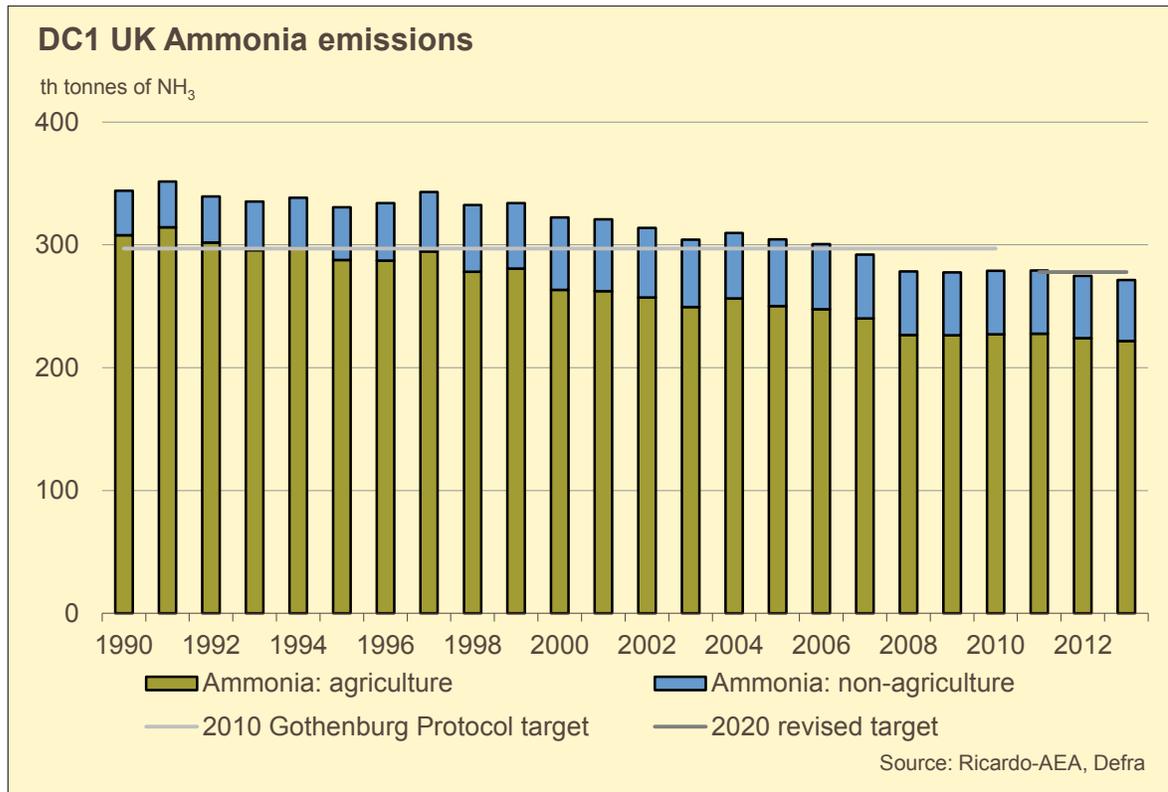


Observatory monitoring framework – indicator data sheet

Environmental impact: Air quality

Indicator DC1: Ammonia emissions

This indicator shows agriculture's contribution to total UK Ammonia (NH₃) emissions from the 2013 inventory.



In 2013:

- total UK NH₃ emissions have decreased by 21% since 1990 to stand at 271 thousand tonnes;
- agriculture accounts for 82% of NH₃ emissions in the UK. This is down from 90% in 1990;
- there has been little change (2% decrease) in emissions from agriculture since 2008.

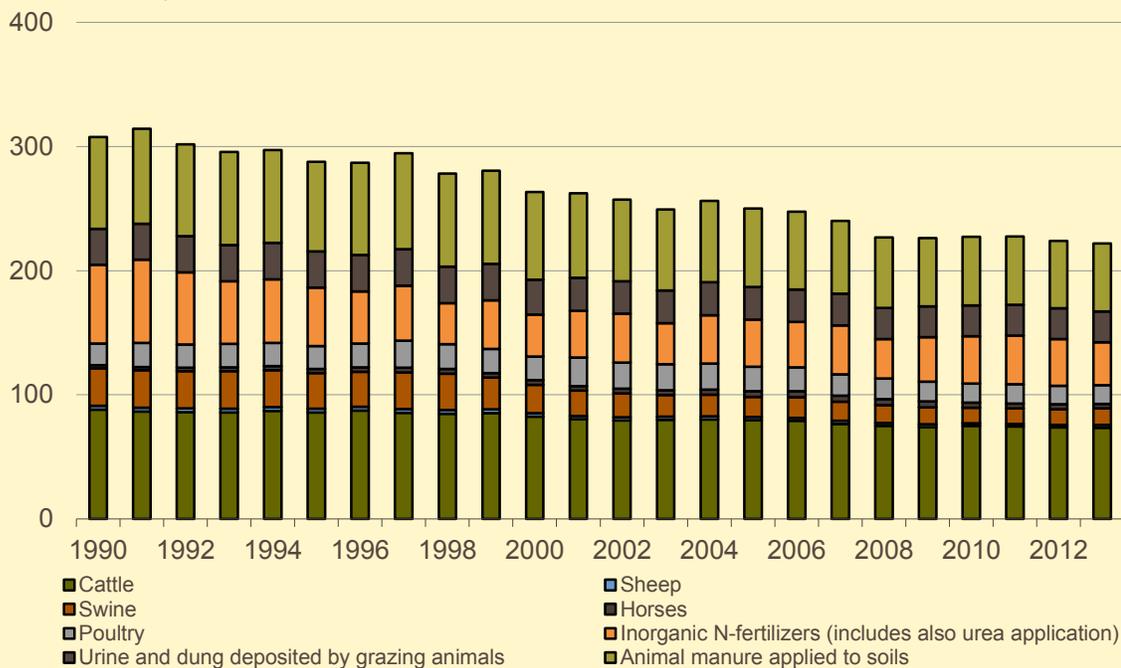
Between 1990 and 2013:

- NH₃ emissions from agriculture have fallen by 28%.

In May 2012, the UNECE Gothenburg protocol ceiling target for NH₃ was revised to 279 thousand tonnes to be achieved by 2020. The 2013 figure is 3% below this revised target. Historical data have been revised as a result of improvements to base data and emissions factors.

DC1a UK Ammonia emissions from agriculture

th tonnes of NH₃



In 2013:

- NH₃ emissions from agriculture were 222 thousand tonnes, of which 33% was attributed to cattle and 25% attributed to animal manure applied to soils.

This indicator was updated in September 2015. It will be next be updated from the 2014 inventory in 2016.

Further information and contact

Background information can be found in the accompanying fact sheet.

For further queries or information on this indicator contact Defra's Observatory team on +44 (0) 1904 455058 or email Observatory@defra.gsi.gov.uk

Observatory monitoring framework – indicator fact sheet

Environmental impact: Air quality

Indicator DC1: Ammonia emissions

<i>Indicator</i>	Ammonia emissions from farming.
<i>Data</i>	UNECE emissions of ammonia from agriculture.
<i>Geographic coverage</i>	UK
<i>Years</i>	DC1 1990 – 2013 from the 2013 inventory DC1a 1990 – 2013 from the 2013 inventory
<i>Source</i>	Defra: Environment and wildlife statistics
<i>Origin of data</i>	National Atmospheric Emissions Inventory (NAEI) , Ricardo-AEA estimates, Defra
<i>Updates</i>	This data will be updated annually. It will be next be updated from the 2014 inventory in 2016.
<i>Background</i>	<p>This indicator shows agriculture's contribution to total UK Ammonia (NH₃) emissions (excluding natural emissions from wild animals and humans).</p> <p>Agriculture accounts for around 82% of UK total ammonia emissions. Ammonia emissions are predominately from livestock manure, particularly from cattle and pigs. Inorganic fertilisers also produce ammonia as nitrogen reacts with compounds in the soil and air.</p> <p>Ammonia is a soluble and reactive gas. It contains nitrogen (N) and is readily deposited from the atmosphere onto soils and plants. This 'deposition' of ammonia from the atmosphere may damage plant communities that have evolved on nutrient-poor habitats (such as heathlands, upland bogs and some forests) by increasing the amount of N in the soil. This enrichment by N, also known as 'eutrophication', can overwhelm those existing species that are not as well able to cope with the extra N and mean that they are replaced by a few rank (fast-growing) grass species and other undesirable species. A major concern is that the plants growing on many valuable conservation areas in the UK are adapted to a limited supply of N and are therefore particularly vulnerable to increased ammonia deposition.</p> <p>Ammonia may also cause soils to become acidic. Once deposited on soil, ammonia may be oxidised to nitrate by a chemical process that increases soil acidity (acidification). The most obvious examples of acidification in the UK are the acidified lakes and streams in many upland areas. While acidification has been largely caused by sulphur dioxide emitted from industry, N can also play a role. Nitrogen deposition is thought to delay the recovery of habitats now that sulphur dioxide emissions have been reduced.</p> <p>Under the UNECE Gothenburg Protocol to the Convention on Long Range Transboundary Pollution, the UK agreed that by 2010 its emissions, excluding those from natural sources, would be below 297 thousand tonnes. In May 2012 a revised Gothenburg Protocol ceiling target was set of 279 thousand tonnes of ammonia to be achieved by 2020. Based on 2005 emissions data this represents an emissions</p>

reduction commitment of 8% between 2005 and 2020. Total ammonia emissions in 2013, excluding those from natural sources, were 271 thousand tonnes, although the estimates are subject to a relatively high degree of uncertainty (see below).

At its thirty-second session (Geneva 9-13 December 2013) the Executive Body for the Long-range Transboundary Air Pollution Convention adopted revised guidelines for reporting emissions and projections data. Key changes for 2014 are that reporting of emissions, now requires the use of NFR14, the latest version of the templates, with agriculture now under sector classification 3. The changes are to ensure improved information on emissions is available for the work of the Convention by strengthening reporting practices, quality and best practice requirements.

Statistical & methodological information

The UK greenhouse gas inventory is compiled for the UK governments by Ricardo-AEA.

Emissions of ammonia are estimated using national data on farm animal numbers (cattle, poultry, pigs and sheep) as well as on fertiliser application, crops and non-agricultural emissions (including traffic and contributions from human sources, wild animals etc). The dataset held by Defra includes emissions data for turkeys. In 2013 turkeys accounted for about 2 thousand tonnes of ammonia emissions from agriculture.

Agricultural sources are the most significant emission sources in the UK ammonia inventory. The UK uses a Tier 3 methodology to estimate ammonia emissions from manure management, with calculations for animal subcategories using detailed information on farm management practices and country-specific emission factors for animal housing, manure spreading and grazing animals.

An analysis of uncertainty in emission estimates by AEA suggests that the level of uncertainty for ammonia emissions is +/-20%. Although for any given year considerable uncertainties can surround the emission estimates for a given pollutant, trends over time are likely to be more reliable. UK national emission estimates are updated annually and any developments in methodology are applied retrospectively to earlier years. Adjustments in the methodology are made to accommodate new technical information and to improve international comparability.

Further information

The latest statistical release can be found at:

<https://www.gov.uk/government/publications/emissions-of-air-pollutants>

For more information on UK emissions of Air pollutants and datasets:

<https://www.gov.uk/government/organisations/department-for-environment-food-rural-affairs/series/air-quality-and-emissions-statistics>

Further information on the Gothenburg protocol can be found at:

http://www.unece.org/env/lrtap/multi_h1.htm

and at:

<http://uk->

air.defra.gov.uk/assets/documents/reports/cat19/1405130812_UK_IIR_2014_Final.pdf

The National Atmospheric Emissions Inventory web site can be found at:

<http://naei.defra.gov.uk/>