Two-thirds of EU ecosystems are currently exposed to higher nitrogen levels than they can cope with and one-tenth are over-exposed to acidifying air pollutants. Elevated concentrations of ground-level ozone also threaten biodiversity and the functioning of ecosystems. While the area of ecosystems in the EU at risk from excess acid deposition is expected to shrink further by the year 2020, the area at risk of eutrophication from excess nitrogen deposition is expected to come down only marginally, and will still exceed 1 million km$^2$. According to longer-term scenarios, up to 61% of EU ecosystems will remain at risk of eutrophication by 2050 [1].

**EU legislation**

- The Ambient Air Quality Directive 2008/50/EC sets an EU-wide target value for O$_3$ for the protection of vegetation. This target is three times higher than the long-term objective set already in 2002 (Directive 2002/3/EC) to protect vegetation from adverse effects. The Directive lacks critical levels for ammonia.
- The National Emissions Ceilings (NEC) Directive sets overall caps on pollutants in order to limit acidification, eutrophication and ground-level ozone pollution. The Directive is currently being revised.
- Significant additional emission reductions are required to achieve the long-term objective of the 6th and 7th Environmental Action Programmes of no exceedance of critical loads and levels.

**FACTS AND FIGURES**

**LESS ACIDIFICATION**
Following significant SO$_2$ emission reductions over the last 40 years, the area of sensitive ecosystems at risk of acidification in the EU is now less than 200,000 km$^2$.

**TOO MUCH EUTROPHICATION**
Excess levels of nitrogen lead to eutrophication (over-fertilisation) of ecosystems. Nitrogen-loving species, such as many grasses, out-compete sensitive lichens, mosses, forbs and dwarf shrubs in grasslands or on the forest floor.

1.1 MLN KM$^2$ = 2/3 OF EUROPEAN ECOSYSTEMS = 5xUK

Ozone changes the composition of species of sensitive plant communities such as acid grasslands. All the other parts of an ecosystem are also potentially impacted by ozone, including animals, fungi, bacteria and insects that live in close association with plants or in nearby soils.

In 2010, the area of ecosystems affected by eutrophication amounted to 1.1 million km$^2$ which represents 2/3 of EU ecosystems.

In 2010, the area of ecosystems affected by eutrophication amounted to 1.1 million km$^2$, which is equal to more than two-thirds of the EU’s ecosystems and corresponds to more than the size of Poland, the UK and Spain put together [3].
The current ambient ozone levels are dangerously high, as shown by the growth reductions in mature beech and Scots pine in Switzerland and Lithuania, respectively [4].

Reduced tree growth means reduced carbon storage in wood biomass. The estimated losses in forest carbon stocks average about 10% across ten northern European countries, with the highest losses predicted for the Czech Republic, Germany and Poland [5].

If additional measures to reduce emissions of ozone precursor pollutants (primarily NOx and volatile organic compounds) are not taken by 2020, vegetation over large areas in Europe will remain at risk from ozone damage. Areas in parts of western, central and southern Europe will be at highest risk [1].

Urgent action at EU level is required to minimise the effects of air pollutants on biodiversity and to ensure the ability of species and ecosystems to provide us with vital ecosystem services. In particular the EU should:

- Control emissions from medium combustion installations by setting limits in line with current best available techniques, ensure their rapid entry into force and an adequate permitting and monitoring regime.
- Adopt sector legislation to cut emissions from all major sources of air pollution including e.g. NOx emissions from international shipping and NH3 emissions from agriculture.
- Extend the EU Air Quality Directive 2008/50/EC to include critical levels for NH3 to protect lichens and bryophytes, heathlands, grasslands and forest ground flora.

More information

- Ozone Injury in European Forest Species: www.ozoneinjury.org
- NGO reports and briefings: www.eeb.org and www.airclim.org

For footnotes, please refer to separate reference sheet and to the EEB website.