Earthquake risk and risk management assessment

The report provides comparative assessments of earthquake risk, each cities contributing factors, and the state of risk management in each participating city. Because the information for each city was gathered using the same worksheets, systematic descriptions of the key elements of a city's risk and risk management efforts are also included.

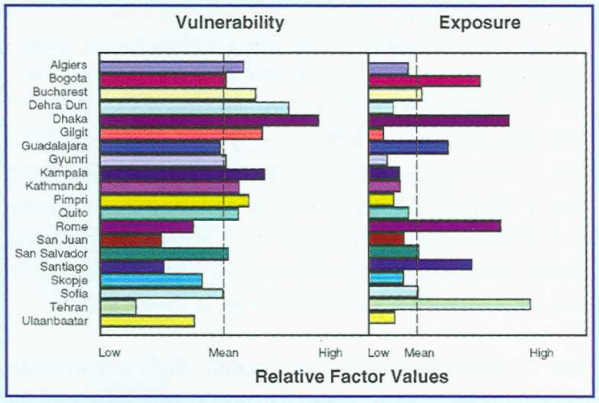

Figure 2: Sample results of exposure and vulnerability factor values for the twenty cities actively involved in all phases of the project. While Dhaka (Bangladesh) shows the highest vulnerability factor value of the sample, Tehran (Iran) has the highest exposure factor value. Results are relative to the sample.

City profiles

For each of the participating cities, the project coordinators developed a two-page profile of the city's earthquake risk, its causes, and efforts undertaken to reduce it. Each city profile includes a map of the greater metropolitan area, basic information about the city, significant historical developments in the seismic building codes, a graph of the city's population growth, a list of significant earthquakes, a comparative analysis describing the city's earthquake risk in relation to other cities, a list of agencies involved in earthquake risk management, and examples of efforts undertaken to reduce the city's earthquake risk. Figure 3 presents an example of a city profile for Algiers, Algeria.

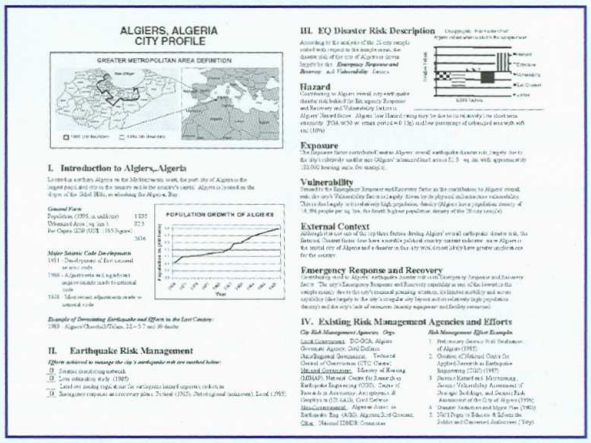

Figure 3. Example of a city profile for Algiers, Algeria.

Risk management effort case studies

The final report also includes more than 65 risk-management effort case studies from 26 cities. Together they cover a variety of types of efforts. These efforts implemented by different groups (local government agencies or the private sector), target a variety of groups (schools, transportation network, small businesses) and needs (emergency response planning, infrastructure strengthening, public education), use different forms of implementation (establishing an organization, developing a new technology, passing legislation), and they cover different areas (local, state, national). The compilation can be expanded and updated over time and provided city representatives with specific risk management ideas and contact information should they wish to obtain more information.

Feedback

The report also summarizes the comments provided by city representatives during the project. This input was compiled from responses to a worksheet designed to solicit feedback, discussion in the internet forum, and meetings during the RADIUS symposium that complemented the project's internet discussion. Comments were requested on the EDRI methodology, project design, potential uses and users of the study's results, global earthquake risk assessment in general, and the potential for conducting related work in the future.

Worldwide network of earthquake professionals

The development of a new network of earthquake professionals in more than 70 cities and 50 countries is another important contribution. The professionals represent a variety of disciplines and cities with diverse earthquake risk and risk management situations. Twenty of the individuals are active participants who have established a basis of understanding through this project, gained experience collaborating via e-mail, and met at the RADIUS symposium in October 1999. This network will be an important resource for formal projects, either following up on the UUSRAW project or for similar work. It will also provide valuable contacts for informal interaction, particularly for representatives of cities that do not have a great deal of internal earthquake risk resources.

Conclusions

The UUSRAW project involved 74 member city representatives working worldwide mostly via the internet in order to gather information that would help participants better understand the magnitude and different causes of their city's risk, as well as compare these results with those of the other participating cities.

One of the biggest challenges of the project was obtaining data, even directly from city representatives who have access to local sources. Several cities in the sample are undergoing periods of social and economic transition, and it has been difficult to obtain reliable economic data for these cities. In addition, it was difficult to ensure that all 74 representatives were able to participate actively in all phases of the project.

Another shortcoming was the lack of unlimited access to the internet. For the most part, participants agreed that the Internet was a good vehicle for implementation of projects such as this. Providing a forum in which project participants could voice their ideas about the project, the proposed methodology of earthquake risk and earthquake risk management in general, the internet brought together earthquake professionals worldwide.

A notable achievement is the large amount of information collected by the project. In addition to earthquake risk data, the information gathered on earthquake risk management has sparked interest in city representatives who would like to learn more about each other's work.

The project has also helped raise awareness in several cities. Representatives of San Salvador (El Salvador) and Sofia (Bulgaria) for example, have used their participation in the project as a means to gain the attention of the media in order to educate the public and city officials on earthquake risk in their cities.

The Understanding Urban Seismic Risk around the World project has achieved its objectives. However, the methodology used for this study still needs to be improved. All project participants have learned from the challenges and agree that this effort is only a first step in a long-term process shared by cities worldwide to mitigate earthquake risk.

Contact information

Cynthia Cardona, Rachel Davidson and Carlos Villacis
GeoHazards International
200 Town and Country Village
Palo Alto, CA 94301, USA
Tel: (1 650) 614 9050
Fax: (1 650) 614 9051
E-mail: cardona@geohaz.org
rad24@cornell.edu
and villacis@geohaz.org