

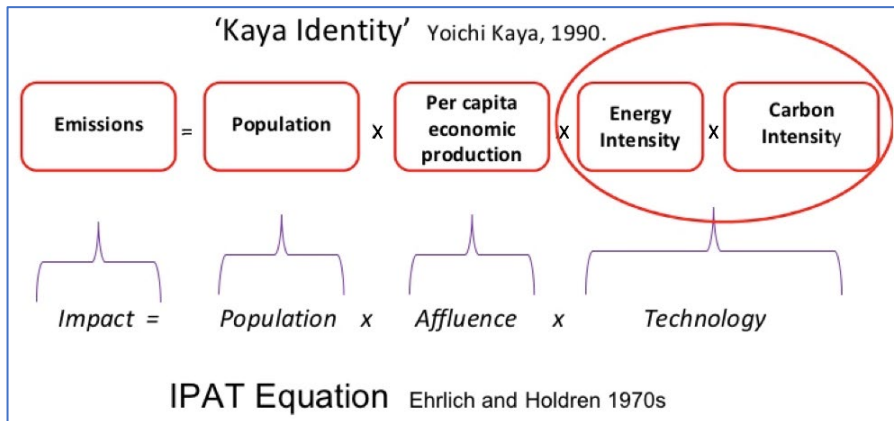
國立臺北大學自然資源與環境管理研究所
108 學年度第二學期 『清潔生產與工業生態』

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

- Revisit the ‘Master Equation’
 - ⇒ Sustainability $\sim (AP/I) = 1/T \Rightarrow$ Ratio of human quality of life to environmental impact (*)
 - ⇒ IPAMDH (Kapur and Gradeal, 2004)
 - => Materials intensity, Dissipation factor, and Hazard factor
- STIRPAT (York et al., 2003a & b):
STochastic Impacts by Regression on Population, Affluence, and Technology

$$I_i = aP_i^b A_i^c T_i^d e_i$$
- ImPACT and Kaya Identity



- *Metabolic* “Dissipativeness” of Materials vs. *Anthropic* “Concentration” of Pollutants
- Final Sink of Materials

● TECHNOLOGY, RISK AND SOCIAL ASPECTS

- 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)
- Cultural Constructs and Temporal Scales: Paradigm Shift (G&A, p.105)
- Belief systems regarding the economy, individual liberty, the environment, and sustainability (G&A, p.107)
- Social Ecology (G&A, p.108)
- Governmental Agencies and NGOs (NPOs) => Ayres and Ayres (2002): Chp.6 (Allenby)