

OZONE AND AEROSOLS IN FUTURE CLIMATE REGIMES OR GREENHOUSE GASES IN AIR POLLUTION AGREEMENTS? SCIENTIFIC AND POLITICAL CHALLENGES

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In addition to the six greenhouse gases included in the Kyoto Protocol, the ozone precursors CO, NMVOC and NO_x and the aerosols/aerosol precursors black carbon, organic carbon and SO₂ also play significant roles in climate change. These compounds differ from the Kyoto gases in that the climate effects are dependent on the geographical location of the emissions, aerosols and NO_x may contribute with a negative forcing (cooling) and uncertainties related to the overall effect on climate are higher, in particular for the aerosols. Furthermore, they have effects on health, vegetation and materials in addition to climate. Because of these differences, these compounds, in particular the aerosols and NO_x, are less suited to include in a global protocol in a basket with the Kyoto gases. They may be regulated more appropriately in regional agreements. Such agreements could be a part of a future climate regime or, air pollution agreements could address the regional climate effects in addition to other environmental effects. There are several important challenges, i.e. increase the knowledge of the atmospheric transport and regional climate effects, assess the institutional basis for an agreement with respect to the UNFCCC and air quality agreements (for example the Convention on Long-Range Transboundary Air Pollution) and get a better understanding of the cost-effectiveness (abatement costs and functioning of the flexibility mechanisms). An important question is whether the complexity and fairness issues introduced by addressing ozone precursors and aerosols might negatively affect the political feasibility of a future agreement.