

City	Addis Ababa	Antofagasta	Bandung	Guayaquil	Izmir	Skopje	Tashkent	Tijuana	Zigong
Area	54 km ²	90 km ²	168 km ²	340 km ²	90 km ²	1,860 km ²	326 km ²	250 km ²	4,373 km ²
Population (in millions)	2.90	0.22	2.06	2.10	3.00	0.55	2.08	1.25	3.13
Population growth	3.80%	3.00%	3.48%	3.20%	3.00%	8.00%	2.00%	6.02%	0.74%

Figure 1. Basic information on the nine RADIUS case-study cities.

Case-study cities

Full case study (5 cities)

Addis Ababa (Ethiopia), Guayaquil (Ecuador), Tashkent (Uzbekistan), Tijuana (Mexico), Zigong (China)

Auxiliary case study (4 cities)

Antofagasta (Chile), Bandung (Indonesia), Izmir (Turkey), Skopje (TFYR Macedonia)

institutes was to supervise and coordinate the case studies. In order to guide the case studies technically, they were requested to visit a case-study city several times and to communicate frequently through electronic means.

For Asia (Bandung, Tashkent, Zigong)

OYO Corporation and International Center for Disaster-Mitigation Engineering (INCEDE), Japan
Fumio Kaneko, Rajib Shaw, Shukyo Segawa, Jichun Sun, Ken Sudo

For Europe, the Middle East and Africa (Addis Ababa, Izmir, Skopje)

Bureau de Recherches Géologiques et Minières (BRGM), France
Philippe Masure, Pierre Mouroux, Christophe Martin

For Latin America (Antofagasta, Guayaquil, Tijuana)

GeoHazards International (GHI), United States
Carlos Villacis, Cynthia Cardona

4. STC subcommittee for RADIUS

At the ninth Session of the Scientific and Technical Committee for IDNDR (STC), which was held in Geneva in October 1997, the "Subcommittee for RADIUS" was newly established. Its role was to review the RADIUS activities and to provide the IDNDR secretariat with advice and comments. The members were as follows:

- ♦ Dr. Tsuneo Katayama (Chair), Director-General, National Research Institute for Earth Science and Disaster Prevention, Japan
- ♦ Mr. Robert Hamilton, Chairman of the STC, U.S. Geological Survey, United States
- ♦ Prof. Mustafa Erdik, Kandilli Observatory, Bogazici University, Turkey

5. Selection of the three international institutes

The IDNDR secretariat identified three international institutes in three regions, namely, Asia, Europe/the Middle East/Africa, and America. The role of the international

6. Launch of the case studies

The local authorities of the case-study cities prepared a cost plan to launch the RADIUS case studies. In most cities, the local governments allocated complementary local funds for the project. The IDNDR secretariat concluded the Grant Agreement with the nine cities respectively. It also concluded the Grant Agreement with the three international institutes. It was stipulated in the agreements that the cities and institutes should complete the project in 18 months, hold RADIUS workshops, and submit periodical progress reports to the IDNDR secretariat.

Most of the case-study cities established a local steering committee, which took the responsibility for the implementation of the case study. The committee basically had two co-chairpersons, one from the city and the other from the responsible international institute. Each city also established a local advisory committee, whose role was to provide the steering committee with comments in defining needs and priorities, and to help in raising public awareness. The committee consisted of representatives from various sectors such as relevant organizations, semi-public and private sectors, mass media, politicians, and communities.

In order to substantially launch the case studies, a RADIUS kick-off meeting was held from April to July 1998 in most case-study cities. Its purpose was to explain the objectives and methodologies of the project to relevant experts and organizations as well as government officers, raising public awareness.

Some case studies were incorporated in a comprehensive project or closely collaborated with another similar project with independent resources. For example, Zigong City was selected at the same time for a national project called "Demonstration Study on Prevention and Reduction of Earthquake Disaster in Large and Medium Size Cities" by the Chinese Seismological Bureau. In Bandung, the case study was carried out in close cooperation with AUDMP (Asian Urban Disaster Mitigation Program) of the ADPC (Asian Disaster Preparedness Center), funded by USAID.

7. Regional advisers

Three international advisory committees were established in May 1998 regionally so that they might advise the case-study cities in each region. The role of the committees was to visit the cities, provide them with technical advice and to raise the public awareness there. The regional advisers, together with the assigned international institute, visited the cities once or twice. During their visits, they actively participated in the meetings and workshops to discuss the city's seismic risk with decision makers and local experts. The three international institutes coordinated the activities of the regional advisers.

Regional advisers (in alphabetical order)

Asia

- ♦ Dr. Anand S. Arya, Former STC member, Former Professor Emeritus, University of Roorkee, India
- ♦ Dr. Jack Rynn, Director, Centre for Earthquake Research Australia (CERA), Australia
- ♦ Dr. Tsunehisa Tsugawa, Senior Chief Research Engineer, Kajima Technical Research Institute, Japan

Europe, the Middle East and Africa

- ♦ Dr. Mohamed Belazougui, Director of CGS, member of the STC, Algeria
- ♦ Dr. Victor Davidovici, French Bureau de Contrôle SOCOTEC, France

Latin America

- ♦ Ms. Shirley Mattingly, Former Chair of the Emergency Management Committee, City of Los Angeles, United States
- ♦ Prof. Carlos E. Ventura, Dept. of Civil Engineering, University of British Columbia, Canada

8. Training seminars

A seminar on "Seismology and Earthquake Engineering" was held in support of the RADIUS initiative by the International Institute for Seismology and Earthquake Engineering (IISSE), Building Research Institute (BRI), Japanese Ministry of Construction, in Tsukuba, Japan from 11 May to 19 June 1998. It was financed by the Japan International Cooperation Agency (JICA). A RADIUS training seminar for city government officials was held from 22 to 30 June 1998 in Tokyo and Fukui, Japan. It was co-organized by the United Nations University (UNU), the United Nations Centre for Regional Development (UNCRD), and the IDNDR secretariat. They participated in the World Urban Earthquake Conference in Fukui City from 26 to 28 June as part of this seminar.

All of the participants concluded that the lectures, information and materials that they received in Japan were going to help them very much in their work for the reduction of seismic risk in their cities. What they found most valuable was the opportunity to establish relationships with people from other cities in similar conditions. During the RADIUS seminars most of the discussions were centered on what the RADIUS cities were doing, what their problems were, and what they could and needed to do in the future to reduce the risk.

9. “Earthquake Damage Scenario” workshops

All the case-study cities held Earthquake Damage Scenario workshops from October 1998 to March 1999, the end of the first phase of the case study. The workshops greatly raised public awareness through various coverage by mass media, such as newspapers, radio and TV. The common objectives of the workshops were to:

- ♦ Present the damage estimates to the city and ask for feedback from the participants;
- ♦ Estimate the impact of the estimated damage on the city activities;
- ♦ Produce ideas of actions that could reduce the impact of an earthquake on the city; and
- ♦ Discuss the conditions needed to institutionalize the risk management activities.

- ♦ **Zigong** 14 and 15 October 1998
- ♦ **Bandung** 20 and 21 October 1998
- ♦ **Tashkent** 11 to 13 November 1998
- ♦ **Antofagasta** 17 and 18 December 1998
- ♦ **Tijuana** 13 to 15 January 1999
- ♦ **Guayaquil** 20 to 22 January 1999
- ♦ **Izmir** 18 and 19 February 1999
- ♦ **Addis Ababa** 24 to 26 February 1999
- ♦ **Skopje** 1 to 3 March 1999
(in conjunction with the Action Plan Workshop)



Figure 2: Some of the participants of the Workshop on the Action Plan for reducing the seismic risk of Guayaquil

10. “Action Plan” workshops

In most of the nine case-study cities, the second workshop, the “Action Plan” workshop, was held from April to July 1999. The objectives of the workshops, were to develop a Risk Management Plan, based on the evaluation of the earthquake damage scenarios and propose an Action Plan for immediate actions. Active discussions widely covered by mass media, such as TV and newspapers, greatly raised public awareness of disaster preparedness.

- ♦ **Bandung** 14 April 1999
- ♦ **Zigong** 21 May 1999
- ♦ **Tashkent** 26 May 1999
- ♦ **Tijuana** 27 and 28 May 1999
- ♦ **Antofagasta** 9 and 10 June 1999
- ♦ **Guayaquil** 30 June to 3 July 1999
- ♦ **Addis Ababa** 20 to 22 July 1999