

Links between air pollution and biodiversity

Main conclusions from the International Nitrogen Initiative (INI) meeting of experts of the Convention on Biological Diversity (CBD) and the Convention on Long-range Transboundary Air Pollution (LRTAP) on “Nitrogen deposition, critical loads and biodiversity”, held on 16–18th November 2009 in Edinburgh, United Kingdom

Nitrogen deposition is currently one of the major drivers for detrimental effects on biological diversity. Total nitrogen deposition exceeding the critical loads, which represent long-term tolerance of ecosystems against pollutant load, and the deposition itself have been defined as risk indicators. These indicators are already in use by the CBD and LRTAP Conventions. They are based on sound scientific knowledge on the empirical and modelled impacts on sensitive receptors.

The exceedance of critical loads of nitrogen and the total nitrogen deposition have been linked to observed changes in the flora and fauna of aquatic and terrestrial ecosystems. Nitrogen critical loads have been successfully used in policy support in Europe and are being developed for North America. However, comprehensive experience in applying them at the global level is still lacking. Further practical indicators, developed by various research and policy processes, would be available to describe the negative impacts of nitrogen on biodiversity. They may link to generic receptors, such as to forests and sensitive coastal areas, or be targeted, such as on endangered species or conservation areas.

In addition to nitrogen deposition, also other air pollutants and changes in climatic conditions and land use affect biodiversity simultaneously. Therefore, links to related work within the climate change community¹ would further enhance the necessary understanding of the interlinkages of the problem. This could also help to assess impacts also in the long-term timeframe, e.g. 2100 and further. Currently, the LRTAP Convention and tentatively the Convention on Biological Diversity emphasize the main target year 2020, but also have considered visionary, aspirational targets for 2050. Such time scales would help in discussing the desired status of biodiversity, as historical conditions may not be achievable.

Increased collaboration at the technical level between the three scientific communities on air pollution, biodiversity and climate change brings considerable benefits for scientific work supporting policy discussions. Specified bodies of the LRTAP Convention² and the Convention on Biological Diversity³ could exchange data and methodologies, e.g. at joint technical meetings. Such work should make the best use of existing networks on monitoring, modelling and policy support, and propose further work to fill the main gaps in the knowledge.

As a first step, the experts recommended:

(a) The LRTAP Convention Executive Body invites the Bureau of the Working Group on Effects, the Bureau of the EMEP Steering Body and the Co-Chairs of the Task Force on Reactive Nitrogen, in consultation with the secretariat, to explore possibilities for collaboration with appropriate technical bodies under the Convention on Biological Diversity, and report to the Executive Body at its session in 2010;

(b) The secretariat to the Convention on Biological Diversity explores possibilities for collaboration between its appropriate bodies and those under the LRTAP Convention.

¹ The United Nations Framework Convention on Climate Change (UNFCCC) and the Intergovernmental Panel on Climate Change (IPCC).

² Representing both the scientific and policy-oriented bodies, for example, the International Cooperative Programme on Modelling and Mapping, the Task Force on Reactive Nitrogen, and the Task Force on Integrated Assessment Modelling.

³ For example, the Subsidiary Body for the Scientific, Technical and Technological Advice and the planned Intergovernmental Panel on Biodiversity and Ecosystem Services.