

Lessons from Montreal to Kyoto

Stephen O. Andersen

K. Madhava Sarma

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Not necessarily the views of India or USA

Thank You Denmark!

- Danish contribution to Montreal design, implementation, and technical solutions
 - Ozone champions put forward compromise strategy
 - Influential on “Toronto Group” & “Tolba Insiders”
 - Invented “Inert gas” alternatives to halon
 - CO2 ingredient increases respiration
 - Inert gas ingredients smother fire
- Danish technology to protect climate
 - Natural refrigerants and architectural innovation
- Danish leadership in 2009

Practitioner Stephen O. Andersen

- Co-Chair, Technology & Economic Assessment Panel
- Country Programs
 - Brazil, Egypt, and Mexico
- Voluntary Partnerships
 - Foams, Solvents, Mobile AC...
 - Thailand, USSR, and Vietnam
- Military Leadership
- U.S. Stratospheric Ozone Regulations
- Technology Cooperation & Transfer

Practitioner K. Madhava Sarma

- Senior Government of India executive looking after environmental policy, law, institutions and international cooperation
- Member of 1989-91 Indian diplomatic team agreeing Montreal Protocol developing country obligations
- Executive Secretary of the Vienna Convention and its Montreal Protocol 1991-2000
- Senior Expert Member of the Technology and Economic Assessment Panel
- Author with Stephen O. Andersen and Kristen N. Taddonio of Montreal Protocol Books



'One of the most impressive environmental books ever written' Ambassador Richard Benedick

PROTECTING THE OZONE LAYER

The United Nations History

Stephen O Andersen & K Madhava Sarma

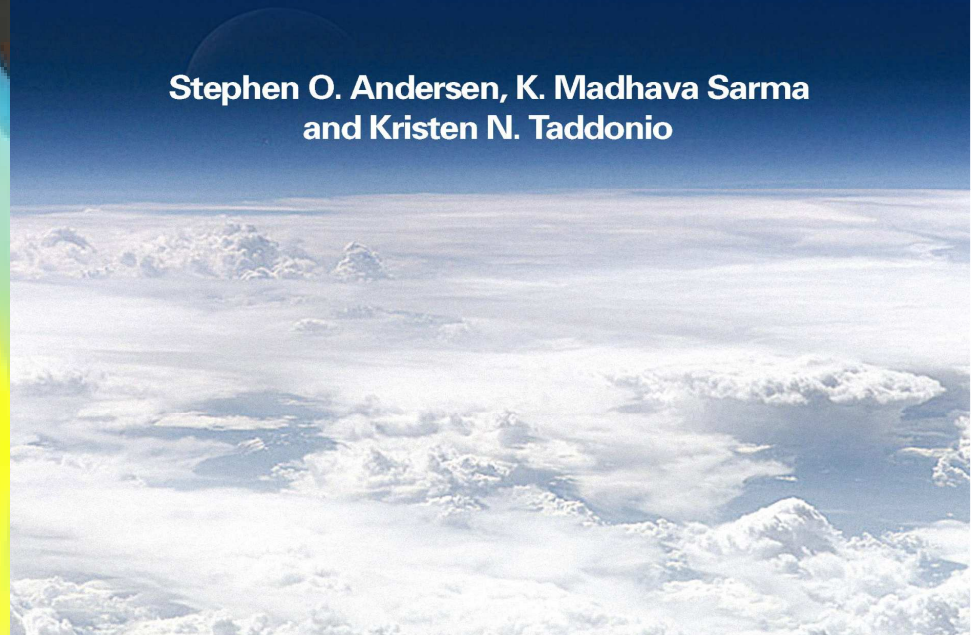
Foreword by Kofi A Annan

'This book is the story of why we can all be optimistic about the future if we are willing to be brave and dedicated world citizens.' Mario Molina, Nobel Prize in Chemistry

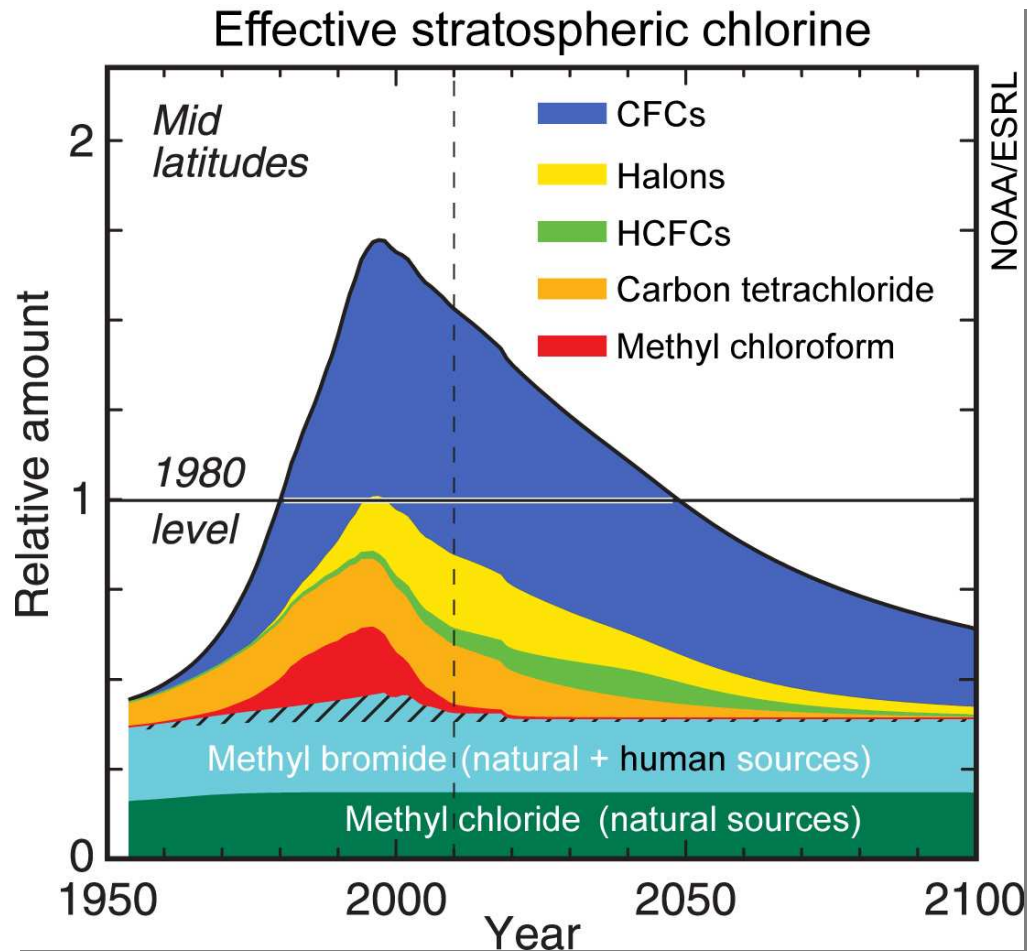
TECHNOLOGY TRANSFER FOR THE OZONE LAYER

Lessons for Climate Change

Stephen O. Andersen, K. Madhava Sarma
and Kristen N. Taddonio



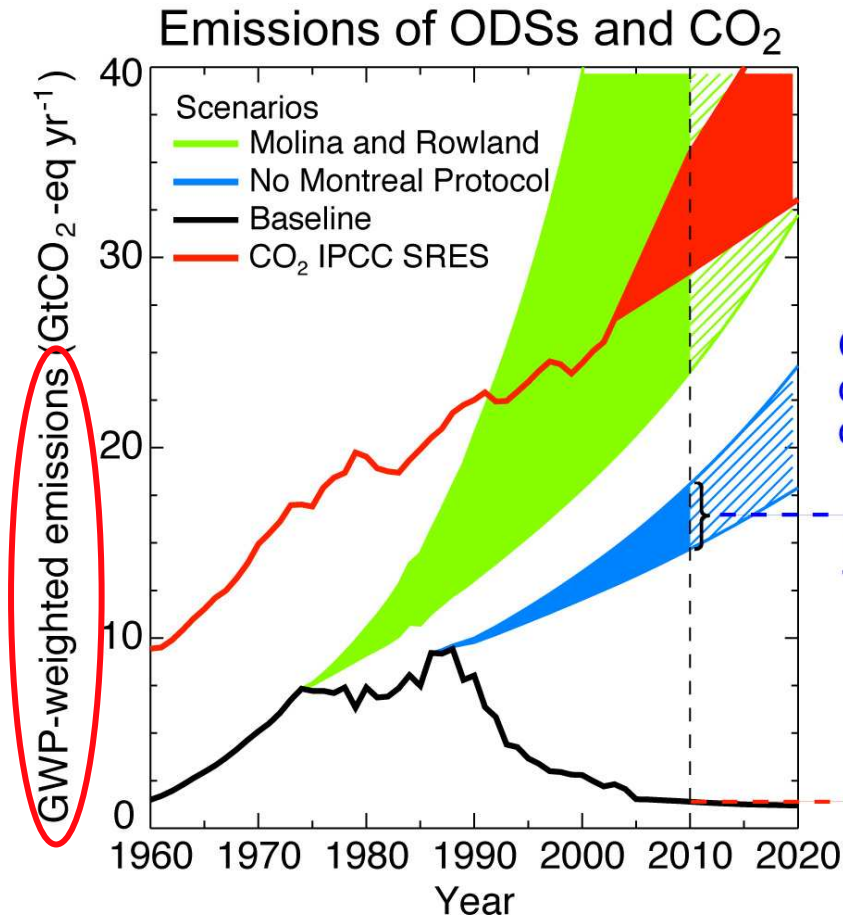
The Montreal Protocol Protecting Ozone



> The Montreal Protocol has **slowed and reversed** the accumulation of ozone depleting substances (ODSs) in the stratosphere.

(Effective stratospheric chlorine is the weighted sum of chlorine and bromine gases in the stratosphere.)

Global Warming Potential of ODS Emissions



The Montreal Protocol will have **reduced net GWP-weighted emissions from ODSs in 2010 by 5-6 times** the reduction target of the first commitment period (2008-2012) of the Kyoto Protocol.

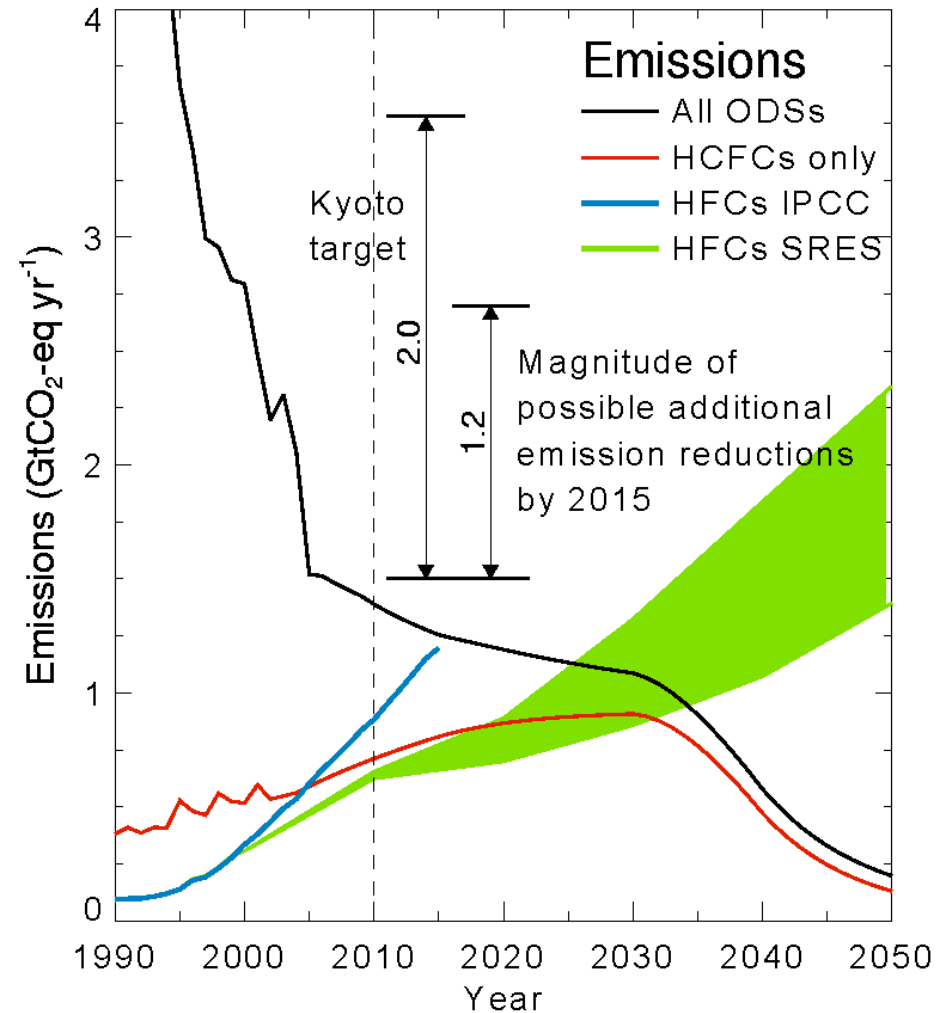
The Montreal Protocol will have **reduced net GWP-weighted emissions** from ODSs in 2010 by about 11 Gt CO₂-eq yr⁻¹.

Magnitude of Kyoto Protocol reduction target (1st commitment period)

- Greenhouse gases: CO₂, CH₄, N₂O, HFCs, PFCs, SF₆
- Target Annex-1 parties for 2008-2012 (cf 1990):
 - -0.97 GtCO₂-eq/yr about -5.8%
- Projections for 1990-2010 (UNFCCC):
 - +1.06 GtCO₂-eq/yr

Additional Montreal Climate Benefits

- Better containment in refrigeration
- Destruction of ODS banks
- Alternatives with lower GWPs
- Phaseout of HFCs used to replace CFCs and HCFCs
- Potential reductions:
(by 2015 in GtCO₂-eq/yr)
 - CFCs: 0.12
 - HCFCs: partly done
 - HFC-23: 0.30 (by-product)
 - HFCs: 0.44 (alternative chemicals)



Montreal Protocol Lessons for Climate

1. Start and Strengthen

- Prove cost-effective action first
- Stimulate new technology & reward innovation
- Learn by doing
- Trust science and technology
- Strengthen scope & stringency democratically
- Stay agile & seize opportunities to strengthen
- Provide safety valves for contingencies

Montreal Protocol Lessons for Climate

2. Visionary Technology Assessment

- Globally respected & influential experts
 - From industry, government, and academia
 - Representing all regions of the world
- Operating under stringent rules of conduct
- Frequently updating what more can be done
- Documenting environmental & economic performance
- Naming names
- Saying what respected companies are doing
- Guiding public policy and private choice

Montreal Protocol Lessons for Climate

3. National/Multinational Leadership

- Citizens boycotting bad & rewarding good
- Companies setting stretch goals & cooperating
- Governments regulating faster & further
- Military organizations developing alternatives
- Associations guiding technology choice
- Standards organizations clearing barriers

Acting in anticipation of global regulations that will be shaped by your leadership actions

Montreal Protocol Lessons for Climate

4. Recruit & Involve Stakeholders

- Define the challenge
- Communicate the opportunity
- Create new problem-solving partnerships
- Celebrate progress and reward innovation
- Always welcoming the next transition

Montreal Protocol Lessons for Climate

5. Raise Awareness

- Educate decision-makers
- Motivate industry executives
- Empower engineers and inventors
- Promote unfamiliar technology
- Involve technicians
- Train on technology and management
- Keep your eyes on the green growth path

Montreal Protocol Lessons for Climate

6. Country Programs

- Expect technically & economically capable countries & sectors to do their part to protect the climate
- Assist all other countries to decide their strategies, goals and action programs with schedules
 - Working with key sectors and associations
 - Agreeing short- and medium-term goals
- Network with experts at each transition stage
- Craft regulations and economic instruments
 - Energy performance standards, import tax exemptions, green labels...
- Continuously raising the bar on actions to reduce greenhouse gas emissions worldwide

Montreal Protocol Lessons for Climate

7. Empower the Financial Mechanism

- Many institutions assisting developing countries need coordination to make best use of funds
 - GEF, UN, World Bank, regional development banks, bilateral aid agencies, multilateral partnerships, & private foundations
- An ideal financial mechanism
 - One-stop financing; clear and simple rules
 - Transparent governance acceptable to all stakeholders
 - Knowledgeable loan officers; wanting success
 - Off-the-shelf solutions **And** investment freedom
 - Innovation on all sides of the window

Montreal Protocol Lessons for Climate

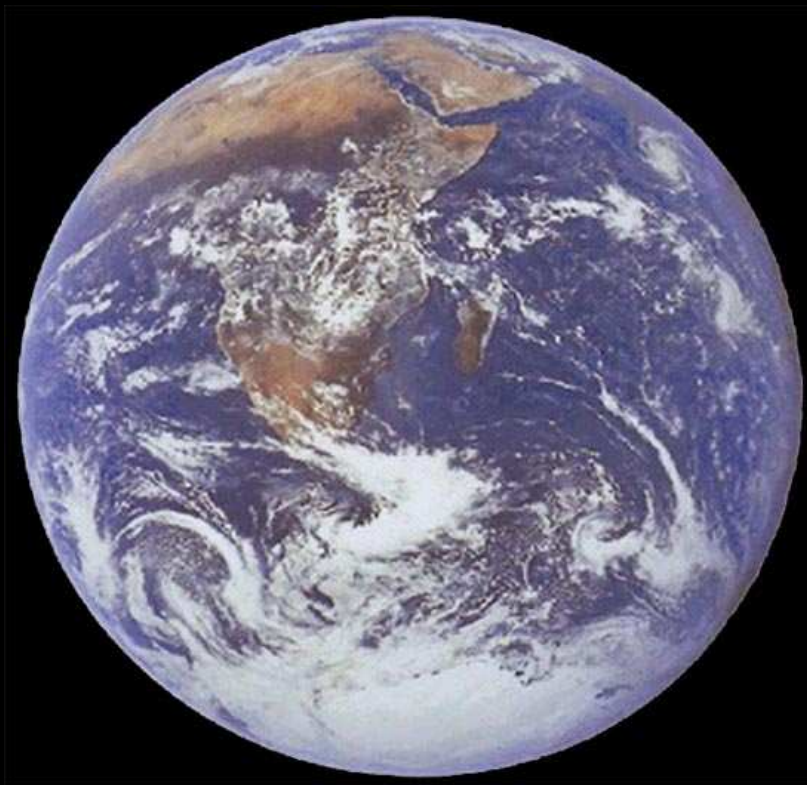
8. Country Focal Points & Networks

- Focal points backed by networks of experts
- Exchanging knowledge and experience
- Joining forces for:
 - Achieving economies of scale
 - Rewarding superior technologies
 - Driving hard bargains for fair prices

Montreal Protocol Lessons for Climate

9. Use Public Procurement

- Invest to save energy
 - military facilities, schools, public buildings, transit and more
- Raise the bar for corporate performance
- Share tools for life-cycle assessment
- Partner worldwide to jump-start proven new technology



We have the power to protect the Earth

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