

**6th sem. Hons., CC-14,
Study material prepared by Surajit Let**

RISK ASSESSMENT AND EARTHQUAKE HAZARD

Risk assessment involves in earthquake hazard two activities.

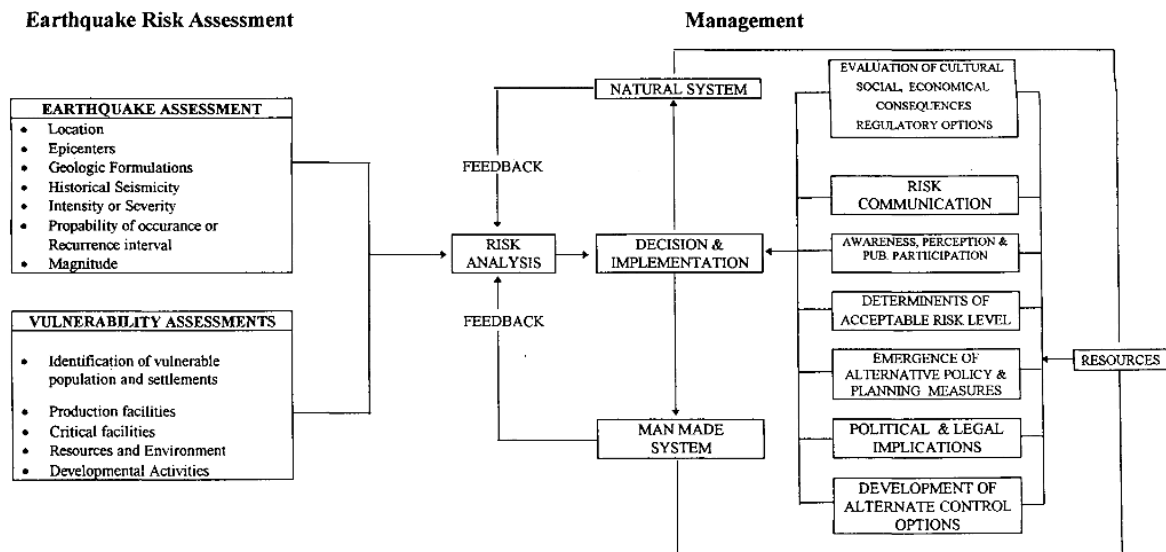
They are:- 1. To identify the characterization of the physical phenomena triggered by earthquake hazard on temporal and spatial scales and

2. Presentation of the physical effects in a map form.

So that community decision makers and practitioners can use, to adopt and enforce emergency preparedness and mitigation measures and develop an effective protective capability.

Characterization of earthquake hazard varies from region to region because of its mode and frequency of occurrence. Even each place generates a unique ensemble of physical effects that affect the built environment in different ways. Therefore, the 6 following questions are important in earthquake hazard assessment

- Where have earthquake hazard occurred in past?
- How severe were the levels of physical effects (for example, ground shaking) triggered in the past events?



What levels are expected to be triggered in future events?

- How frequently, on the average, do events capable of generating severe physical effects occur?

These assessments are able to provide information of the probable location, severity phenomena and the likelihood of its occurrence within a specific period in a These assessments are mainly

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based on available scientific information given time. 37 including geologic, geomorphic and soil maps, topographic maps, and satellite imagery. Even historical information both written reports and oral accounts of long-term residents are also much useful in this regard.

Risk assessments tell us the loss expected from the earthquake hazard, what is at risk (Population, property and rescues) and how easily various elements at risk can 39 Basically, risk assessments clarify the following be damaged by earthquake hazard . questions;

- What kind of damage will physical effects of an earthquake cause to buildings, facilities and life line systems that are at risk in a community?
- What have communities done in the past to control damages of deaths, injuries, economic loss and loss of function from these effects?
- How social, scientific and technical actions will reduce the vulnerability of existing buildings and lifeline systems in each community to future events?

Indeed hazard assessments involves scientific, societal and economic considerations, particularly three main factors are important :

- (a) the location of buildings, facilities, and lifeline systems with in a community,
- (b) their exposure to the physical effects of an earthquake,
- (c) their vulnerability (such as potential loss in value) A part and another important factor in earthquake hazard assessment is
- (d) to determine the level of acceptable risk

Importantly when the spatial and temporal characteristics of the physical effects are fully integrated with a community's inventory of buildings, facilities and lifeline systems, the risk to the community can be determined.

Earthquake hazard and risk assessments are the starting points for defining actions that communities can take to reduce economic loss, humans impacts from Such assessments are used by communities to improve their earthquake hazard. capacities in mitigation, emergency response, and disaster recovery. Further prediction and warning system can be designed to provide all sectors of the population with information on the location, severely and duration of an impending earthquake event so that they can take action in advance to lessen the unanticipated impacts.