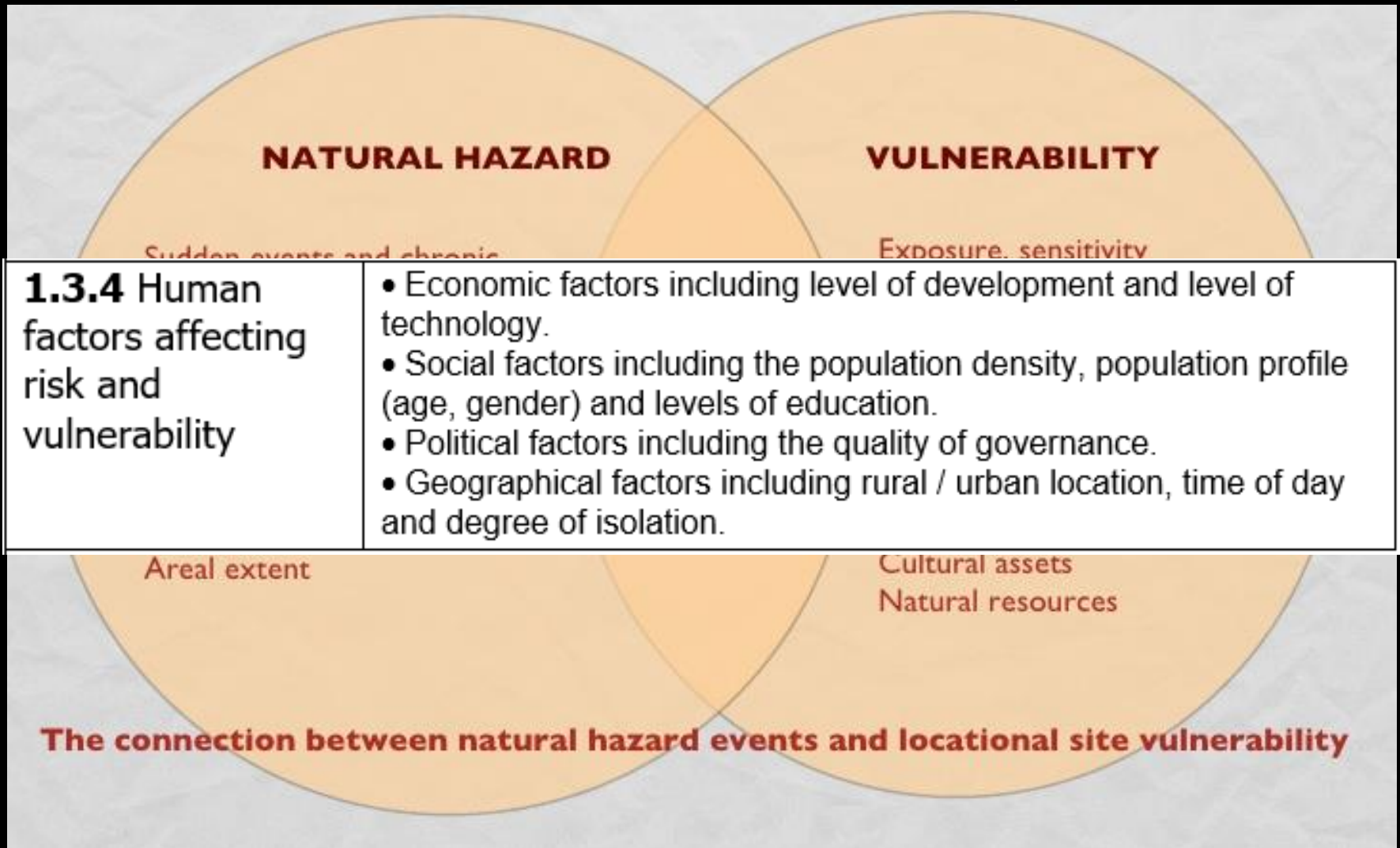


1.3.4: Human Factors affecting Risk and Vulnerability



What are risk and vulnerability?

Risk describes the actual danger from a tectonic event. This can vary depending on a number of factors covered already. These include human and physical factors:

- Human:
 - Population density
 - Preparedness
 - Quality of structures
- Physical:
 - Areal extent
 - Magnitude of the event
 - Specific hazards

Vulnerability

Vulnerability is a measure of someone's inability to cope with, or recover from, a disaster such as an earthquake or other tectonic hazard. Some groups of people are more vulnerable to hazards than others. Poverty, age, gender and disability are all factors that can affect vulnerability. For example, someone's poverty may mean that their house is badly built and unable to withstand ground shaking during an earthquake.

Capacity

Capacity is the opposite of vulnerability. It describes someone's ability to survive a hazard or recover

The Disaster Risk Equation

$$\text{Risk} = \frac{\text{Hazards} \times \text{Vulnerability}}{\text{Capacity}}$$

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Human factors affecting risk and vulnerability

Economic Factors (those related to wealth, employment and poverty).

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In MEDCs (HICs)

People are far more likely to take a more **POSITIVE RESPONSE**, by looking for practical ways of coping and living with the hazard. This is referred to as **HAZARD MANAGEMENT**. This involves adjustment and modification. People accept that the natural event will happen and so they need to take **PRO-ACTIVE** steps to prepare themselves for this future event and to minimise the threat of damage to people and property. This involves what is referred to as the **3 P's policy**.

This positive action is very much dependent on:

- a) A **higher level of education** which affects how they perceive the hazard and accept that the hazard does exist.
- b) A **higher level of capital and technology** to be able to take action and respond to the hazard.
- c) A **better knowledge and understanding** of the hazard due to there being more historical records and effective monitoring taking place.

Human factors affecting risk and vulnerability

Economic Factors (those related to wealth, employment and poverty).

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In LEDCs (LICs)

People are far more likely to take a **NEGATIVE RESPONSE** and ignore the hazard (i.e. pretend that it does not exist). **Lower levels of education and economic development** mean that LEDCs **do not have the know-how, capital or technology** to take an active response to the hazard. As a result, it has been estimated that 95% of the total loss of life caused by all natural hazards have occurred in LEDCs.



Human factors affecting risk and vulnerability

Social Factors (related to people's way of life and living conditions)

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In LEDCs people often live in poor quality housing. Sometimes this is made by the people themselves in **shanty towns or slums**. There are often large numbers of people crowded into these buildings living in **poor conditions** with **no running water, medicine or sanitation**. As a result of this difficult way of life, tectonic hazards are likely to affect these areas and people far more than people living in comfortable conditions in MEDCs.

Human factors affecting risk and vulnerability

Political Factors (related to how a country is organised or run)

The organisation and governance of a country has a huge bearing on its ability to cope with tectonic hazards. Contrast the two examples on **page 34** of your booklet:

Page 34

USA



[EARTHQUAKE]

BE PREPARED...

IF YOU FEEL SHAKING...

AFTER...

SAFESTEPS.COM

FEDERAL EMERGENCY MANAGEMENT AGENCY

The infographic provides a comprehensive guide to earthquake safety. It is divided into three main sections: 'BE PREPARED...', 'IF YOU FEEL SHAKING...', and 'AFTER...'. The 'BE PREPARED' section shows various items to have on hand, such as water, food, and a first aid kit. The 'IF YOU FEEL SHAKING' section illustrates the correct 'Drop, Cover, and Hold On' technique in different settings, including schools, homes, and public places. The 'AFTER' section provides instructions on how to safely return home and what to do if you are trapped. The infographic includes logos for SAFESTEPS.COM and the FEDERAL EMERGENCY MANAGEMENT AGENCY.

Human factors affecting risk and vulnerability

Political Factors (related to how a country is organised or run)

HAITI

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Human factors affecting risk and vulnerability

Other Factors

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- 1) Location – urban areas are far more prone to damage from earthquakes, simply due to the fact that they contain more buildings likely to cause death. However rural areas can become cut off, leading to people suffering more long term. These isolated areas are often the most vulnerable of all.
- 2) Time of day/day of week/time of year – most areas are more vulnerable during the rush hours and times when people are moving. Night time tends to be quite safe as people are at home where they are most comfortable and likely to act more calmly. Winter is the worst time of year as people can often be left with no shelter and food/water are harder to come by.

Human factors affecting risk and vulnerability

Other Factors

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3) Population density – It goes without saying that densely populated areas are the ones at greatest risk. Some buildings may house thousands of people either at work or living there. Sparsely populated rural areas are unlikely to be as severely affected.

What affects risk and vulnerability?



The Disaster Risk Equation

$$\text{Risk} = \frac{\text{Hazards} \times \text{Vulnerability}}{\text{Capacity}}$$

Draw a simple version of the diagram to explain how vulnerability can be reduced and capacity increased.

What affects risk and vulnerability?

1) With reference to examples that you have studied explain how people's capacity to cope with tectonic hazards can be improved. (10)

2) Explain why the risk and vulnerability of different regions to tectonic hazards varies. (10)

3) How do the following factors affect people's vulnerability to tectonic hazards (8)

i) Level of development

ii) Political governance