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UNITED NATIONS EDUCATIONAL,
SCIENTIFIC AND CULTURAL ORGANIZATION

CONSULTATIVE COMMITTEE ON SEISMOLOGY AND EARTHQUAKE ENGINEERING

First Meeting, Tbilisi, 14-18 June 1965

REPORT BY UNESCO SECRETARIAT

The following report summarizes the action taken by UNESCO since the Intergovernmental Meeting on Seismology and Earthquake Engineering, held in Paris in April 1964, towards implementing the recommendations of this Meeting.

I. INTRODUCTION

The Report of the Intergovernmental Meeting was transmitted by the Secretariat to the General Conference of UNESCO at its Thirteenth Session held in Paris in November 1964.

The General Conference, after taking note of this Report, adopted the following resolutions :

Resolution 2.2241 :

The Director-General is authorized, in co-operation with Member States, the competent organizations of the United Nations system and appropriate international non-governmental scientific organizations, especially the International Union of Geodesy and Geophysics, to promote and facilitate international collaboration in the study of the earth's crust and upper mantle, and especially of earthquakes, by providing assistance for :

- (a) The creation and reinforcement of regional and international centres for the collection and analysis of seismological data and for research, it being understood that Unesco's direct assistance to any centre established under this provision will not be continued beyond a maximum period of five years;
- (b) The study of the effects of severe earthquakes and volcanic eruptions through emergency missions of experts to the affected areas immediately after their occurrence;
- (c) The study of regional seismicity and seismo-tectonics;
- (d) The study of the dynamic characteristics of buildings and norms applicable to earthquake-resistant constructions;
- (e) Studies of Tsunami warning systems and protective measures;
- (f) The training of specialists in seismology and earthquake engineering and the publication of instructions and handbooks;

- (g) The development of international programmes of advanced training in volcanology and the exploration and use of sources of geothermal energy;
- (h) The international multidisciplinary studies of selected geophysical areas; and
- (i) The development of seismological and volcanological services in Member States.

Resolution 2.2242 :

The Director-General is authorized, in co-operation with Member States, the competent organizations of the United Nations system and appropriate international and non-governmental organizations :

- (a) To explore the possibility, in comparison with other methods of financing such as that employed in the Intergovernmental Oceanographic Commission and in the International Hydrological Decade, of setting up for a period not exceeding six years, an International Fund for the Development of Seismology and Earthquake Engineering, to be financed by voluntary contributions from Member States, private foundations, regional and international organizations, at the invitation of the Director-General;
- (b) To draw up, in consultation with the committee of experts appointed by the International Association of Seismology and Physics of the Earth's Interior, the programme of work to be financed by the international fund;
- (c) To promote the study of earthquake engineering through, for example, the convening of expert working groups. "

The General Conference approved an allocation within the Regular Budget of UNESCO, of \$117,000 to cover these activities in 1965-66, of which \$72,000 are earmarked for activities arising from the Intergovernmental Meeting. In addition, certain projects are financed under the United Nations Expanded Programme of Technical Assistance and the United Nations Special Fund.

II. SEISMOLOGICAL OBSERVATIONS AND DATA

Recommendation N°2: Regional networks and regional centres

Previous to the Intergovernmental Meeting, UNESCO had convened in Lima in December 1963 a meeting of seismologists from Latin American countries, who examined the problems involved in setting up a regional centre or centres in Latin America.

A member of the Secretariat visited Lima in February 1965, together with the President of IASPEI, Dr John Hodgson. Discussions with senior officials of the Peruvian Government and with the Director of the Institute of Geophysics of Peru led to the formulation of plans for the establishment in Lima of a Regional Seismological Centre which is expected to come into operation in October 1965. Father R. Cabré, Director of the San Calixto Observatory in La Paz, Bolivia, will act as Technical Director of the Centre during the initial period of operation. The Centre will commence by

collecting and analysing seismological data from Peru and neighbouring countries, and it is hoped that, with the active cooperation of national seismological services, it will be able to extend its activities gradually to cover the whole of South America.

Under the terms of an agreement which is at present being negotiated between UNESCO and the Government of Peru, the Organization will provide financial and other support to the Centre for a period of up to five years from date of its creation.

At a meeting of experts in geology and volcanology from Central America and Mexico, convened by UNESCO in San Salvador in February 1965, it was recommended that the Seismological Observatory in San Salvador serve as a centre for the collection of seismological data from observatories in the Central America area.

Recommendation N°4 : Observatory practice and procedure

Provision has been made within the budget of UNESCO for 1965-66 for the translation and publication in five languages of an International Handbook of Seismological Observatory Practice.

The text of this Handbook is being prepared by members of the IASPEI Committee for the Standardization of Seismographs and Seismic Records, under the chairmanship of Dr P.L. Willmore.

Recommendation N°6 : Strengthening of national networks

At the request of the Government of Morocco, UNESCO has provided under the Technical Assistance Programme the services of an expert in seismology, Mr Pierre Stahl (France), whose main tasks have been to put back into full operation the Averroës seismological observatory, to set up a new station at Ifrane and to prepare plans for a future central seismological observatory at Tiouine. He is also engaged in the training of Moroccan observatory staff.

At a meeting of representatives of UNESCO National Commissions of the six Balkan countries (Albania, Bulgaria, Greece, Rumania, Turkey and Yugoslavia), held in Bucharest in May 1964, it was resolved that efforts should be made to strengthen the seismological services of those countries. The European Seismological Commission of IASPEI, to which this resolution was communicated at its meeting in Budapest in September 1964, offered to UNESCO its scientific collaboration in this matter. The Secretariat is now exploring ways and means of giving effect to this resolution.

III. DEFINITION OF SEISMIC ZONES

Recommendation N°8 : Macroseismic intensity scales

Arrangements are being made by the Secretariat for the translation into French and Spanish of the Seismic Intensity Scale MSK 1964, drawn up by a committee appointed by the IASPEI. The English and Russian texts of this scale have already been finalized by members of the committee. It has been suggested that the scale be published by the IUGG in the above four languages.

Recommendation N°15 : Creation of a working group on seismicity and seismotectonics

After consultation with the IASPEI, the International Association for Earthquake Engineering (IAEE) and the International Union of Geological Sciences (IUGS), a Working Group on Seismicity and Seismotectonics has been set up by UNESCO, composed of the following persons : Messrs C.R. Allen (USA); V.V. Beloussov (USSR); R.W. Clough (USA); K. Ergin (Turkey); V. Karnik (Czechoslovakia); H. Kawasumi (Japan); S.V. Medvedev (USSR); J.P. Rothé (France); A.N. Tandon (India); H.W. Wellman (New Zealand).

The first meeting of this Working Group will take place in Tbilisi on 8-12 June 1965.

IV. EARTHQUAKE ENGINEERING

An International Seminar on Earthquake Engineering was held in Skopje from 29 September to 2 October 1964 under the joint auspices of the Government of Yugoslavia and of UNESCO. It was attended by over 50 scientists and engineers, including twelve from countries other than Yugoslavia. The Seminar provided an opportunity for an exchange of information on recent developments in earthquake engineering and on the results of the various studies which had been carried out in Skopje since the earthquake of 26 July 1963.

During the Seminar, it was decided to set up a working group to prepare draft statutes for a European Commission for Earthquake Engineering and to seek its affiliation to the International Association for Earthquake Engineering.

Recommendation N°17 : Formation of an Advisory Board on Earthquake Engineering

In consultation with IAEE, a Working Group on Engineering Seismology has been set up by UNESCO, with the following membership: Messrs N.N. Ambraseys (U.K.); S. Bubnov (Yugoslavia); J. Despeyroux (France); R. Flores (Chile); J. Krishna (India); K. Muto (Japan); J.E. Rinne (USA); E. Rosenblueth (Mexico); C.W. Turner (New Zealand); K.S. Zavriov (USSR).

The first meeting of this Working Group will be held in Tbilisi on 8-12 June 1965.

V. TSUNAMI WARNING AND PROTECTION

Recommendation N°21 : Tsunami warning systems

The text of this recommendation was transmitted by the UNESCO Secretariat to the Intergovernmental Oceanographic Commission (IOC) at its Third Session in Paris in June 1964. The Commission requested its secretariat to arrange for the convening of a meeting to discuss the international aspects of the tsunami warning system, with a view towards securing the best possible international cooperation in all its phases, viz.: tidal and seismic monitoring stations, internal and international communications, and the issuance and dissemination of warnings.

This meeting was held in Honolulu on 27-30 April 1965, and was attended by representatives of eleven countries bordering on the Pacific Ocean, as well as by representatives of interested international organizations.

In its report to IOC, the meeting recommended:

(1) that an International Tsunami Information Centre be established, to collect and interpret data during the occurrence of tsunamis and from which national centres could obtain information on which to base their warnings;

(2) that the IOC establish an International Co-ordinating Committee for the Tsunami Warning System in the Pacific, with the following terms of reference :

- (i) effect liaison among the participating countries at the technical level, particularly with regard to communications;
- (ii) ensure exchange of information on developments of observing methods and of techniques of tsunami forecasting;
- (iii) effect liaison and co-ordination with the Intergovernmental Oceanographic Commission, World Meteorological Organization, and the International Union of Geodesy and Geophysics - particularly with its Tsunami Committee; and
- (iv) provide essential secretarial service for International Tsunami Information Service and for the International Tsunami Warning System.

The meeting also made recommendations regarding the collection and exchange of sea-level data, communications, and scientific research on various aspects of tsunami.

VI. FIELD STUDIES OF EARTHQUAKES

Recommendation N°23 : Earthquake Reconnaissance Missions

During the past twelve months, the Secretariat has been completing arrangements for the eventual dispatch of earthquake reconnaissance missions to the site of severe earthquakes immediately after their occurrence.

A list is being compiled of experts in seismology, seismo-tectonics, and earthquake engineering, able and willing to join such missions at very short notice. Arrangements are being made, with the cooperation of representatives of United Nations and of UNESCO in each country, for the rapid transmission to UNESCO Headquarters of precise information on the intensity and amount of damage caused by large earthquakes. Special administrative procedures have been worked out for the rapid constitution and despatch of such missions.

The first occasion on which such procedures were put into practice was in connection with the San Salvador earthquake of 3 May 1965. A mission of four experts (two seismologists, one geologist and one earthquake engineer) reached San Salvador on 10 May. With further experience, and with improvements in the mechanisms for recruiting experts for such missions, it is hoped that on future occasions the target set by the Intergovernmental Meeting, that is to say the arrival of missions at the site of severe earthquakes within 72 hours of their occurrence, will be achieved.

VII. EDUCATION AND TRAINING

Recommendation N°26 : International and national facilities for professional training.

Recommendation N°27 : International exchange of specialists and students

UNESCO is acting as Executing Agency of the United Nations Special Fund in connection with the International Institute of Seismology and Earthquake Engineering in Tokyo, Japan. The participation of the Special Fund includes the provision of the services of experts in seismology and in earthquake engineering, of whom there are three at the Institute during the academic year 1964-65; these will be four during the year 1965-66. Twelve fellowships are awarded each year to persons from other countries wishing to study at the Institute, and equipment is being supplied to a value of \$140,000. The Government of Japan has assumed responsibility for the permanent staff of the Institute, as well as for a number of fellowships and the provision of land, building, equipment and facilities.

The general policy of the Institute with regard to training and research is subject to periodic review by a Panel of Consultants nominated by the Government of Japan and by UNESCO. The present membership of this Panel is as follows: Messrs Muto, Nasu and Wadati (for Japan); Messrs Housner, Riznicenko and Stoneley.

At the request of the Government of Yugoslavia, UNESCO will provide to the University of Skopje, under the U.N. Technical Assistance Programme, the services of two experts from July 1965 onwards, to assist in the establishment within the university of an Institute of Seismology, Earthquake Engineering and Urban Planning. Funds will also be provided for the purchase of equipment.

VIII. GENERAL

Recommendation N°29 (4) : International Fund for the Development of Seismology and Earthquake Engineering

Resolution 2.2242, adopted by the General Conference of UNESCO at its Thirteenth Session, authorizes the Director-General "to draw up, in consultation with the committee of experts appointed by the International Association of Seismology and Physics of the Earth's Interior, the programme of work to be financed by the international fund". It is understood that this programme of work will be based on the recommendations of the Intergovernmental Meeting on Seismology and Earthquake Engineering.

One of the principal tasks of the Committee at the present meeting will thus be to provide the Director-General with a programme and budget, for a period not exceeding six years, which the Director-General may present to Member States, private foundations, regional and international organizations, in an attempt to secure the financial support necessary for the implementation of the recommendations of the Intergovernmental Meeting.