for regional and mobile fire-fighting and disaster prevention activities utilizing helicopters for fire-fighting from the sky, rescue of people's lives, finding disaster situation and carrying heavily wounded first-aid patients to better medical treatment institutions, the systematic arrangement of fire-fighting and disaster prevention helicopters is being promoted aggressively by respective prefectural governments. At the end of fiscal 1993, the helicopters will be arranged in 18 prefectures with 25 fire-fighting helicopters plus 10 disaster prevention helicopter.

(8) 1) Arrangement of emergency power supply unit for traffic signals.

Arrangement of pre-mounted type or portable generators as auxiliary power supplies during great earthquakes, floods, etc. is being carried out, and 2,446 units have been installed at the end of fiscal 1992.

2) Execution of pre-reporting of emergency transport vehicles.

In order to find the traffic demand in advance during emergency transport after the occurrence of disasters, to simplify and increase efficiency in confirmation procedure for emergency transport vehicles, the pre-reporting system for emergency transport vehicles is being carried out.

Participating institutions in the country and/or on international level:

(1) Prefectural Police Force.

(2) Fire-Defense Agency, Ministry of Home Affairs.

(3) Defense Agency.

(4) —— .

(5) 1) —— .

2) Fire-Defense Agency, Ministry of Home Affairs.

(6) Fire-Defense Agency, Ministry of Home Affairs.

(7)-(8) —— .

Cost of Project:

(1) —— .

(2) 477 million yen for FY1993, 3,656 million yen for FY1987-FY1993.

(3) 9 million yen for FY1993.

(4) 8 million yen for FY1993.

(5) 1) 5 million yen for FY1993, 14 million yen for FY1991-FY1993.

2) 734 million yen for FY1993.

(6) For comprehensive arrangement projects for the activation of fire-fighting teams, 306 million yen for FY1993.

For fire-fighting team base facilities arrangement projects, 448 million yen for FY1993.

(7) For subsidies to helicopters, 565 million yen for FY1993 (5 helicopters), 3,379 million yen for FY1966-FY1992 (35 helicopters).

(8) —— .

Sources of Funding:

(1) —— .

(2) Central Government: 1/3; local governments: 2/3.

(3) Central Government: 100%.

(4) —— .

(5) 1) Central Government: 100%.

2) Central Government: 1/3; local governments: 2/3.

(6) Central Government: 1/3; local governments: 2/3 (for depopulated areas and remote islands, Central Government: 5.5/10; local governments: 4.5/10).

(7) Central Government: fixed amount.

(8) 1) prefectural governments: 100%.

2) —— .

Implementing agencies:

(1) National Police Agency.

(2) Local governments.

(3) Food Agency, Ministry of Agriculture, Forestry and Fisheries.

(4) Fire-Defense Agency, Ministry of Home Affairs.

(5) 1) Fire-Defense Agency, Ministry of Home Affairs, local governments.

2) Local governments.

(6) Local governments.

(7) Fire-Defense Agency, Ministry of Home Affairs, local governments.

(8) 1) Prefectural Police Force.

2) Prefectural Public Safety Commission.

Address (telephone and fax-number) of the agency in charge:

(1) National Police Agency

2-1-2, Kasumigaseki, Chiyoda-ku, Tokyo 100

Tel 03-3581-0141; Fax 03-3581-0559.

(2) Ambulance and Rescue Service Division, Fire-Defense Agency, Ministry of Home Affairs

2-1-2, Kasumigaseki, Chiyoda-ku, Tokyo 100

Tel 03-3581-5311; Fax 03-3581-1757.

(3) Food Agency, Ministry of Agriculture, Forestry and Fisheries

1-2-1, Kasumigaseki, Chiyoda-ku, Tokyo 100

Tel 03-3502-8111; Fax 03-3501-1692.

(4) Fire-Defense Agency, Ministry of Home Affairs

2-1-2, Kasumigaseki, Chiyoda-ku, Tokyo 100

Tel 03-3581-3902.

(5) Ambulance and Rescue Service Division, Fire-Defense Agency, Ministry of Home Affairs

2-1-2, Kasumigaseki, Chiyoda-ku, Tokyo 100

Tel 03-3581-5311; Fax 03-3581-1757.

(6) Fire Defense Division, Fire-Defense Agency, Ministry of Home affairs

2-1-2, Kasumigaseki, Chiyoda-ku, Tokyo 100

Tel 03-3581-4076; Fax 03-3593-1757.

(7) Ambulance and Rescue Service Division, Fire-Defense Agency, Ministry of Home Affairs

2-1-2, Kasumigaseki, Chiyoda-ku, Tokyo 100

Tel 03-3581-5311; Fax 03-3581-1757.

(8) National Police Agency

2-1-2, Kasumigaseki, Chiyoda-ku, Tokyo 100

Tel 03-3581-0141; Fax 03-3593-2375.

c) **Short-term protective measures and preparedness (preparedness against wind and flood disasters)**

Title of Project:

(1) Preparation for wind resistance design manual for houses(completed).

Status:

(1) Based on the survey results for the damages by Typhoon No. 19 in 1991, "Wind resistant house design, construction and inspection guides" were prepared for architectural engineers in Mach 1993, and "Preparedness against storms" was prepared as pamphlets for ordinary house occupants in September 1992.

Participating institutions in the country and/or on international level:

(1) —— .

Cost of Project:

(1) 18 million yen for FY1992 (total cost).

Sources of Funding:

(1) Building Research Institute, Ministry of Construction: 0.5 million yen; Fukuoka, Nagasaki, Saga and Kumamoto Prefectures, Building Center of Japan: 3.5 million yen respectively.

Implementing agencies:

(1) Building Research Center, Ministry of Construction; Fukuoka, Nagasaki, Saga and Kumamoto Prefectures; and Building Center of Japan.

Address (telephone and fax-number) of the agency in charge:

(1) Aero-Dynamics Division, Structural Engineering Department, Building Research Institute, Ministry of Construction
1, Tachihara, Tsukuba-shi, Ibaraki 305
Tel 0298-64-2151; Fax 0298-64-2989.

c)Short-term protective measures and preparedness (preparedness against earthquake disasters)

Title of Project:

(1) Promotion of projects for securing water storage facilities for emergency.

(2) Promotion of making earthquake-resistant high pressure gas plants.

(3) Arrangement of ports and harbours for securing emergency transport (arrangement of port facilities with strengthened earthquake resistance).

(4) Disaster Prevention Measures for National Government Buildings.

(5) Promotion of disaster prevention structures in cities (arrangement of refuge sites and evacuation roads; emergency arrangement projects for Disaster Prevention green areas; and promotion of urban Disaster Prevention and non-combustible urban structure project).

(6) Arrangement of facilities against fire occurred by large-scale earthquake (subsidized project for arranging countermeasure facilities against large-scale earthquake and fire).

(7) Promotion of seismic safty diagnosis and seismic safty modification for existing buildings.

(8) Other (promotion of the installation of automatic gas shut-off devices for earthquake resistant LP gas system and LP gas leak alarm and shut-off system).

Status:

(1) Projects for increasing water storage capacity of distribution as storage Status for drinking water supply from existing 8-hour to newly 12-hour (emergency water supply base acquisition project) and the projects for arranging water main (emergency water main arrangement projects) for receiving water from neighboring water works until restoration is completed after the occurrence of disaster are now being carried out; the projects will be executed at 22 areas in fiscal 1993.

(2) Survey and study for establishing the evaluation method for earthquake resistant design of pipe system are being carried out from fiscal 1990 to 1993. In fiscal 1993, the evaluation schemes prepared in 1992 will be validated.

(3) In particular ports, earthquake resistant port facilities (mooring facilities, etc.) are being arranged in order to assure marine transport of evacuating persons and emergency materials immediately after a disaster and also maintain a minimum port functions from the end of the transport of emergency matters to the restoration of damaged port facilities. At present, the work was completed in 25 ports and is in progress in 32 ports.

(4) For the purpose of improving the earthquake resistance performance for exiting government facilities, the use of non-combustible interior finishes and Disaster Prevention improvements for securing evacuation passages are

being carried out for the purpose of the improvement of fire resistance performance and earthquake resistance performance by reinforcing structural members, fixing mechanical equipment and remodeling non-structural portions (exterior walls, exterior windows and doors) thereby enhancing the earthquake resistant performance of existing government buildings.

(5) 1) Arrangement of refuge sites and evacuation roads.

In order to secure the safety of lives and bodies of urban citizens during large-scale earthquake and fire, we are arranging the urban planning roads and urban parks (disaster prevention parks) which can be used as refuge sites and evacuating roads in existing built-up areas in three metropolitan districts and Tokai District which have a high possibility of the occurrence of large-scale earthquake.

2) Emergency arrangement projects for Disaster Prevention green areas.

Moreover, in order to quickly secure regional evacuation zones during large-scale earthquake disaster, sites for parks and green areas are acquired in advance for the Disaster Prevention parks to be quickly developed by using urban development funds; the minim facilities required for Disaster Prevention are developed by means of auxiliary projects, thereby assuring the quick acquisition of refuge site function as Disaster Prevention green areas.

3) Promotion of urban Disaster Prevention and non-combustible urban structure project.

To secure the safety of lives and bodies of urban residents during large-scale earthquake and fire, we will promote the non-combustible structures in the districts important for Disaster Prevention in refuge sites and evacuating roads through the utilization of private building construction activities in the existing built-up areas in three metropolitan zones and the Tokai district where the possibility of the occurrence of large-scale earthquake is high.

(6) To cope with the simultaneous start of fire from many points expected during earthquake disaster, it is necessary to promote the arrangement of early fire extinguishing and prevention of fire spread and expansion and also to provide evacuation guide and emergency rescue system. For these purpose, we are arranging earthquake resistant water tanks, stockpiling warehouses, portable small powered pumps, special motor vehicles and equipment and materials for first-aid stations.

(7) We are promoting seismic safty diagnosis and seismic safty modification mainly for government buildings.

(8) In order to promote the spread of earthquake resistance automatic gas shut-off machine for LP gas and LP gas leak alarm and shut-off system, we are

offering loans to LP gas sellers. At the end of fiscal 1992, the loans of 284 cases from Small Business Finance Corporation and 2,260 cases from People's Finance Corporation.

Participating institutions in the country and/or on international level:

(1) Ministry of Health and Welfare.

(2) Ministry of International Trade and Industry.

(3)-(4) —— .

(5) Ministry of Construction.

(6) Fire-Defense Agency, Ministry of Home Affair.

(7) Ministry of Construction, local governments, The Japan Building Disaster Prevention Association.

(8) Ministry of International Trade and Industry, Small Business Finance Corporation, People's Finance Corporation.

Cost of Project:

(1) 2,702 million yen for FY1993; 4,624 million yen for FY1991-FY1993.

(2) 2 million yen for FY1993.

(3) 5,217 million yen for FY1993.

(4) For earthquake resistance improvement, 288 million yen for FY1993; 7,516 million yen for FY1971-FY1993.

For disaster prevention improvement, 539 million yen for FY1993; 12,174 million yen for FY1974-FY1993.

(5) 1) For arrangement of refuge sites - disaster prevention parks, 124,056 million yen for FY1993.

For arrangement of evacuating roads - road works, 101,557 million yen for FY1993.

For arrangement of evacuating roads - land readjustment project, 18,590 million yen for FY1993.

2) 32,560 million yen for FY1993.

3) 635 million yen for FY1993.

(6) 3,248 million yen for FY1993.

(7) —— .

(8) Small Business Finance Corporation: 1,758 million yen for FY1992, People's Finance Corporation: 3,516 million yen for FY1992.

Sources of Funding:

(1) Central Government: 1/3; Local governments: 2/3.

(2) Central Government:100%.

(3) Central Government: 5/10; Local governments: 5/10, or Central Government: 4/10; Local governments: 6/10, etc.

(4) Central Government:100%.

(5) 1) For refuge sites - acquisition of land, Central Government: 1/3, Local

governments: 2/3.

For refuge sites - facilities arrangement, Central Government: 1/2, local governments, etc.: 1/2).

For evacuating roads, Central Government: 1/2, local governments, etc.: 1/2.

2) —— .

3) Central Government: 1/2, local governments: 1/2.

(6) Central Government: 1/3, local governments: 2/3.

(When arranging earthquake resistance water tanks and portable small powered pumps in the districts strengthening the earthquake Disaster Prevention, Central Government: 1/2 and local governments: 1/2).

(7) Borne by the owners and managers of buildings.

(8) —— .

Implementing agencies:

(1) Local governments (mainly water supply organization).

(2) High Pressure Gas Safety Association.

(3) Ministry of Transport and respective port managers.

(4) Ministry of Construction.

(5) 1) For those arranged by road works among refuge sites and evacuation roads: local governments.

For those arranged by land readjustment project among evacuating roads: individual executors, land readjustment cooperatives, Local governments, etc.

2) Local governments.

3) Local governments.

(6) Local governments.

(7) Owners and managers of buildings.

(8) LP gas sellers.

Address (telephone and fax-number) of the agency in charge:

(1) Water Supply Division, Water Supply and Environmental Sanitation Department, Environmental Health Bureau, Ministry of Health and Welfare
1-2-2, Kasumigaseki, Chiyoda-ku, Tokyo 100
Tel 03-3503-1711(ext 2468); Fax 03-3503-7963.

(2) Safety Division, Environmental Protection and Industrial Location Bureau, Ministry of International Trade and Industry
1-3-1, Kasumigaseki, Chiyoda-ku, Tokyo 100
Tel 03-3501-1511(ext 3081); Fax 03-3501-6544.

(3) Ports and Harbours Bureau, Ministry of Transport
2-1-3, Kasumigaseki, Chiyoda-ku, Tokyo 100
Tel 03-3580-3111(ext 7453); Fax 03-5511-8280.