Vulnerability Analysis and Risk Assessment

Science and arts – Quantitative assessments

Mathematical models – Regression

Socio-economic – Social Vulnerability (Characters of people and impact(s) of the disaster on the people)

Analysis of Vulnerability

- → Climate science
- → Policy development studies
- → Economics
- → Disaster Management
- → Health
- → Social Sciences

Social Vulnerability

- → Initial well-being (Nutrition's, morale, health)
- → Livelihood and resilience (income, qualifications, assets performance)
- → Self-protection (build a safe home, safe site)
- → Social protection (mitigation measures, shelters, preparedness)
- → Social and political networks and institutions (capital, resources needs)

Guidelines

Building codes

Zoning regulations

Earthquake training (DCH)

Communication systems

…………………………………….. they are vulnerable

Process of Vulnerability Analysis

1. Making an inventory of what is at risk (Buildings, Infrastructure, Local institutions)
2. Assessing the vulnerability of elements of risk (Tangible & Intangible)
   a. Floods – crops, livestock, buildings (T) & Cultural, Social Cohesion (INT)
   b. Landslides – Cliff of roads, shallow foundations (T) & Social cohesion (INT)
   c. Strong winds – trees, crops (T) & community structures (INT)

Risk Assessment

A process of analysis to identify and measure risks from natural hazards that affect the people, property and environment.

Risk Assessment

Scientific quantification of risk – data – past proceedings – incidents – region – identified and part of the exercise

Risk Evaluation

Social and political judgments – importance of the various risk (faced and involved) – resource allocation

Two components

1. Hazard analysis
   a. DMTP – Geological analysis of the area -
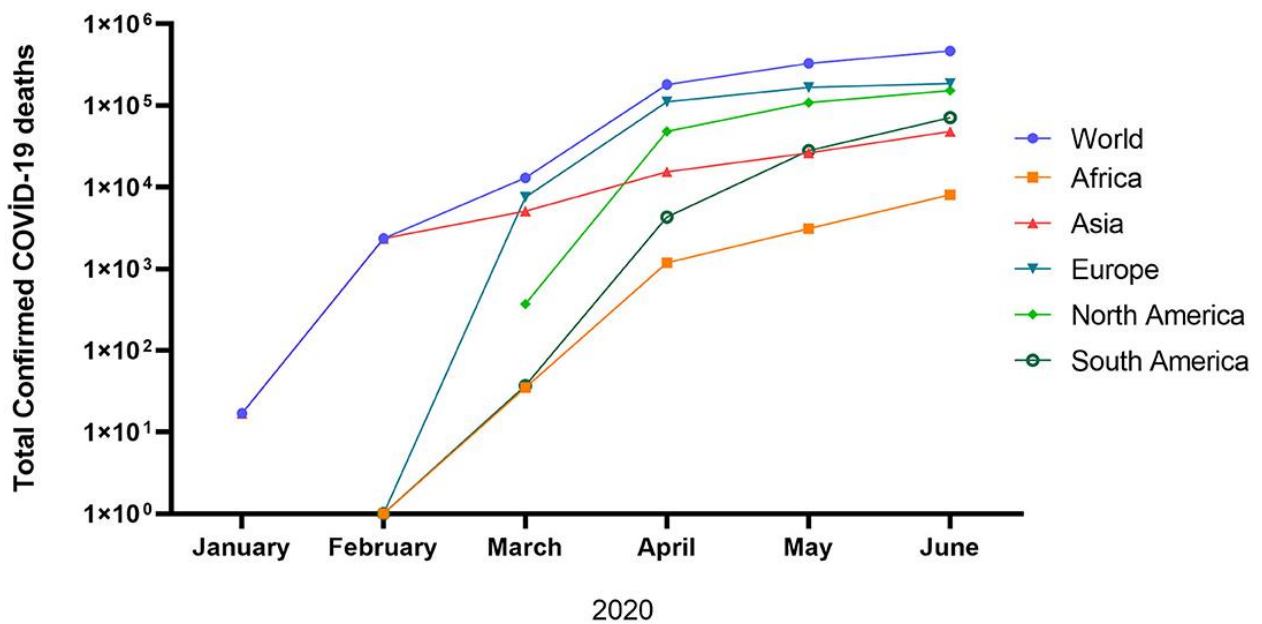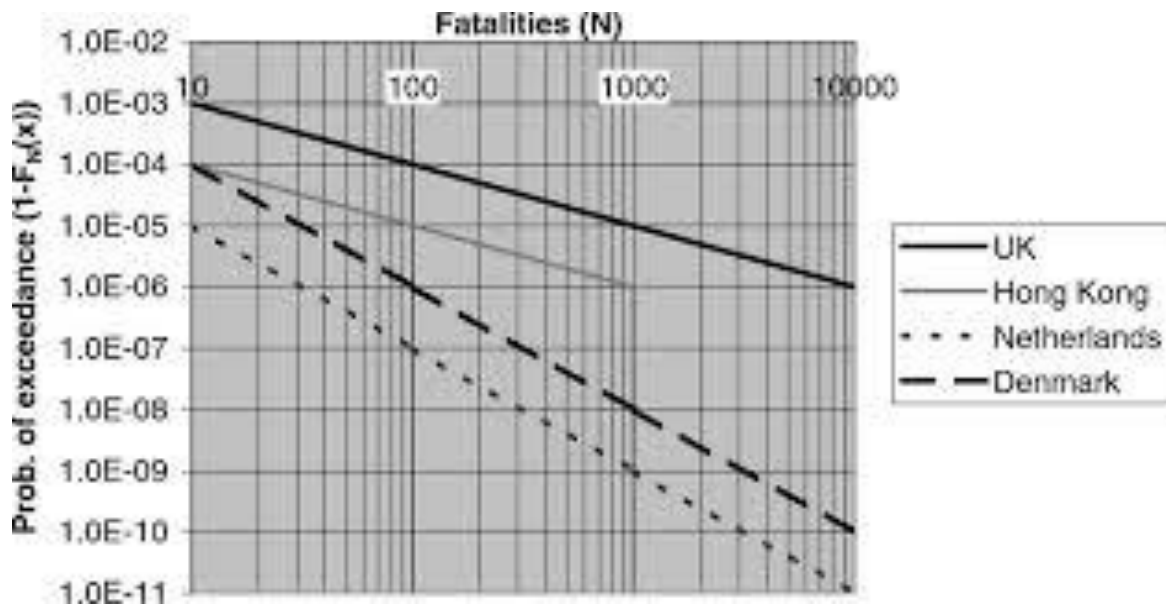2. Vulnerability Analysis

Risk determination

1. Hazard occurrence probability
2. Elements of the risk
3. Vulnerability of elements at risk

Risk mapping

1. **f-N curves**

f – frequency

N – Number of causalities

2. **Scenario mapping**

- ➔ Houses lightly damaged
- ➔ Houses heavily damaged
- ➔ Houses collapsed
- ➔ People Injured
- ➔ People Killed
- ➔ People homeless