07 March 2025

Scaling up nature recovery

Response by the Sustainable Soils Alliance

The Sustainable Soils Alliance (SSA) was launched in 2017 to address the current crisis in our soils. Its aim is to campaign to restore UK soils to health within one generation by seeing soil health elevated to where it belongs as a priority alongside clean air and clean water. The SSA is a non-profit organisation (CIC number 10802764).

Inquiry overview

The House of Lords Environment and Climate Change Committee, chaired by Baroness Sheehan, has launched an inquiry into efficient nitrogen use. The inquiry will focus on excess reactive nitrogen as a resource and consider the ways in which nitrogen could be captured and re-used rather than being treated as a waste product, highlighting opportunities and challenges across sectors. It will also consider how existing Government policy on nitrogen is coordinated across departments and how Government could take a holistic, strategic approach to nitrogen management. The committee's focus is on England, as most relevant matters are devolved in Northern Ireland, Scotland and Wales.

Background

Nitrogen (N) is a naturally abundant element with nearly 80% of the Earth's atmosphere composed of the inert gas di-nitrogen, N_2. Over the last century, conversion of N into reactive forms has increased significantly through the Haber-Bosch process – primarily for fertiliser production – and the burning of fossil fuels. This has caused unprecedented changes to the global nitrogen cycle.
Nitrogen pollution has significant public health and environmental impacts: on water quality, air quality, greenhouse gas emissions, ecosystem health and biodiversity, and soil quality.

Efficient use of existing reactive nitrogen is also an issue, as there are significant losses of nitrogen to air and water from agriculture, industry, wastewater, and transport which constitutes a wasted resource.

The UK has a range of targets relating to diverse aspects of nitrogen pollution, but many are reported to be off track in the Office for Environmental Protection's latest progress report. Policy on nitrogen to date has focused on particular impacts within separate sectors, such as air pollution from vehicles, nitrate in water, or fertiliser application rates in certain zones. For example, the Air Quality Standards Regulations 2010 set concentration limits on air pollutants, including nitrogen oxides (NOx); the Levelling-up and Regeneration Act 2023 requires wastewater companies to upgrade treatment plants in nitrogen sensitive areas; and the Farming Rules for Water require farmers to manage nutrient inputs to protect watercourses. However, there is not an overarching strategy to address the nitrogen cycle holistically and take account of 'pollution swapping' risks.

Aims

The aims of this inquiry are to:

- Highlight and explore the opportunities for capture and reuse of existing reactive nitrogen within sectors to minimise waste.
- Understand barriers to sustainable nitrogen management approaches within sectors.
- Review changes to the nitrogen cycle and its balance over time and associated challenges.
- Understand the gaps in current policy and the effectiveness of regulation in addressing nitrogen pollution.
- Understand how Government departments and associated agencies coordinate efforts on nitrogen management and whether this could be done more effectively.

Questions

The committee seeks evidence in response to the following questions. It is not necessary to answer all the questions. Short submissions are preferred. A submission longer than six pages should include a one-page summary.

1. **How effective is existing policy at regulating and reducing nitrogen pollution? How could they be improved? Are there gaps?**

When it comes to the critical policy instruments, it should be noted that soil health and nitrogen pollution are inherently linked.

- Soil acts as the primary reservoir for excess nitrogen from agricultural activities - nitrogen which would otherwise leach into water bodies through drainage, causing eutrophication and harming aquatic ecosystems.
- Soil is also where most natural nitrogen fixation occurs, with bacteria converting atmospheric nitrogen into forms plants can utilise. When soil is overly saturated with nitrogen, microbes produce nitrous oxide, while excessive nitrogen can lead to overly acidic soils.
- Decline in soil quality, especially its physical condition, increases the amount of nitrogen lost to the atmosphere or waterways, for example:
    - Compaction leads to a decreased soil porosity, reduced water infiltration capacity and therefore increased risk of N2O emissions and runoff of N to surface waters.
    - Soil erosion causes a loss of sediment into rivers and streams, carrying nutrients like phosphates and nitrates with it. This is particularly prevalent in agricultural areas where runoff from fields can carry eroded soil into waterways.
- Soil type will influence how nitrogen is lost. Sandy soils may lose N through leaching (soluble nitrates) while heavy, wet soils lose N through denitrification (conversion to nitrous oxide).
- Healthy soils with good structure and high organic matter content can buffer against nitrogen pollution by increasing the soil's capacity to retain nitrogen and prevent leaching.

As a result, an effective policy framework for addressing nitrogen pollution must embrace soil health – and regulations are a critical driver of this.

There are gaps in the policy framework here, in particular the critical regulatory instrument governing soil health the ‘Eight Farming Rules for Water’, rule 6 of which requires farmers to ‘take all reasonable precautions to prevent significant soil erosion and runoff from the application of organic manure and manufactured fertiliser affecting a single area of more than 1 hectare’. We would like to see these gaps filled as follows:

- Greater Enforcement: The Environment Agency has a target of inspecting 4000 farms per year (4% of all farms) to enforce the Rules. This level of inspection is clearly inadequate, and we agree with the final report from Parliament's EFRA Committee Inquiry into Soil Health which stated, "visiting just 4% of farms every year will not act as a deterrent to bad actors, nor help the farmers that could benefit from the 'supportive' approach".
- Improved Communication: Robust data to establish awareness among farmers of the Rules is lacking, meaning we are dependent on anecdotal evidence drawn largely from insights from partner organisations and public events – insights which give the impression that awareness is patchy at best. For example, at a farming cluster meeting in late 2019 in Hampshire the question was asked of the farmers (generally on the more environmentally aware side of the spectrum), and less than 50% had heard of the 2018 Farming Rules for Water, let alone operated by them. If these communities are not being reached, there is little chance of the regular offenders in the farming community (those responsible for the worst incidents) being cognisant of the rules.
- Greater Clarity: Both the 1ha rule and 'reasonable precautions' are subjective and open to interpretation. They appear only in text format – many of the helpful diagrams and images are hidden within the accompanying long-format documents. Their impact could be enhanced by more detailed descriptions, infographics, visual case studies, etc. This will help all stakeholders (including inspectors) identify and remedy soil erosion and loss before it gets too serious.
- Positive Messaging: To resonate with farmers, the rules must focus as much on the business case as the environmental rationale for better soil management. Degraded soil results in increased input costs, lower yields and productivity, and increased vulnerability to climate change. Following recent droughts, farmers will be particularly responsive to the message that healthy soils store more water – and more expensive inputs.
- Policy Alignment: There is a clear role for a more universally applicable approach to the assessment, interpretation and measurement of soil. We understand that DEFRA is developing a 'farmer-led soil monitoring scheme', alongside tools on how to apply it in practice. We would like to see this embedded within and across all relevant policy instruments – (Farming Rules which requires farmers to test soil chemistry, and Environmental Land Management which pays farmers to test for soil organic matter) as the critical foundations for soils understanding and a bridge across these policies.