國立臺北大學自然資源與環境管理研究所 106學年度第二學期『環境災害與風險管理』

課程講義 (02): 基本定義與概念: Hazard, Risk, Disaster Introduction, Definitions, and Related Concepts: Hazard, Risk, Disaster

• INTRODUCTION TO THIS COURSE

□ 講義提供:數位學苑;<u>http://web.ntpu.edu.tw/~yml/download/risk2018s/</u> <u>https://www.box.com/ntpu-inrm-prof-lee-classes</u> => risk2018s

 The Textbook: Smith, K., Environmental Hazards – Accessing Risk and Reducing Disaster, 6th Edition, Routledge, New York, NY, 2013. https://www.routledge.com/Environmental-Hazards-Assessing-Risk-and-Reducing-Disaster-6th -Edition/Smith-Smith/p/book/9780415681063

Part One: The Nature of Hazard

- 1. Hazard in the Environment
- 2. Dimensions of Disaster
- 3. Complexity, Sustainability and Vulnerability
- 4. Risk Assessment and Management
- 5. Reducing the Impacts of Disaster

Part Two: The Experience and Reduction of Hazard

- 6. Tectonic Hazards Earthquakes and Tsunamis
- 7. Tectonic Hazards Volcanoes
- 8. Landslide and Avalanche Hazards
- 9. Severe Storm Hazards
- 10. Weather Extremes, Disease Epidemics and Wildfires
- 11. Hydrological Hazards Floods
- 12. Hydrological Hazards Droughts
- 13. Technological Hazards
- 14. Environmental Hazards in a Changing World
- □ A Timeline of Historic Disasters: All About History Book of Disasters
- □ Environmental Catastrophes and Human Tragedies: Encyclopedia of Disasters

• DEFINITIONS OF HAZARD, DISASTER AND RISK

- □ Hazard 危害、Risk 危機/風險、Disaster 災害 (S. p.11)
 - ⇒ *Hazard* (*cause*) -- a potential threat to humans and their welfare arising from a dangerous phenomenon or substance that cause loss of life, injury, property damage and other community losses or damage.
 - ⇒ *Risk (likely consequence)* -- the combination probability of a hazardous event and its negative consequences.
 - ⇒ Disaster (actual consequence) -- a serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses or impacts which exceed the ability of the affected community or society to cope using its own resources.
 - \Rightarrow "Risk is opportunity" (Risk or Crisis) = (Danger + Opportunity)
 - \Rightarrow RISK = Hazard Probability \times Elements at Risk \times Vulnerability (S.p.71)

• ENVIRONMENTAL HAZARDS AND RISK ASSESSMENT

- □ The Evolution of Environmental Hazard Paradigms
 - ⇒ Engineering, Behavioural, Development, and Complexity
- □ Natural Hazards and Technological Hazards => Na-Tech Disasters (Context Hazards)
- D Voluntary vs. Involuntary; Natural vs. Manmade; Intense vs. Diffuse
- □ Risk Assessment: Safety, Health, Ecological, Public Welfare, and Financial
- □ Exposure and Vulnerability
 - ⇒ 'End-Points' vs. Scales (Temporal, Spatial, etc.): Chronic vs. Acute
 - \Rightarrow Risk vs. Security => Emergency and Crisis
- □ Vulnerability to Disasters => Vulnerability to Climate Change
 - ⇒ Vulnerability and Resilience => Reliability



- Homework Assignment #1 (2018/03/20 Due)
 - 1.請用你自己的文字定義說明"Hazard, Risk and Disaster"及"Vulnerability, Resilience and Reliability"。
 - 2.請比照上述組合方式提出一組與風險管理相關之名詞組合,並定義說明之。
 - 3.請比較說明 Na-Tech Disasters、Context Hazards 與「複合型災害」之差異。