The Montreal and Kyoto Protocols

Similarities, Differences and Continuing Controversies

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What is the Montreal Protocol on Substances That Deplete the Ozone Layer?

- International treaty designed to protect the ozone layer by phasing out production of ozone-depleting substances.
- Entered into force January 1, 1989
  - Undergone 5 revisions
  - 189 countries party to the treaty
The Montreal Protocol

• Stated purpose:
  – “...Recognizing that world-wide emissions of certain substances can significantly deplete and otherwise modify the ozone layer in a manner that is likely to result in adverse effects on human health and the environment, ... Determined to protect the ozone layer by taking precautionary measures to control equitably total global emissions of substances that deplete it, with the ultimate objective of their elimination on the basis of developments in scientific knowledge ... Acknowledging that special provision is required to meet the needs of developing countries...”
Montreal Protocol

- Ozone Depleting Substances
  - Chlorofluorocarbons
    - All contain chlorine or bromine
    - Commonly known as CFCs
  - Used in refrigerants, aerosols, air conditioning, and foams
  - Complete phase out by 2030
Montreal Protocol

- Why are CFCs dangerous to the ozone layer?
  - CFCs remain in atmosphere for long periods of time
  - Broken down by UV rays releasing chlorine
  - The chlorine causes breakdown of ozone (O3)
Montreal Protocol

- Stipulations for developing countries
  - Multilateral Fund for the Implementation of the Montreal Protocol
    - Countries have a “common but differentiated responsibility to protect and manage the global commons”
    - Pledges up to $2.1 billion
The Kyoto Protocol

- What is the Kyoto Protocol to the United Nations Framework Convention on Climate Change?
  - Assigned mandatory targets for the reduction of greenhouse gas emissions
    - CO2 and five other greenhouse gases (GHG)
The Kyoto Protocol

- Negotiated in Kyoto, Japan in 1997
- Opened for signature from March 1998-March 1999
- Came into force February 16, 2005 after ratification by Russia
Why is Kyoto necessary?

- Objective of agreement is: “stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system”.

- Intergovernmental Panel on Climate Change predicted average global rise in temperature of about 1.4 to 5.8 degrees C (2.5 to 10.4 degrees F) by 2100.
  - If successfully completed and implemented, Kyoto will reduce increase about .02 to .28 degrees C by 2050.
The Kyoto Protocol

• Developed countries will reduce GHG by 5.2% compared to year 1990
  • If compared to expected emissions levels, this represents a 29% cut
• The goal is to lower overall emissions of six greenhouse gases
  • Carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, HFC, and PFCs
• National targets vary
  • Range from 8% reductions for the European Union and some others to 7% for the US, 6% for Japan, 0% for Russia, and permitted increases of 8% for Australia and 10% for Iceland
The Kyoto Protocol

• How do countries meet the targets?
  – Emissions trading (cap and trade system)
  – National caps imposed on Annex I (developed) countries
    • On average need a 5.2% reduction below 1990 levels by 2012.
  – Trading takes place on an industrial level
The Kyoto Protocol

- Developing countries
  - Exempt from framework of treaty
    - Most notably China and India
    - Developing country gains from technology transfer
Why did we have an easier time with Ozone than Global Warming?

- US support for Montreal and lack of support for Kyoto
- Availability of cheap alternatives led to industry buy-in
- Easier transfer of technology and funds to developing countries
- Scientific consensus on the issue
  - Media focus
Recent Controversies

• Montreal Protocol called for replacement of CFCs in major household appliances and aerosols.
• What about other chlorine or fluorine gases?
• Is the Montreal Protocol contributing to global warming?
  – HCFCs and PFCs
Comments and Questions?