

國立臺北大學自然資源與環境管理研究所  
104 學年度第二學期 『清潔生產與工業生態』

課程進度(05)：架構性觀念：人性、技術與風險  
Framework Topics and Concepts: Humanity, Technology, and Risk

● HUMANITY AND TECHNOLOGY

- The Tragedy of the Commons (G&A, p.24; <http://zh.wikipedia.org/zh-tw/公地悲劇>)
  - ⇒ Carry Capacity => The Maximum Sustainable Yield
- Technology at Work (G&A, p.26)
- Sustainable Development: Common Concerns, Differing Emphases (G&A, p.38)
- The Grand Environmental Objectives (G&A, p.44)
  - ⇒ UN Sustainable Development Goals
- The 'Past Goods' and the 'New Bads' (G&A, p.53)
- Decoupling of 'Economic Goods' and 'Environmental Bads'
  - ⇒ The Environmental Kuznets Curve
  - ⇒ Strong Sustainability and Weak Sustainability
- *Metabolic* "Dissipativeness" of Materials vs. *Anthropic* "Concentration" of Pollutants

● TECHNOLOGY AND RISK

- Historical Patterns in Technological Revolution (G&A, p.89)
  - ⇒ Trends in Anthropogenic Environmental Transformation
  - ⇒ Technological Revolution => Product lifecycle; Market penetration rate; Clusters
- Approaches to Risk (G&A, p.93)
  - ⇒ Risk => Opportunity => Degree of adverse effect and probability of occurrence
  - ⇒ Annual mortality rate => one-in-a-million (ppm)
  - ⇒ Perception of risk and Risk Communication
  - ⇒ Risk Assessment and Risk Management (G&A, p.97)

● SOCIETY AND CULTURE; GOVERNMENT, LAWS AND ECONOMICS

- Cultural Constructs and Temporal Scales: Paradigm Shift (G&A, p.105)
- Social Ecology (G&A, p.108)
- Governmental Agencies and NGOs (NPOs) => Ayres and Ayres (2002): Chp.6 (Allenby)
- Industrial Ecology: *The Science of Sustainability*
  - ⇒ A nascent and challenging discipline for scientists, engineers and policy makers (Kapur and Graedel, 2004) \*
- Environmentalism, Technology and Society: '3E'
- Ecological Ideology vs. Environmental Ideology: Eco-centrism vs. Techno-centrism \*
- Traditional Spheres and the Fifth Sphere (Manahan, 2004: Chp.17)
  - ⇒ hydrosphere, atmosphere, geosphere, and biosphere: water, air, land, and life
  - ⇒ the 'anthroposphere': consisting of the things that humans make, use, and do.
  - ⇒ the 'technosphere'? 'infosphere'?