

Achievements and Activities of the Geological Survey Department Ministry of Agriculture Natural Resources and Environment of Cyprus to enhance the goals and objectives of the programme of the International Decade for Natural Disaster Reduction (IDNDR 1990-2000)

With in the framework of the General Assembly Resolutions on IDNDR GA RES/44/236 on December 1989 the Geological Survey Department of Cyprus has been involved in the following activities which are listed along the points in document A/CONF 172/9.

1. **Activities at National Level**

The GSD contributed in the introduction of standards for aggregates used in the construction industry and in the preparation of Building Regulations. The GSD from 1980 is chairing the Cyprus Committee for Antiseismic Measures (C.C.A.M). In 1988 introduced the Briet Measures for Earthquake Resistant Design and prepared the Cyprus Seismic Code which was implemented in 1994. The Local Seismic Network which is operated by GSD was upgraded and expanded from 6 channels to 15 channels. To the existing array of 10 analog accelerometers 12 new digital accelerometers were added. Eight more have been approved to be installed by the year 2003.

The GSD in collaboration with the Geoforschungszentrum Potsdam (GFZ) and the Geophysical Institute of Israel established in December 1998 a joint broadband seismograph station as part of the GEOFON network. Data from the station will be shared with the whole seismological community for global and regional studies of the Earth and for the seismological verification of the nuclear test ban treaty CTBT.

The GSD Published Geological Maps, Geotechnical Maps (Nicosia, Larnaca and Landslide areas of Cyprus), Geophysical Maps and Seismic Hazard Maps. Organised workshops and seminars, participated between 1990 and 1999 in 12 International workshops and conferences, such as: SEISMED, RELEMR, IASPEI and ESC. Publicised information and organised seminars at local level on earthquake studies and on instructions for protection from earthquakes. Launched studies in the evaluation of the degree of vulnerability of important and lifeline structures and improvement of their earthquake resistance capacity.

The GSD issued preparedness plans to act before during and after an earthquake. Also cooperating with the Civil Defence and other Organisations to meet affantly the occurrence of a destructive earthquake and minimise loss of lives and property.

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2. Activities at Regional and Subregional Level

Microseismic and Microzonation Studies were carried out by the GSD at the southern coast of Cyprus covering the urban areas of Larnaca, Limassol and Agia Napa. The studies also covered the area of Pafos and Nicosia the capital of Cyprus. The investments in these areas represent the core of the economy of Cyprus and include Harbours, Airport, Oil Refinery, Highways, The southern conveyor which supplies the area with water and a great number of Luxury hotels which contribute to the economy of Cyprus 20% of the Gross Domestic Product (G.D.P.).

Additionally Neotectonic studies are currently carried out in these areas. Also post-earthquake studies and monitoring of the aftershock seismicity were carried out for the recent earthquakes which occurred in the region of Cyprus in February 1995 (M = 5.8) and October 1998 (M = 6.5)

The GSD launched scientific studies contributing in the location of seismic sources, earthquake recurrence relations for each seismic source, attenuation relations and detail determination of the local site geology and geotechnical properties of foundation soil and rock. Also launched studies to complete data and minimize uncertainty that typically leads to conservatism in design, and Microseismicity studies which will continue to cover the whole of the island.

3. Activities at the International Level

The Geological Survey Department is a member of the International Seismological Centre (ISC) and in 1997 became an active member of the Euromediterranean Seismological Centre (EMSC) which is based in France. The Cyprus Seismological Bulletin is exchanged with 14 institutions of the neighbouring countries, ISC and USGS. Seismic data are sent to the Alert System of EMSC using the e-mail.

The GSD has joined three experiments on the rapid exchange of seismic data between the Seismological Institutions of Eastern Mediterranean countries. The experiments were co-ordinated by the EMSC. Between 1994 and 1999 the GSD has organised five workshops in Cyprus on the Reduction of Earthquake Losses in the Eastern Mediterranean Region (RELEMR). These were sponsored by Unesco and the United States Geological Survey.

In the framework of co-operation of GSD with Institutions of Greece GSD has joined three programs of two year duration (1996-1997) and which were successfully completed. Final reports presentations and seminars were the capstone. The programs have the following subjects:

