



# Closing gaps in global environmental treaties

## The ozone layer treaty

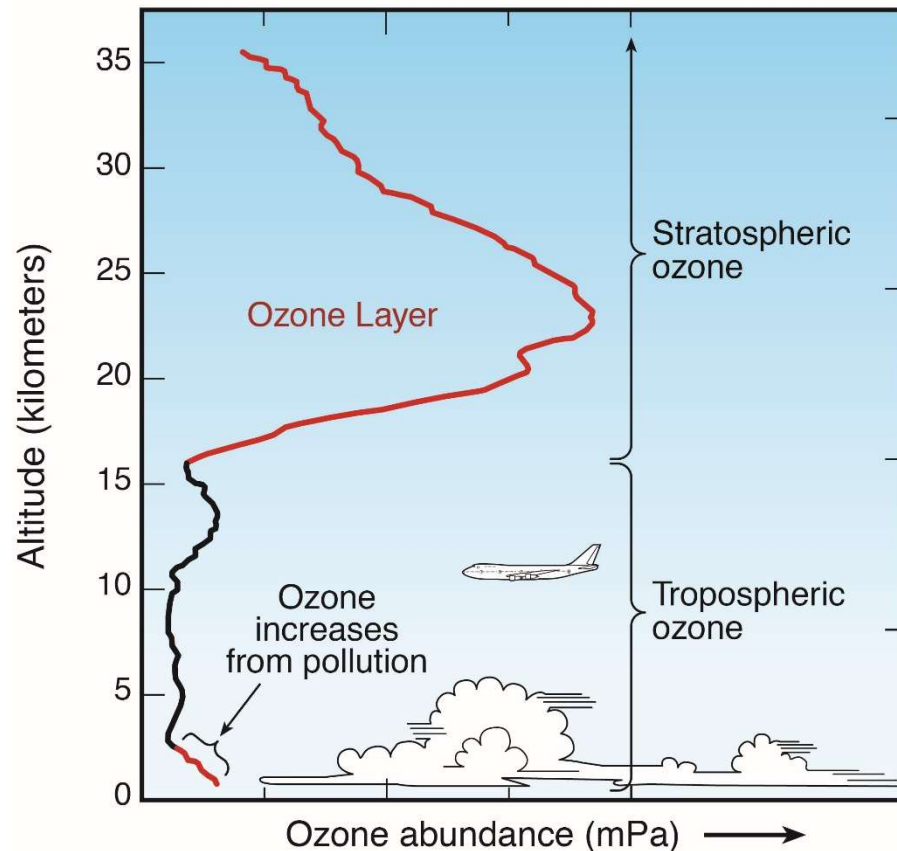
SSRP Research Symposium  
September 16, 2020

Joseph Alcamo  
*Sussex Sustainability Research Programme*



# Why is ozone layer up there important?

## Abundance of ozone in the atmosphere



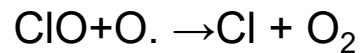
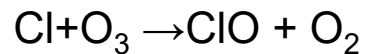
Ozone in stratosphere:  
Absorbs UV radiation  
Protects society at earth's surface from:

- Eye cataracts
- Skin Cancer
- Crop damage

# Ozone depletion & the Ozone treaty

## Ozone depleting substances

CFCs destroy ozone in the stratosphere



## The Ozone Treaty

Vienna Convention for the protection of the ozone layer (adopted 1985)

Promotes cooperation on research, information exchange

Montreal Protocol on substances that deplete the ozone layer (adopted 1987)

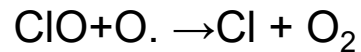
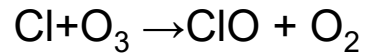
Plan for phase out of use of chlorofluorocarbons CFCs + other ozone-depleting substances; financial mechanisms



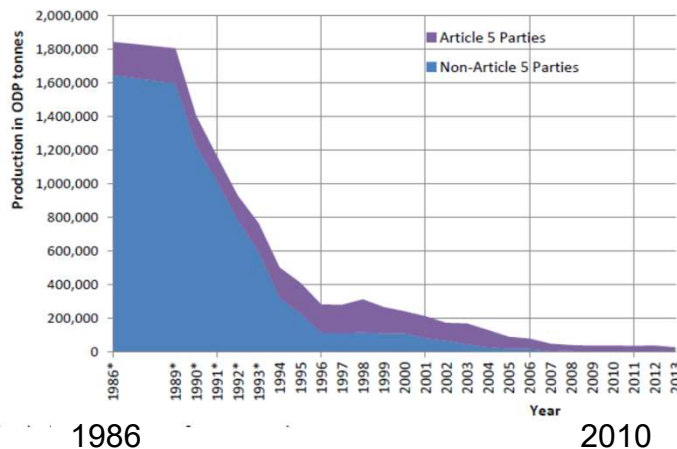
# Ozone depletion & the Ozone treaty

## Ozone depleting substances

CFCs destroy ozone in the stratosphere



Global production of ozone depleting substances



## The Ozone Treaty

Vienna Convention for the protection of the ozone layer (adopted 1985)

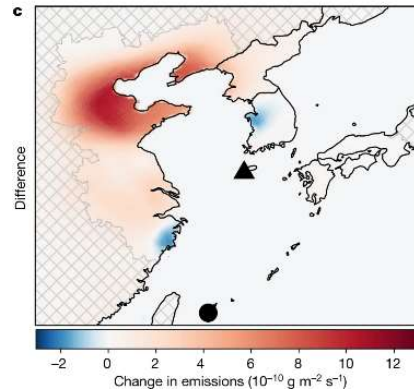
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# Gaps in the treaty and why they are occurring

Increasing CFC-11 emissions after 2010



New sources of ozone depleting substances detected in atmosphere

*Nature*, May, 2019 (Univ. Bristol et al.)

Leakages of ozone depleting substances –  
Old air conditioners, refrigerators, insulating foams  
“Banks of emissions”



Continuing emissions of ozone-depleting  $\text{N}_2\text{O}$  from agriculture ...

# Plugging the Gaps

- ✓ Toughen compliance with treaty
- ✓ Add monitoring to treaty
- ✓ Expand treaty to include all emission sources including “banks of emissions” and N<sub>2</sub>O; \$\$\$ support for reductions
- ✓ To save climate: speed up the phase out of all ozone depleting substances and climate-unfriendly substitutes

And regular people can ...

*Nature Communications, Aug. 2020*  
<https://www.nature.com/articles/s41467-020-18052-0.pdf>  
With search engine:  
“ozone unfinished business”

# What we've learned

Vigilance needed in protecting the planet

Trust, but verify

Despite gaps, Montreal Protocol effective as global response  
– Why not for Covid?