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

課程講義（01）：課程簡介、基本定義與概念
Introduction to this Course, Definitions, and Related Concepts

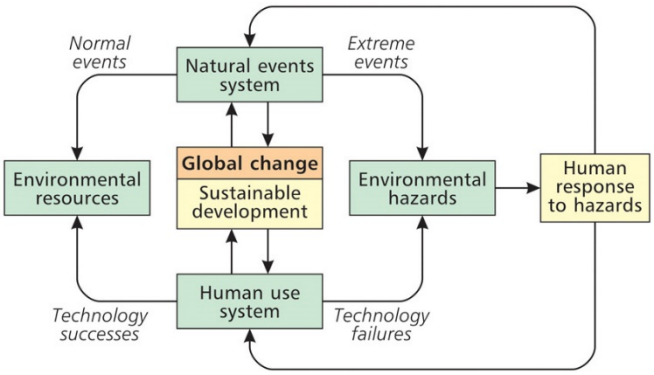
- INTRODUCTION TO THIS COURSE
  - □ 講義提供：數位學苑；http://web.ntpu.edu.tw/~yml/download/risk2022s/
    https://www.box.com/ntpu-inrm-prof-lee-classes => risk2022s
  - □ The Textbook: Smith, K., *Environmental Hazards – Accessing Risk and Reducing Disaster*, 6th Edition, Routledge, New York, NY, 2013. https://www.routledge.com/Environmental-Hazards-Assessing-Risk-and-Reducing-Disaster-6th-Edition/Smith-Smith/p/book/9780415681063

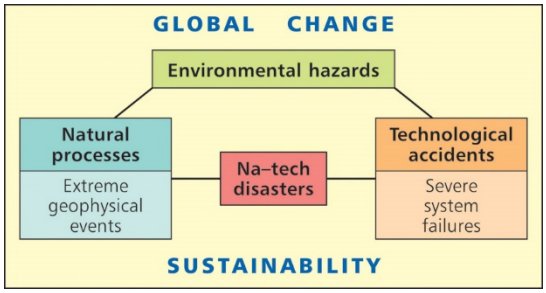
    Part One: The Nature of Hazard
    1. Hazard in the Environment
    2. Dimensions of Disaster
    3. Complexity, Sustainability and Vulnerability
    4. Risk Assessment and Management
    5. Reducing the Impacts of Disaster

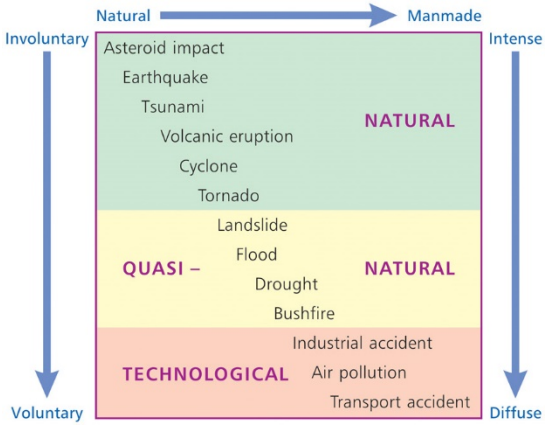
    Part Two: The Experience and Reduction of Hazard
    6. Tectonic Hazards - Earthquakes and Tsunamis
    7. Tectonic Hazards - Volcanoes
    8. Landslide and Avalanche Hazards
    9. Severe Storm Hazards
    10. Weather Extremes, Disease Epidemics and Wildfires
    11. Hydrological Hazards - Floods
    12. Hydrological Hazards - Droughts
    13. Technological Hazards
    14. Environmental Hazards in a Changing World
  - □ Disasters through History: All About History -- Book of Disasters (2016)
  - □ Environmental Catastrophes and Human Tragedies: Encyclopedia of Disasters

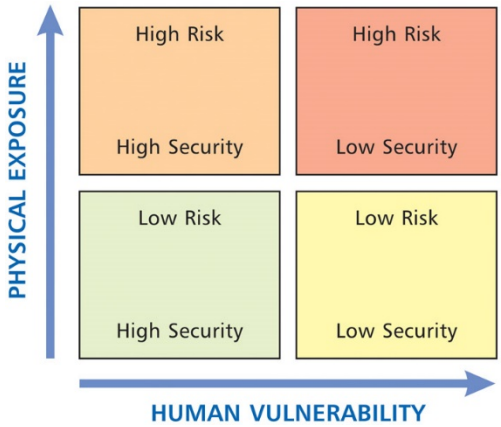
- DEFINITIONS OF HAZARD, DISASTER AND RISK
  - □ Hazard 危害、Risk 危機/風險、Disaster 災害 (**S.** p.11)
    - ⇨ ***Hazard (cause)*** -- a potential threat to humans and their welfare arising from a dangerous phenomenon or substance that cause loss of life, injury, property damage and other community losses or 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.
    - ⇨ "Risk is opportunity" (Risk or Crisis) = (Danger + Opportunity)
    - ⇨ RISK = Hazard Probability × Elements at Risk × Vulnerability (**S**.p.71)

- ENVIRONMENTAL HAZARDS AND RISK ASSESSMENT
  - □ The Evolution of Environmental Hazard Paradigms (**S.** p.15)
    - ⇨ Engineering, Behavioural, Development, and Complexity
  - □ Natural Hazards and Technological Hazards => Na-Tech Disasters (Context Hazards)
  - □ 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
    - ⇨ Risk vs. Security => Emergency and Crisis
  - □ Vulnerability to Disasters => Vulnerability to Climate Change
    - ⇨ Vulnerability and Resilience => Reliability









- SOFTWARE PACKAGES TO BE APPLIED
  - □ R Packages: Introduction to R for Natural Resource Scientists
  - □ Software Packages for Monte Carlo Simulation and Risk Analysis: Oracle Crystal Ball; Palisade @Risk

- Homework Assignment #1 (2022/03/01 Due)

  1.請用你自己的文字定義說明"Hazard, Risk and Disaster"及"Vulnerability, Resilience and Reliability"二組名詞組合。

  2.請比較說明 Na-Tech Disasters、Context Hazards 與「複合型災害」之差異。