

Lecture-08: Vulnerability

27

1

Course Teacher:
Md. Esraz-Ul-Zannat
Assistant Professor
Dept. of URP, KUET

January 01, 2018



ACKNOWLEDGEMENT

These slides are aggregations for better understanding of the topic mentioned in the previous slide . I acknowledge the contribution of all the authors (especially **M Aminur Rahman**, Assistant Professor, Department of Architecture), and photographers from where I tried to accumulate the info and used for better presentation.

TOPICS TO BE COVERED BY THIS PRESENTATION

- Vulnerability
- Characteristics of Urban Setting Vulnerabilities
- Other Factors Contributing to Urban Vulnerabilities
- Vulnerability Equation
- Categorization of Vulnerability
- Interaction of Vulnerability Factors
- The Social Levels of Vulnerability
- The Social Levels of Vulnerability
- Quantifying Vulnerability
- Hazard-dependent/independent vulnerability
- Social levels-vulnerability parameters and indicators

VULNERABILITY

There is a potential for an event to occur



Vulnerability is a concept which describes factors or constraints of an economic, social, physical or geographic nature, which reduce the ability to prepare for and cope with the impact of hazards.

VULNERABILITY

○ Hazard-specific:

- a characteristic which makes the element concerned susceptible to the force/s or impact of a hazard. The geo-physical and locational attributes of the element/s concerned are considered in this category. Based on the present-knowledge of the distribution and frequency of hazards, a community or country may be threatened by specific hazards.

○ Setting-specific:

- This is concerned with the prevailing socio-economic arrangement of the area concerned as to whether it is predominantly rural or urban. There are inherent setting characteristics that may be common to both as well as exclusive to each which contribute to the general susceptibility of the area.

CHARACTERISTICS OF URBAN SETTING VULNERABILITIES

- **Concentrations and Crowdedness** - the three aspects are crowdedness and disease; crowdedness and buildings; crowdedness and resource base.
- **Numbers of Peoples and Activities** - the two aspect of this condition are Technologies and the Management System.
- **Proximity to Man-made Hazards** - the aspects considered are Technological hazards, Economic hazards, and Social Hazards

○ Interdependency of Lifelines

- Major lifelines of the urban area are dependent on each other to function effectively. This interdependency is a factor that may contribute to the area's vulnerability.

○ Social and Organizational Dimension

- The existing arrangement of a society regarding relationships of individuals, groups and institutions may create adverse situations that weakens these elements' capabilities to face or withstand hazards and contribute instead to the intensifying of the effects.

○ Attitudinal and Motivational Dimension

- The prevalent worldview of the society or certain groups within society may contribute to a passive or non-active stance regarding the disasters that beset the area.

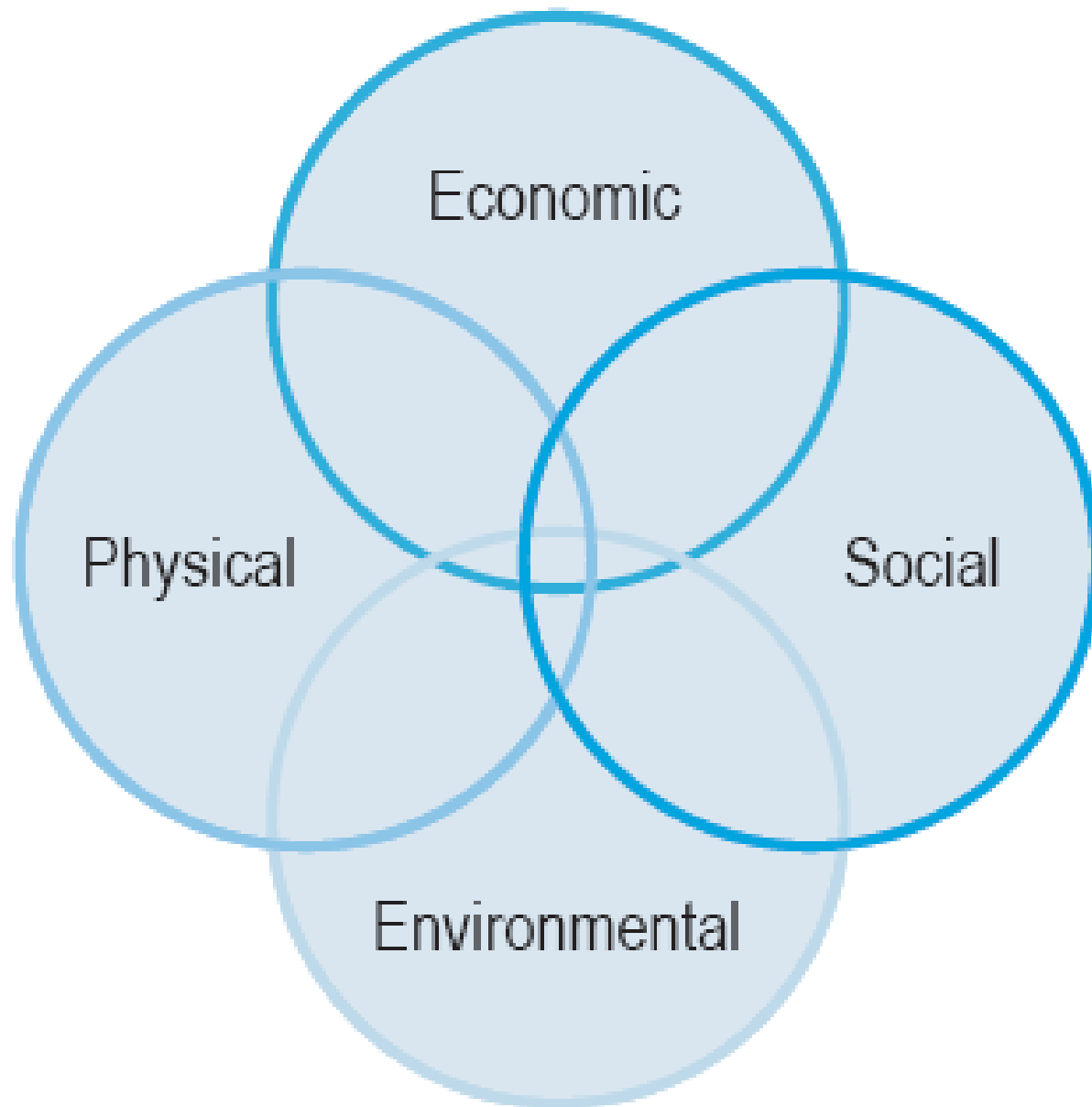
VULNERABILITY EQUATION

$$\text{Vulnerability} = \text{Exposure} + \text{Susceptibility} - \text{Resilience}$$

CATEGORIZATION OF VULNERABILITY

- Physical Vulnerability
 - Loss of buildings, assets, infrastructure, lifeline facilities etc.
- Social Vulnerability
 - such as age, gender, poverty, culture, attitude of population
- Economical Vulnerability
 - Potential loss of stock, investments, crops etc.
- Environmental Vulnerability
 - Degradation, changes of state, etc.

INTERACTION OF VULNERABILITY FACTORS



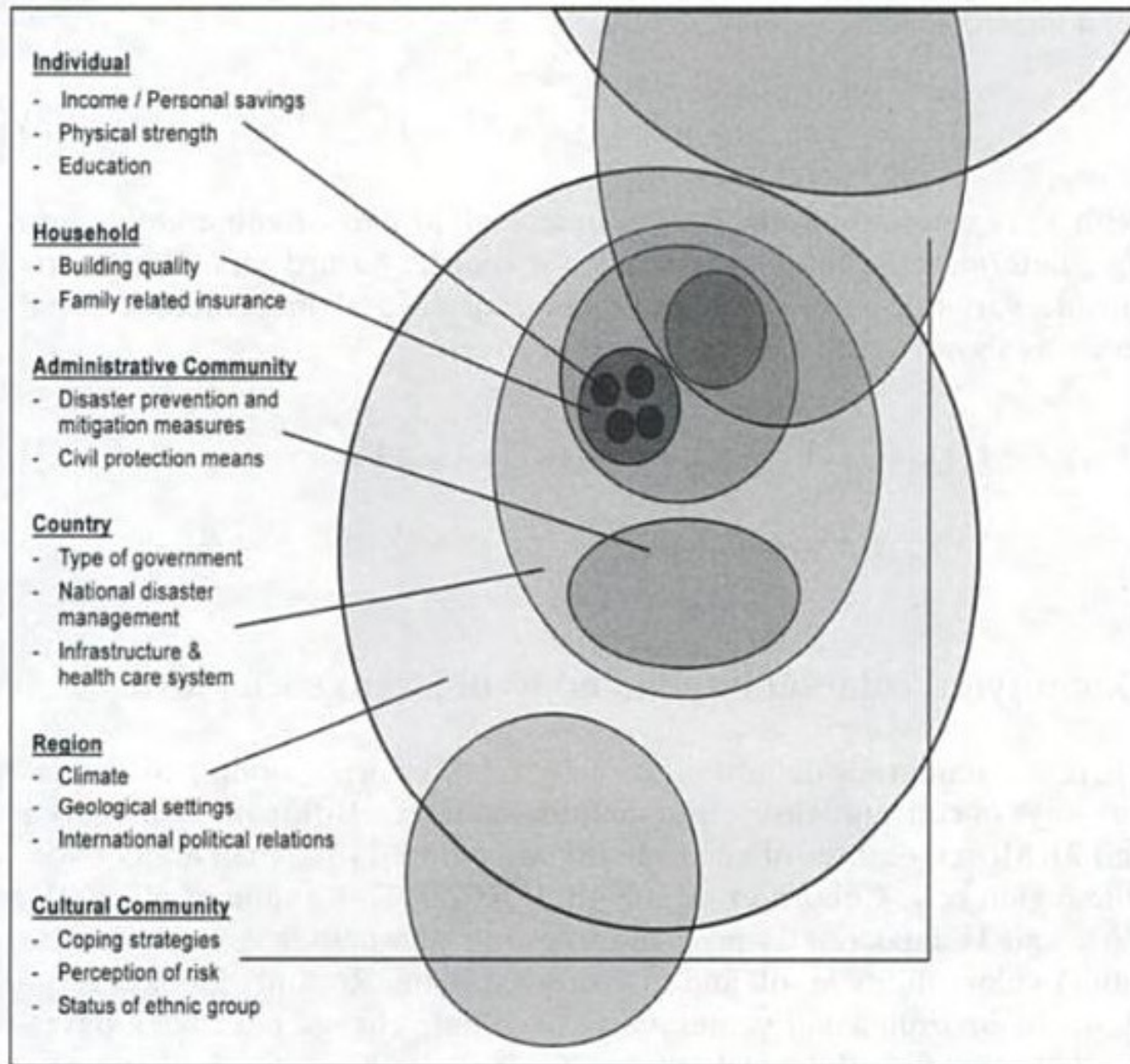
THE SOCIAL LEVELS OF VULNERABILITY

- Vulnerability is related to poverty. The poorest societies have the fewest resources and opportunities to significantly reduce vulnerability.
- However, while poverty is generally linked to **income or availability of goods and degree of well-being based on wealth**, the concept of vulnerability has a broader remit that also **embraces cultural and social components**. Not being poor does not necessarily mean not being vulnerable, and vice versa.
- It should be noted that the development process of a society might exclude certain social or cultural groups. This is particularly the case where rapid national economic development, measured by indicators such as GNP, can hide the fact that part of a population may remain disadvantaged, with a low development status. These groups are also most likely to be found in high risk areas.

THE SOCIAL LEVELS OF VULNERABILITY

- Affiliation with a specific social or cultural group might therefore have certain implications for an individual's vulnerability.
- Indicators created particularly for measuring development, such as the widely used HDI (Human Development Index), are available globally but only rarely at sub-national scale, and hence are not adequate for vulnerability assessments at finer resolution.
- In the context of measuring vulnerability at household or individual level, one has to take into account the linkages of vulnerabilities between the different social levels.

THE SOCIAL LEVELS OF VULNERABILITY



THE SOCIAL LEVELS OF VULNERABILITY

- The average vulnerability of an individual is made up of a set of vulnerabilities connected to different social levels that each individual belongs to. The social levels are:
 - Individual
 - Household
 - Administrative community
 - National
 - Regional
 - Cultural community

THE SOCIAL LEVELS OF VULNERABILITY

- The individual, household, administrative community and national levels follow a hierarchical spatial order and the administrative partition of a country. The regional and cultural community levels may intersect the other social levels confined by administrative limits.

QUANTIFYING VULNERABILITY

- Methodologies to address the socio-economic characteristics of vulnerability worldwide are still at an early stage of development.

HAZARD-DEPENDENT/INDEPENDENT VULNERABILITY

- The vulnerability of an individual or a group of individuals of a certain social level can be better quantified if one distinguishes between hazard-independent and hazard-dependent parameters.
- Hazard-independent vulnerability:
 - Describes the strength or weakness of an individual or a group of people **to withstand stresses derived from their exposure to any natural hazard.**
 - Typically hazard-independent parameters describe general aspects of development including **income, health and education, but also access to information or the existence of national disaster plans.**

- Hazard-Dependent vulnerability:
 - Describes people's vulnerability to the impact of a given hazard.
 - Largely of a **physical nature, such as the quality of building or the construction of dams, but also include social and cultural aspects, such as draught preparedness or the percentage of the population vaccinated**

SOCIAL LEVELS-VULNERABILITY PARAMETERS AND INDICATORS

Social Levels	Parameters	Indicators
Individual and household	<ul style="list-style-type: none">• Age• Income• Health/disability• Education• Subsistence economy in primary sector• Savings• Individual and family related insurance• Neighborhood network• Access to information	<ul style="list-style-type: none">• Average age• GDP per capita• Malnutrition of children <5• Life expectancy• HIV/AIDS infection rate• Illiteracy rate• Productivity per capita (primary sector)• Number of mobile phones, TVs, radios/per capita

SOCIAL LEVELS-VULNERABILITY PARAMETERS AND INDICATORS

Social Levels	Parameters	Indicators
Administrative community	<ul style="list-style-type: none">• Infrastructure/Accessibility• Presence and quality of civil protection including early warning/emergency plans/disaster management capacities• Disaster preparedness• Degree of autonomy/participation in decision making procedures and access to resources	<ul style="list-style-type: none">• Traffic infrastructure/road network• Density of rural population• Level of urbanization• Level of corruption

SOCIAL LEVELS-VULNERABILITY PARAMETERS AND INDICATORS

Social Levels	Parameters	Indicators
Country /Region	<ul style="list-style-type: none">• Regulatory environment• Armed conflict with involvement of national government• Population structure• Economic system• Economic dependency• Infrastructure/services• National disaster planning• Forecast and early warning system• Emergency management system and capacities• Insurance services	<ul style="list-style-type: none">• Type of government/number of signed international agreements• Number and intensity of conflicts• Number of IDPs and refugees• Fertility rate• Sex ratio• Age average• Trading activities: rate of GDP• External aid as ration of GNI• Contribution of primary sector in GDP• Remittances from abroad• Urban population growth• Transportation and communication network• Number of missing values of important indicators

SOCIAL LEVELS-VULNERABILITY PARAMETERS AND INDICATORS

Social Levels	Parameters	Indicators
Region	<ul style="list-style-type: none">• Climate• Regional political stability	<ul style="list-style-type: none">• Climate records and their long-term changes• Number and intensity of regional conflicts

SOCIAL LEVELS-VULNERABILITY PARAMETERS AND INDICATORS

Social Levels	Parameters	Indicators
Cultural Community	<ul style="list-style-type: none">• Status of community• Armed conflicts with involvement of the community• Gender inequality• Perception of risk and approach towards emergencies (cultural beliefs)• Coming strategies (including farming methods and land tenure systems)	<ul style="list-style-type: none">• Political discrimination of ethnic groups• Economic disadvantages of ethnic groups• Cultural restrictions of ethnic groups• Intra- and inter-communal conflicts and their intensity• GDI

WHAT WE HAVE COVERED TODAY

- Vulnerability
- Characteristics of Urban Setting Vulnerabilities
- Other Factors Contributing to Urban Vulnerabilities
- Vulnerability Equation
- Categorization of Vulnerability
- Interaction of Vulnerability Factors
- The Social Levels of Vulnerability
- The Social Levels of Vulnerability
- Quantifying Vulnerability
- Hazard-dependent/independent vulnerability
- Social levels-vulnerability parameters and indicators

WHAT WE LEARNT

- Understanding of vulnerability, its associated issues and different parameters.

What Next?

Lecture 9: Hyogo Framework for Action

Sample Questions

1. Vulnerability
2. Characteristics of Urban Setting Vulnerabilities
3. Other Factors Contributing to Urban Vulnerabilities
4. Vulnerability Equation
5. Categorization of Vulnerability
6. Interaction of Vulnerability Factors
7. The Social Levels of Vulnerability
8. The Social Levels of Vulnerability
9. Quantifying Vulnerability
10. Hazard-dependent/independent vulnerability
11. Social levels-vulnerability parameters and indicators