APPENDIX I

METHODOLOGIES FOR DETERMINING THE AFFECTED AREA ACCORDING TO THE TYPE OF NATURAL PHENOMENON

A. Seismic phenomena

Events

- Fault-line movements
- Tremors and earthquakes
- Liquefaction
- Tsunamis

Effects

Partial and total destruction of homes; large number of dead and wounded, especially those suffering fractures, as well as people left disabled or orphaned; an extended

Effects	Dead	Wounded	Buildings totally destroyed	Buildings partially destroyed	Roads closed	Public services interrupted
	********	********	********	********	********	********

Effects on the Environment

Effects	Air pollution	Water pollution	Land pollution
		Caused by overflows	Caused by overflows

reconstruction process requiring significant economic investment.

Basic Information to be collected

Location:

- Epicenter
- Geological information about the area

Intensity and magnitude of the phenomenon:

- The Mercalli scale measures the intensity of an earthquake according to the effects it has on people and property.

- The Richter scale measures magnitude, that is, the amount of energy released from an earthquake's epicenter as recorded on a seismograph.

History:

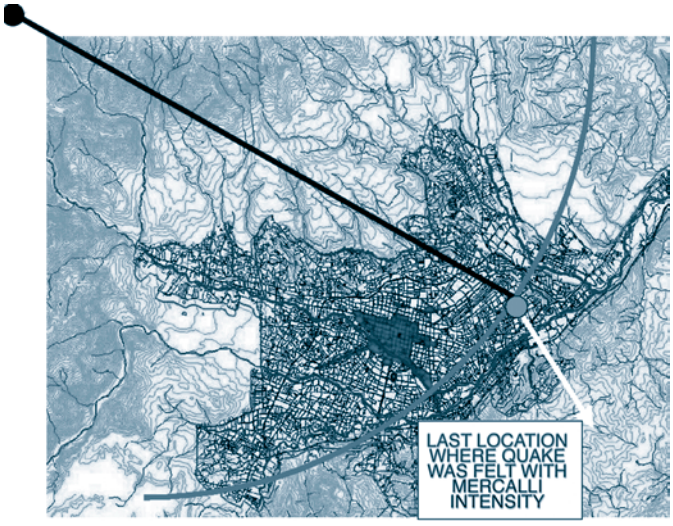
- Historical intervals between seismic phenomena

Determination of affected geographical area

One should use the epicenter as a reference point in defining the area affected by an earthquake. The study should be supported with as much relevant planimetric information as possible.

A circle is drawn with its center at the epicenter and its radius ending at the farthest point where the earthquake is known to have been felt at intensity V or greater on the Mercalli scale. This approximate representation of the affected area should be adjusted as more accurate information is obtained. The Mercalli scale may be used and more circles drawn to show affected areas that are more precisely tailored to the type of study to be carried out. For example, a smaller circle would be drawn for a study of physical damage to urban installations than for a study of the areas affected by interruptions in the supply of services. This means that areas where installations have been destroyed can be defined by a new circle whose radius is determined by the farthest place where physical structures are known to have been totally or partially destroyed (see figure 1).

Figure 1



Planimetrics - scales

- Country level: 1:1,000,000 - 1:250,000. This basically shows in what part of the country the phenomenon took place.
- Regional level: 1:500,000 - 1:50,000. This level shows the location of the event and the entire affected area (both rural and urban) in greater detail.
- Urban area level: 1:50,000- 1:2,500. These scales are used to prepare detailed plans of affected areas. They are more commonly used in urban areas.

B. Atmospheric phenomena

Phenomenon

- Tropical storms and hurricanes
- Heavy rains
- Droughts

Consequences

The heavy rains and high winds produced by tropical storms, hurricanes and other atmospheric phenomena, such as the rainstorms that occur in Central America and the Caribbean, may cause considerable damage.

Effects	Dead	Wounded	Buildings totally destroyed	Buildings partially destroyed	Roads closed	Public services interrupted
	********	********	********	********	********	********

Effects on the Environment

Effects	Soil erosion and silting of river beds	Water pollution	Land pollution
	**********		

Abnormal periods, in which rainfall is reduced or the dry season gets longer, often occur in the region. They have a negative impact on agricultural production, power generation at hydroelectric plants and, at times, the supply of water for human and industrial use.

Basic information to be collected

Location:
- Geographical areas affected

Intensity:
- Rainfall
- Wind speed

History:
- Historical intervals between atmospheric phenomena

Determination of the affected geographical area

The best tools for identifying an area affected by a hurricane or similar meteorological phenomena, such as rainstorms, are satellite photographs, which can be obtained via the Internet. Photographs of this sort clearly define which areas have been affected day by day and make it possible to locate the key points in order to mark out the affected area.

Planimetrics - scales

- Country level: 1:1,000,000 - 1:250,000. It basically shows in what part of the country the phenomenon took place. In the case of atmospheric phenomena, the scale often must cover several countries and indicate the phenomenon's path.
- Regional level: 1:500.000 - 1:50,000. This level shows the entire affected area (both rural and urban) in greater detail.
- Urban area level: 1:50,000- 1:2,500. These scales are used to prepare detailed plans of affected areas. They are more commonly used in urban areas.

C. Hydrological phenomena

Phenomenon

- River flooding
- Heavy seas
- Desertification
- Erosion

Consequences

This type of phenomenon will have different effects, depending on whether flooding takes place slowly or quickly.

- Slow evolution: minimal fatalities and injuries, damage to crops and both immediate and long-term effects on nutrition.
- Flash floods: many fatalities, few wounded, homes destroyed, immediate and long-term consequences for food.

Effects	Dead	Wounded	Buildings totally destroyed	Buildings partially destroyed	Roads closed	Public services interrupted
	********	********	********	********	********	********

Effects on the Environment

Effects	Air pollution	Water pollution	Land pollution
		**********	

Basic information to be collected

Location:

- Areas affected

Intensity:

- Rainfall
- Peak river flows
- Water volume
- Speed of movement

History:
- Historical intervals between hydrological phenomena

Determination of the affected area

There are two forms of measurement, depending on the type of flood:

- Floods caused by rain or storms can be measured by making a plan and establishing key points according to the information obtained (the triangulation method) or by examining the contours of the land, on the assumption that the lowest areas will be the most prone to flooding. These areas are also defined by geomorphic formations such as canyons.

- In the case of flooding caused by swollen rivers or tsunamis, the river's normal course or the beach line are taken as the base line. From there, parallel lines may be drawn, as reports arrive of affected areas (see figure 2). This information should be complemented with information about the sector's geographical conditions, such as contour lines, slopes, hills and so forth.

Figure 2
DEFINITION OF THE AREA AFFECTED BY FLOODING

Lines showing borders of flooded areas.

Planimetrics - scales

- Country level: 1:1,000,000 - 1:250,000. This basically shows the location of the event so that it can be seen in the context of the country where it occurred.
- Regional level: 1:500.000 - 1:50,000. This level shows the total affected area in greater detail and takes into account tributaries that might cause further floods later.
- Urban area level: 1:50,000- 1:2,500. These scales are used to prepare detailed plans of affected areas. They are generally used more in urban areas.

D. Volcanic phenomena

Phenomenon

- Rock ejections
- Pyroclastic eruptions
- Mudflows
- Lava flows
- Poison gas emissions
- Acid rain
- Pollution from toxic gases

Effects

Volcanic eruptions cause two kinds of direct damage, which may be found separately or together in a single event. However, the area affected by them can vary widely, depending on conditions such as wind and geographical agents.

- Damage caused by pyroclastic eruptions (the emission of ash and toxic gases into the air).
- Damage caused by lava flows.

Effects on urban infrastructure

- Fires
- Roofs collapsing under the weight of the ash
- Destruction caused by mudflows

Effects on health

- Injuries, broken bones, burns
- Worsening of respiratory ailments
- Bronchial irritation
- Asphyxia caused by inhalation of carbon dioxide
- Intoxication caused by hydrosulphuric acid and carbon monoxide

Effects	Dead	Wounded	Buildings totally destroyed	Buildings partially destroyed	Roads closed	Public services interrupted
	********	********	********	********	********	********

Effects on the Environment

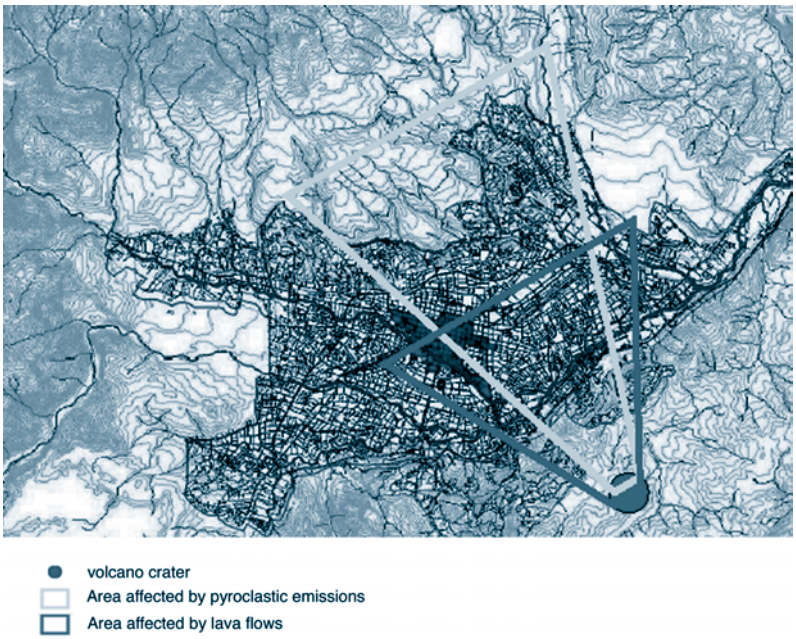
Effects	Air pollution	Water pollution	Soil pollution
	**********	**********	**********

Basic Information to be collected

- Location:
Location of the volcano and its relationship with its nearby surroundings

- Intensity:
Volume of ash emissions

- History:
Historical intervals between volcanic eruptions



Planimetrics - scales

- Country level: 1:1,000,000 - 1:250,000. This basically shows the location of the event so that it can be seen in the context of the country where it occurred.
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APPENDIX II

PROBLEMS RELATED TO AVAILABILITY AND USE OF INFORMATIONIN ASSESSING THE EFFECT OF DISASTERS

Specialists normally find it difficult to determine which information is the most reliable when they first embark on assessing a disaster. Not only is there often a lack of up-to-date information, but access may be limited, and information from different sources can be contradictory and of uneven quality depending on the variable and the geographical unit in question.

Some of these problems are described below and possible solutions to them proposed. We wish to emphasize that these are strategies for approaching the problems rather than specific solutions for all occasions.

Among the problems that are commonly found are the following:

- Difficulties in assessing the quality of basic information on fatalities and the number of other victims.

Information on the number of victims is often gathered by different organizations, and there is a risk of duplication. Also, there is a risk of overestimating the number of missing persons -which is often added to the number of fatalities- due to the challenge of adjusting figures when a person assumed to be missing is found. Another serious problem arises when estimating the number of people who have sustained losses. This figure can vary widely depending on when those living in shelters were counted.

A related problem that hinders future in-depth studies is the lack of information broken down by sex, age or other socio-economic variables.

In view of the above, we suggest reviewing and evaluating the estimated numbers of victims, including the dead, and obtaining as much information as possible regarding the demographic and socio-economic characteristics of the affected persons.

- Lack of consistency in data-gathering activities.

After a disaster, the institutions responsible for providing emergency assistance normally conduct surveys of the affected population. These are usually taken at shelters. Unfortunately, different methodologies are often used and the data are gathered on different dates, which means that the figures are not strictly comparable.

To avoid these complications, a single data-gathering activity should be coordinated as soon after the event as possible. Since this can be a time-consuming exercise, we recommend that it be conducted at shelters and that only a minimum of information be gathered. Questionnaires used in this type of survey often seek information that, although theoretically useful, is never analyzed. A basic set of questions should be designed to collect the following information: