Ozone Depletion and Climate Change

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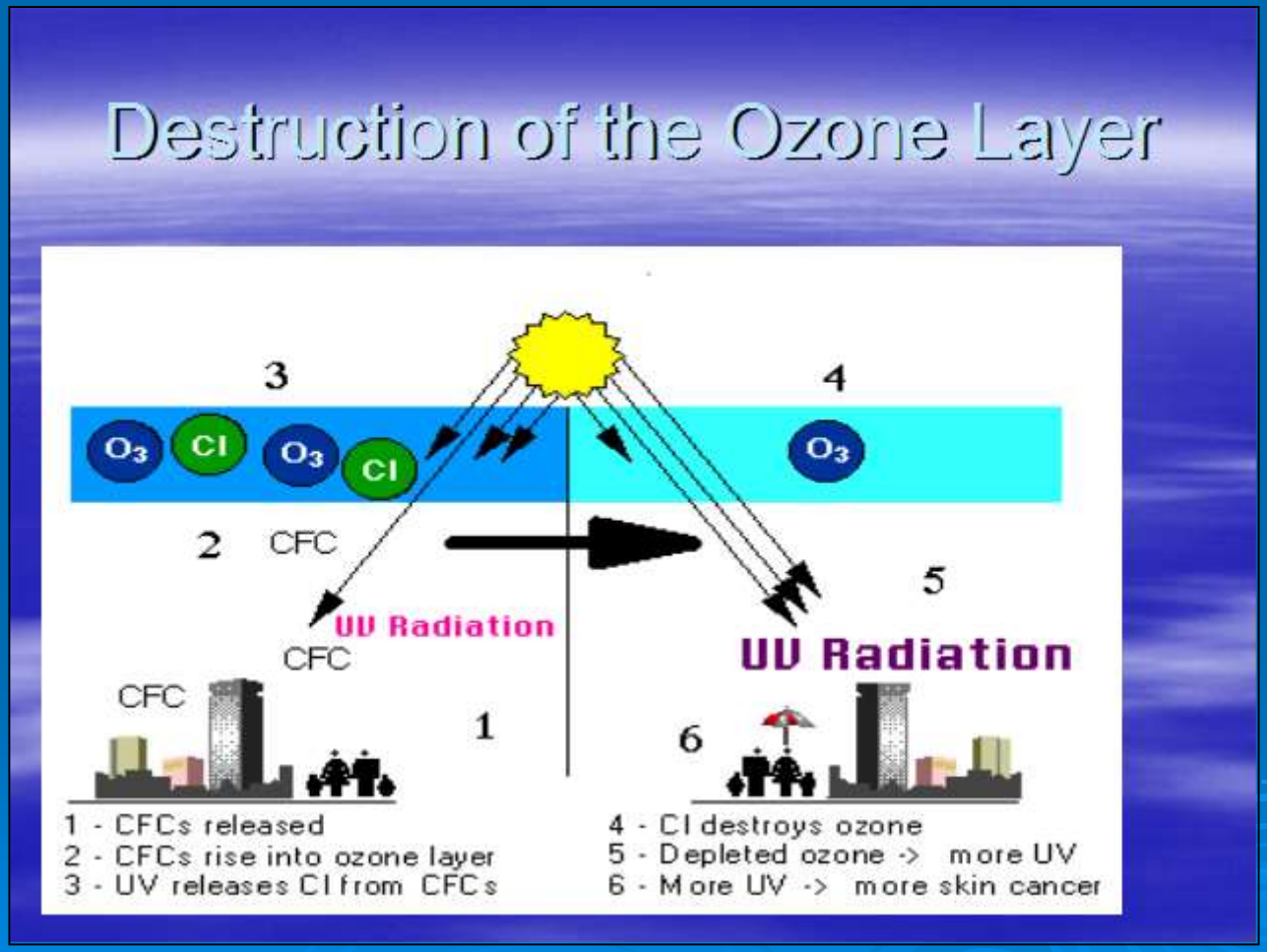
Outline

- Ozone Depletion
  - Initiatives in responding to the ozone problem
  - Negotiations
  - Montreal Protocol, 1987.
- Climate Change
  - Introduction
  - Negotiating global response: Issues
  - UNFCCC, 1992
  - Kyoto Protocol, 1997.
  - Sum.

OZONE DEPLETION [Vienna convention (1985)and Montreal Protocol, 1987]



Solving/Responding to the Ozone Problem

- Two major initiatives: U.S and global

U.S. initiatives:

a) Domestic front

Ready to ban before international action

Public concern and organized pressure?

b) Internationally

- 1972 U.S. raised issue at UN Conference on Human Env. at Stockholm; call for research on the ozone problem.
- U.S. tabled issue at NATO Conference in 1975 [EPA initiative].
- 1977 UNEP's coordinating committee on Ozone layer.
- Negotiations on a binding agreement began in 1981.

-difficulties

- Difficult Negotiations:

- scientific uncertainty still high.

  E.g. 1984 international scientific program still lacked a consensus by 1985.

- Large producers: Britain, France, Italy, and Spain, therefore, resisted stringent Measures vs. countries that wanted strong controls [Toronto Group: Canada, Finland, Norway, Sweden

- - 1985 Vienna Convention signed. Provided for:

  cooperation in research, monitoring and information exchange

- - 1985 discovery of ozone “hole” in Antarctica

Montreal Protocol, 1987.

- **Aim**: regulate and phase out Ozone Depleting Substances [ODS]
- Negotiations

a) impact of domestic actors [U.S. industry]

b) **Epistemic community- inconclusive opinion [fed into tactics of industry lobbyists.**

- By 1987, near unanimity on adverse effects, gave credibility to proponents of ban.

c) Issue played into N.-S. divide on Env. & Development

How they managed to secure an agreement

- Financial mechanisms

Support diffusion of technology on substitutes for ODS in developing countries.

- Role of hegemon [U.S. took lead]

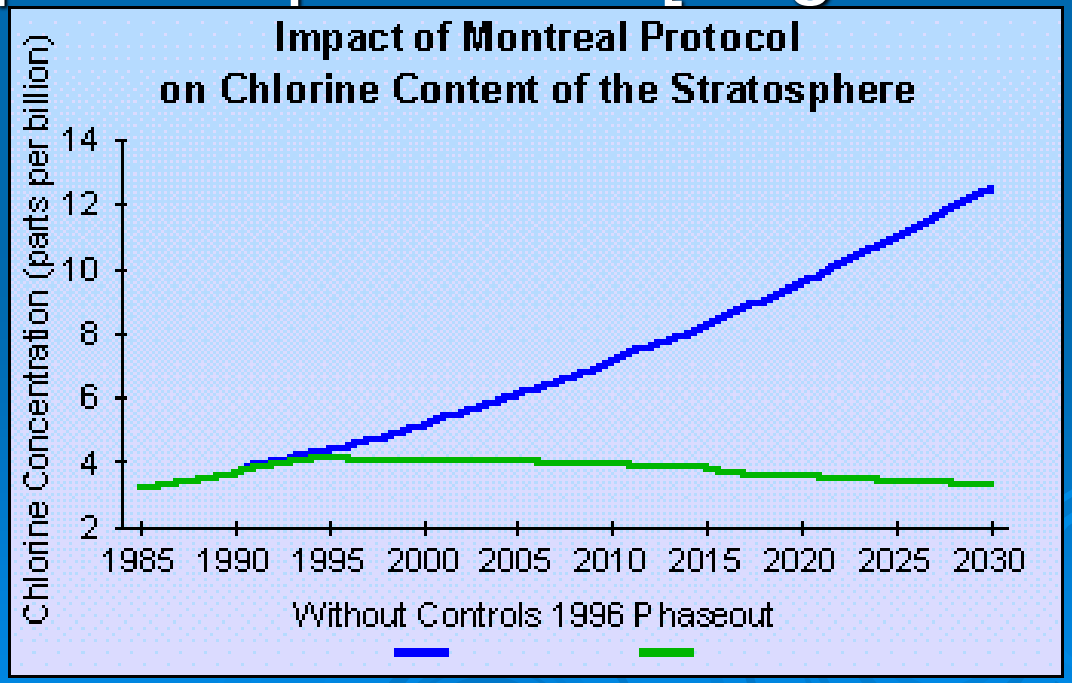
- Carrot and stick strategy
  - cushioned developing countries [10 years delay]
  - Control of trade in ODS with non-participants.

- Dramatic opportunity: possibility of substitutes for CFCs, so industry softened, especially with financial mechanism promising a market in developing countries.

- Industrial countries cut production and consumption of CFCs to 50% of 1986 levels by 1999
- Significance
  - First application of principle of common but differentiated responsibilities.
  - Financial mechanism first of its type in IEA.

Montreal Protocol Success?

- Developing countries not prohibited [but then it was the only way they'd participate]
- Compliance problems [illegal trade-Russia



Post-Montreal Protocol developments

- Shift towards complete phaseout of CFCs

  - Further development in scientific evidence

    - 1988 Ozone Trends Panel released study showing human-generated chlorine species responsible for decrease in ozone.

  - In U.S., Du Pont's announced a CFC manufacturing stop by century end; so U.S. called for a complete phaseout by 2000.

  - Britain: softening due to pressure by environmentalists and parliament. PM hosted a meeting where EU resolved to back U.S. in calling for phaseout.

CLIMATE CHANGE

- Introduction
  - Problem = global warming
  - **History**
    - adoption numerous declarations at regional conferences to reduce GHGs.
    - Meeting of Legal and Policy Experts on Protection of the Atmosphere in Ottawa 1989 considered elements of climate change convention.
    - IPPC 1990
    - UN General Assembly initiated negotiations in 1990,
    - 1992, UNFCCC at Rio Conference.

Greenhouse Gases / air pollutants

- **Examples**:
  - Carbon dioxide (CO_2), sulfur dioxide, Methane (CH_4), Nitrous oxide (N_2O), GHG: hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6), CFCs.
- **Source**s – natural and anthropogenic]
  - Natural occurrence:
    - water vapor, swamps- methane;
    - volcanic eruptions [sulfur dioxide]
  - Anthropogenically induced (i.e. Human activities):
    - combustion process of fossil fuels.
    - decomposition of organic wastes.
    - Agriculture.
    - deforestation – loss of carbon sink].

Impacts

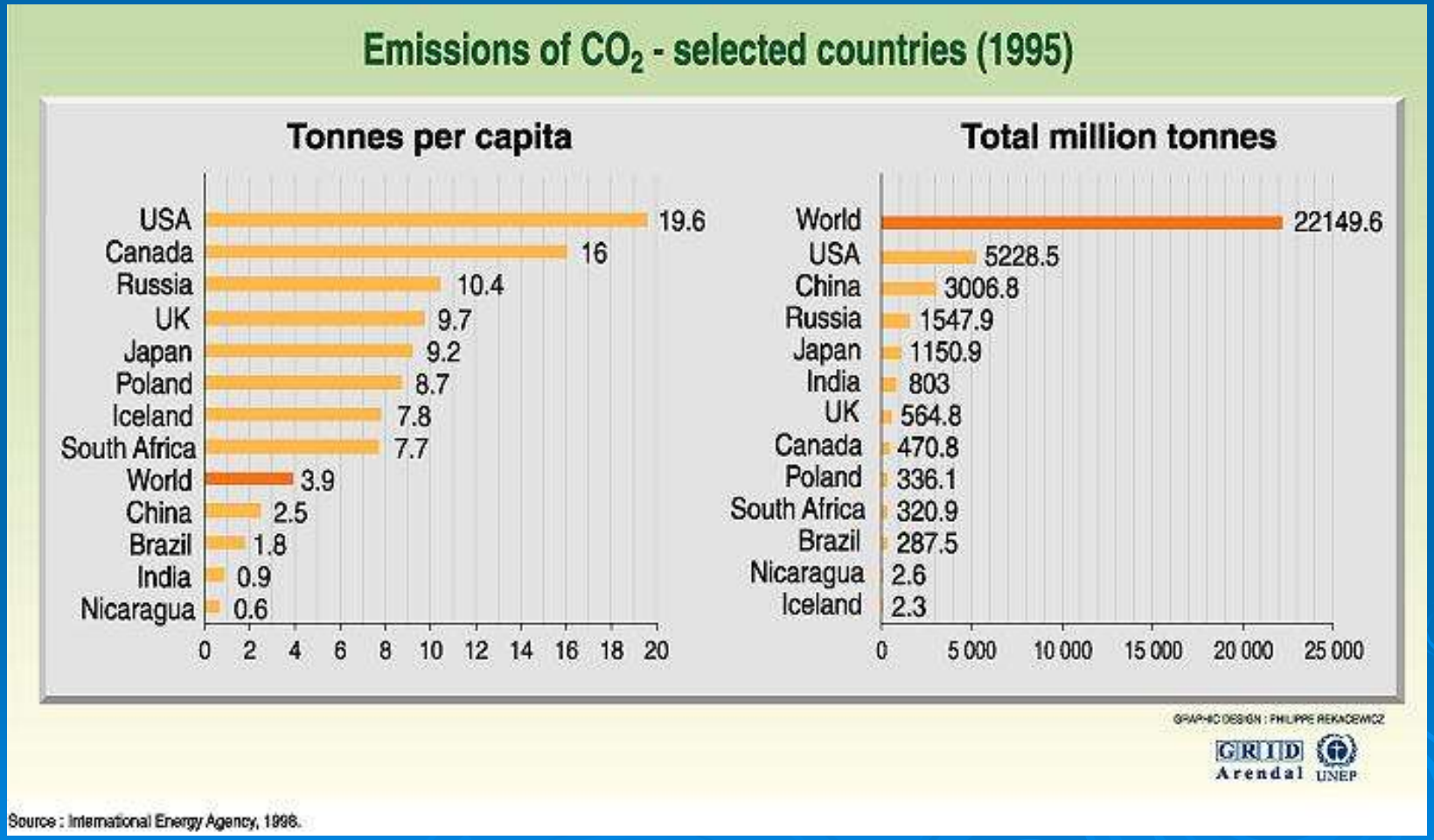
- Health: pollution and vector-born diseases
- Economy
  - Agriculture:
    - most sensitive to weather variability and extremes
  - Flooding: Infrastructure and property damages
  - Water scarcity
  - Loss of biodiversity
- Political [consequence of how no. 2 above is handled]

  - Environmental refugees?
- Differentiated impacts
  - Developing countries at greater risk: Low capacity for adaptation

Issues in forging a global response

- Climate science
  - What happens, why and with what impact?
  - What is the best way forward [consequence of above]?
- Controversies: examples
  - Global warming of benefit (to some)?
    - new agricultural frontiers (Russia, Canada)
    - save life from cold spells?
  - Sulfur dioxide [high or low levels?]
- Information problems [complexity and uncertainty]
- Auditing –who, and how to, count [see assigned reading] **

auditing


Emissions of CO_2 - selected countries (1995)
Tonnes per capita
USA 19.6
Canada 16
Russia 10.4
UK 9.7
Japan 9.2
Poland 8.7
Iceland 7.8
South Africa 7.7
World 3.9
China 2.5
Brazil 1.8
India 0.9
Nicaragua 0.6
0 2 4 6 8 10 12 14 16 18 20
Total million tonnes
World 22149.6
USA 5228.5
China 3006.8
Russia 1547.9
Japan 1150.9
India 803
UK 564.8
Canada 470.8
Poland 336.1
South Africa 320.9
Brazil 287.5
Nicaragua 2.6
Iceland 2.3
0 5 000 10 000 15 000 20 000 25 000
GRAPHIC DESIGN : PHILIPPE REKACEWICZ
GRID Arendal
UNEP
Source : International Energy Agency, 1998.

Issues

- Links to economic and political interests
  - e.g. Bush: implementing it would gravely damage the US economy.

- Unequal adjustment costs
  - Impacts on setting common emission standards, for example,

    differences in industrialization [U.S. vs China/India]

- **Cleavages:** development and vulnerability.
  - Vulnerability – small island states [e.g. Vanuatu, Nauru] → strong convention.
  - Development
- Development divide: LDCs-politics of self-preservation.
  - **Their negotiating position**.
    - International cooperation is essential, but industrialized countries should accept the main responsibility
    - Industrialized countries should transfer funds and technology to help developing countries
    - International action on climate change fine, but must not interfere with the sovereign right of states to develop their own natural resources.

How they managed to secure agreement

- Principle on Common but Differentiated Responsibilities.

- Financial **assistance mechanism**
  - The Global Environmental Facility (GEF) to finance incremental costs of climate change, biodiversity, and desertification projects in developing countries.

- **UNFCCC, 1992.**
  - **stabilize greenhouse gas concentrations in the atmosphere by initiating processes that modify anthropogenic activities that generate GHGs.**

UNFCCC: Provisions

- states to do GHG inventories, mainstream climate change in national strategies/policies
- Help for developing countries in meeting “incremental costs.”
- Scientific processes continue through IPCC.
- Institutions: COPs (biennial); IPCC.
- N/B. No specific actions on reductions; left to protocols [impact of uncertain science; responsibility for costs; U.S. opposition].

- Set guidance for implementing Convention

  - Kyoto Protocol, 1997

Kyoto Protocol

- **Aim:** tighten commitment on reduction of GHGs**.**
- **Provisions**
  - **Binding** emission reduction targets for industrialized countries only
    - reduce emissions (6 target gases) by a total of 5% of 1990 levels by 2008-2012.
  - **Implement elaborate policies and measures to meet reductions objective.**
- **Implementation Mechanisms (3)**

Flexible Mechanisms

- **(Favors to types of countries**
  - Energy efficient, e.g. Japan. Cheaper to invest in less efficient states than to undertake reduction at home.
  - Countries below their permitted level, e.g. Russia.)
- **Emissions trading**
  - set a quantitative limit on the global emissions of a greenhouse gas and allow emissions permits to be traded like ordinary goods and services.
- **Joint Implementations**
  - Country with binding target receives credits for emission abatement projects in another country with a binding target.
  - Emission **aggregation.**
    - Two or more states agree to fulfil their commitment by aggregating their combined emissions.
    - Must remain within their total assigned limits as a group.

- **Clean Development Mechanism**
  - **Countries with targets receive credits for abatement projects in developing.**
- **Implementation**
  - **EU Carbon Trading Program**
    - **Cap and trade in CO2 emissions for utilities and other industries**
  - **JI projects in Eastern Europe**
  - **CDM**
    - **China-Italy**
      - **US$1.4 million over 5 years to plant 3,000 hectares of trees in Aohan Banner in north China**

Conclusion.

- **Evaluating participation in climate change.**
  - **Is U.S. "party" to climate change regime**
    - Proxy to flexible mechanisms?
    - Clean Act: worse than other national legislations?
- **Potential sources of difficult in contracting for a climate change regime?**
- **Why would one expect contracting to be more protracted under climate change than any of the other two air pollution regimes?**