

國立臺北大學自然資源與環境管理研究所

103 學年度第一學期『環境工程科學概論』

課程講義(15)：全球尺度環境議題 Global Environmental Issues

● INTRODUCTION

- World Summit on Sustainable Development: Rio+10
⇒ WEHAB: Water, Energy, Health, Agriculture, and Biodiversity
- United Nations Conference on Sustainable Development (UNCSD): Rio+20
⇒ A green economy in the context of sustainable development and poverty eradication
⇒ The institutional framework for sustainable development
Main themes: Green Economy 綠色經濟 and Institutional Framework 制度架構
Critical issues: decent jobs, energy, sustainable cities, food security and sustainable agriculture, water, oceans and disaster readiness 就業 能源 城市 糧食 水 海洋 災害
- Global Atmospheric Change: Global Warming => Global Change
- Deforestation, Desertification, Loss of Habitats, and Loss of Biodiversity

● THE ATMOSPHERE OF EARTH

- Composition of Clean Dry Air
- Temperature Profile and the Four Major Layers
⇒ Troposphere, Stratosphere, Mesosphere, and Thermosphere
⇒ Tropospheric Ozone vs. Stratospheric Ozone
- Change of Global Temperature => Long Term vs. Short Term

● THE GREENHOUSE EFFECT

- Temperature w/o Greenhouse Effect: 254°K; w/ Greenhouse Effect: 288 °K
- Radiative Forcing => Representative Concentration Pathway (RCP)
- Global Warming Potential (GWP)
⇒ Life Time and GWP Time Horizon; Contributions of GHGs
- Greenhouse Gases (GHG)
⇒ Ozone (O₃), Aerosol, and Halocarbons (CFCs, HCFCs, HFCs, PFCs)
⇒ 京都議定書：六種溫室氣體—二氧化碳(CO₂)、甲烷(CH₄)、氧化亞氮(N₂O)、
氫氟碳化物(HFCs)、全氟碳化物(PFCs)及六氟化硫(SF₆) => 空氣污染物
⇒ The Second Commitment Period: NF₃

● OTHER CONSIDERATIONS AND SCIENTIFIC FOUNDATIONS

- IPCC Reports: FAR (1990), SAR (1995), TAR (2001), AR4 (2007), AR5 (2014)
- Stabilizing Greenhouse Gases: Mitigation vs. Adaptation
- Global Warming => Hydrological and Biological (Environmental) Changes
- Changes in Stratospheric Ozone: Ozone Layer Depletion => ODP

● HOMEWORK ASSIGNMENT #9：請瀏覽[AR5](#)、[TCCIP](#)等網站並閱讀相關文件。