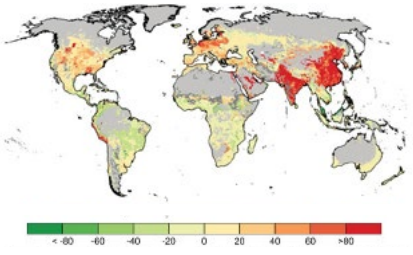
Big differences in nitrogen surplus

Agriculture in northwest Europe and parts of India and China produces a surplus of nitrogen compounds, whereas Africa and South America need more nitrogen fertilizers for food production. These findings come from research published in *Nature* in October.

The planet has a nitrogen surplus. In 2015, researchers publishing in *Science* concluded that the planetary boundary for nitrogen had been exceeded. But this conclusion did not take regional differences into account. So a study performed by a team of researchers from Wageningen, Utrecht University and the Netherlands Environmental Assessment Agency compared regional losses of agricultural nitrogen around the world with calculated regional boundary values for the effects on the quality of nature and water, for example decreases in biodiversity, poorer drinking water quality and toxic algal blooms in surface water.
Nitrogen turns out to be a multifaceted problem: there are big differences between regions, both in the extent to which boundaries are exceeded and in the problems caused by a surplus. Excessive use in Europe and China contrasts with underutilization in many other countries, which actually need more nitrogen for their food production.



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Excessive use and underuse of nitrogen in agriculture.

Wageningen professor of Environmental Systems Analysis and co-author Wim de Vries finds the redistribution of nitrogen important but, he says, 'even if the geographical distribution in the use of fertilizer around the world is optimal, the planetary boundary for nitrogen could still be exceeded.' In addition to the more efficient use of nitrogen in agriculture, he also advocates limiting losses from non-agricultural sources of nitrogen such as sewage and industry.
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