

Impact on air quality

Outdoor pig farming contributes to air pollution through emissions of **ammonia (NH₃)**, **nitrous oxide (N₂O)**, and **methane (CH₄)**. These gases affect air quality, climate, and ecosystems. Their impact varies depending on system design, ground cover, stocking rates, and seasonal conditions.

Key Pollutants

Ammonia (NH₃): Released when urine and faeces mix, breaking down nitrogen compounds.

Nitrous Oxide (N₂O): Produced through processes involving small soil organisms when nitrogen from manure and urine is deposited.

Methane (CH₄): Methane is produced when small soil organisms break down organic matter in pig manure under oxygen-poor conditions, such as in waterlogged soils, releasing methane as a by-product of decomposition.

Why It Matters

Ammonia combines with other atmospheric gases to form **particulate matter (PM)**, which can travel long distances and harm human health and the environment. Ammonia emissions can lead to **nitrogen deposition**, which can cause excess nutrients and changes in species composition, threatening sensitive flora, fauna and habitats.

Nitrous oxide and methane are potent greenhouse gases, contributing to climate change.

Direct risks of outdoor pig farming to air quality

Several factors can increase emissions:

- **High-protein diets** can lead to excess nitrogen excretion.
- **Poor ground cover** can increase emissions.
- **Stocking density and paddock design** can influence the concentration of urine and manure.
- **Soil compaction** changes the physical structure of the soil, creating anaerobic conditions and an increase in emissions.

Check out the guidance documents below to see which measures can improve air quality.

Actions

- Site selection
- On-farm infrastructure
- Diet
- Equipment and machinery
- Green cover and buffer strips
- Stocking rate and grazing management
- Soil health and structure
- Manure management

Links to further information

Code of Good Agricultural Practice (COGAP) for Reducing Ammonia Emissions, Defra, 2024: www.gov.uk/government/publications/code-of-good-agricultural-practice-for-reducing-ammonia-emissions/code-of-good-agricultural-practice-cogap-for-reducing-ammonia-emissions

Protecting our water, soil and air, Defra, 2011: www.gov.uk/government/publications/protecting-our-water-soil-and-air

The Code of Good Agricultural Practice (COGAP) for the prevention of pollution of water, air and soil, DAERA, 2008: www.daera-ni.gov.uk/publications/code-good-agricultural-practice-cogap

