



POLICY REPORT

Accelerating National Implementation of Sustainable Nitrogen Management

Policy Priorities and Challenges in the context of the United Nations Framework Convention on Climate Change (UNFCCC)

Insights and priorities from the 2025 and 2026 Bonn workshops and conversations with agricultural negotiators and technical experts engaged in the UNFCCC.

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About this report

This policy report synthesises the challenges, priorities, and opportunities identified during workshops held in Bonn in June 2025 and June 2026 and subsequent one-to-one conversations. These activities engaged agricultural negotiators and technical experts engaged in UNFCCC processes from more than 40 countries, bringing a wide range of national experiences and perspectives into the discussion.

The workshops were led by Andrea Pérez of Compassion in World Farming (CIWF) and co-convened with partner organisations.¹ The report further incorporates bilateral discussions conducted by Andrea Pérez and William San Martín of the International Nitrogen Network (iN-Net) with negotiators and technical experts engaged in United Nations Framework Convention on Climate Change (UNFCCC) processes. These discussions took place during the 2026 Bonn Climate Change Conference and in the subsequent months.

The analysis focuses on the conditions required to translate international commitments on sustainable nitrogen management into nationally appropriate actions. It distinguishes recurring concerns from individual country experiences and does not present the discussions as a representative survey or assume consensus among participants. Country examples from public workshop presentations are identified, while insights from bilateral conversations are anonymised and paraphrased.

¹ The 2025 workshop was organised by CIWF in partnership with UN Environment Programme (UNEP), the International Nitrogen Management System (INMS), the GCRF South Asia Nitrogen Hub (SANH), the International Nitrogen Initiative (INI), the Global Partnership on Nutrient Management (GPNM), the University of Agriculture Faisalabad (UAF), and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). The 2026 workshop was organised by CIWF in co-partnership with the International Nitrogen Network (iN-Net), the Climate and Clean Air Coalition (CCAC), UNEP, GPNM, GIZ, INMS, SANH, INI, and UAF. See the 2025 workshop report: <https://umbraco.ciwf.org/media/okvhw3tp/bonn-workshop-report.pdf> and the 2026 workshop summary: https://www.ciwf.org/media/sellsxg4/ciwfgb-260908_med-cpn_bonnnitrogensummary_en-web_v2.pdf

The report presents themes and perspectives raised during the workshops and bilateral conversations. It does not necessarily reflect the views of all participants, their governments, the UNFCCC, the United Nations Environment Programme (UNEP), or any other participating or partner organisation. References to country experiences illustrate specific approaches and should not be considered universally applicable models.

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Executive Summary

This report outlines key conditions, constraints, and priorities identified by participants as essential for translating international commitments related to sustainable nitrogen management into national action. The discussions identified substantial differences among countries, as well as areas of consensus regarding shared priority areas, including access to financial and technical resources, research and monitoring capacity, awareness and political attention to nitrogen, sources and scale of nitrogen losses, farming systems and practices, and the roles and influence of actors in agrifood systems.

Across these contexts, participants emphasised making existing commitments implementable rather than adding new international commitments. Concern about the pace of implementation nevertheless raises a longer-term question: if current trajectories remain insufficient to halve nitrogen waste and pollution by 2030, how should countries sustain and strengthen action beyond that date? The immediate priority is to accelerate delivery of existing commitments through 2030 while beginning an open discussion about the post-2030 agenda. One option raised in the discussions was a group of country champions under the UNFCCC, linked with relevant United Nations Environment Assembly (UNEA) processes, that could maintain political attention on nitrogen, support peer learning and improve coordination across climate and environmental forums. As a result, discussions focused on factors that enable or constrain implementation within countries, rather than defining additional ambitions.

Five key implementation challenges emerged across workshops and bilateral conversations:

- 1) Institutional fragmentation and sectoral silos
- 2) Data, monitoring, and measurement, reporting and verification (MRV) limitations
- 3) Subsidies and policy reform challenges
- 4) Financing the transition
- 5) Socioeconomic vulnerability, stakeholder engagement, and potential farmer backlash.

These challenges are interconnected and vary across national contexts. The following sections examine how participants described these issues, the tensions and trade-offs identified, and the experiences and possible responses discussed.

Introduction: Why Nitrogen Matters in the Climate Agenda

Nitrogen is increasingly important to the climate agenda because its management connects greenhouse gas mitigation with agriculture, food security, soil and human health, pollution, and biodiversity. According to the Global Nitrous Oxide Assessment, nitrous oxide (N₂O) – often described as a “super pollutant” and emitted primarily from agricultural activities such as fertiliser use – is the third most important greenhouse gas. N₂O has contributed roughly 10% of net global warming to date and is currently the most significant ozone-depleting substance being released. The Assessment concludes that substantial reductions in N₂O emissions are essential if the 1.5°C target is to remain achievable.

The Paris Agreement and the wider United Nations Framework Convention on Climate Change (UNFCCC) framework provide important entry points for addressing the climate dimensions of the nitrogen challenge. Anthropogenic N₂O emissions are included in national greenhouse gas inventories, and agriculture is a key part of many countries’ Nationally Determined Contributions (NDCs). Parties update their NDCs every five years, with the next round due in 2030. This schedule coincides with other international milestones relevant to advance sustainable nitrogen management. For example, Convention on Biological Diversity (CBD) Target 7 aims to reduce excess nutrient losses by at least half by 2030. United Nations Environment Assembly (UNEA) Resolution 5/2 calls for accelerated action to significantly reduce global nitrogen waste by 2030, and the Colombo Declaration seeks to halve nitrogen waste by that year. However, nitrogen is often addressed indirectly and inconsistently across these initiatives, rather than as a unified policy issue. The 2030 NDC cycle offers an opportunity to explicitly integrate nitrogen management and improve coordination with biodiversity and UNEA processes.

Existing UNFCCC work on agriculture provides a foundation for this effort. The Koronivia Joint Work on Agriculture considered nutrient use and manure management, while its successor, the Sharm el-Sheikh Joint Work on Implementation of Climate Action on Agriculture and Food Security, has placed greater emphasis on implementation, including the financial and technical support required for context-specific action.

Nitrogen’s climate impact, however, extends beyond agriculture. Fertiliser production generates both carbon dioxide (CO₂) and N₂O emissions, including N₂O from nitric

acid production. Discussions with experts linked to UNFCCC processes highlighted that established abatement technologies can substantially reduce these industrial emissions, and some countries have incorporated reductions from nitric acid production into their NDCs. These policy entry points form part of a wider – and still fragmented – landscape of international commitments on sustainable nitrogen management.

A wider landscape of international commitments

UNFCCC efforts are part of a broader set of international commitments. UNEA Resolutions [4/14](#) and [5/2](#) have advanced cooperation on sustainable nitrogen management, with Resolution [5/2](#) calling for accelerated action to significantly reduce global nitrogen waste by 2030 and supporting national nitrogen policies and action plans. The [Colombo Declaration](#) also aims to halve nitrogen waste by 2030 and encourages a more integrated approach to nitrogen management.

Nitrogen is also directly linked to the Kunming-Montreal Global Biodiversity Framework. [Target 7](#) calls for reducing excess nutrient losses to the environment by at least half by 2030, through more efficient nutrient cycling and use, while recognising food security and livelihoods. [Target 18](#) focuses on reforming subsidies and incentives that harm biodiversity and increasing positive incentives.

Implementation is now a pressing issue as countries assess progress towards the 2030 biodiversity targets. The [first global review of the Kunming-Montreal Framework](#) shows that collective progress is not fast enough to achieve these targets. For Target 7, the assessment highlights recurring barriers similar to those discussed in this report: gaps in regulatory frameworks and enforcement, limited implementation and monitoring capacity, and insufficient domestic financing.

Recent international debates on fertilisers have highlighted links between emissions from production and use, nutrient-use efficiency, alternative nutrient sources, innovation, finance, and food security. They have also underscored the geopolitical nature of fertiliser access. Conflict, energy-price volatility, and disruptions to international supply chains can rapidly affect fertiliser availability and affordability, with particularly serious consequences for import-dependent countries and economically vulnerable producers. Sustainable nitrogen management is therefore not only an environmental concern, but also a question of food security and resilience to external shocks. A recurring challenge identified in workshops was how to make

existing commitments actionable and align overlapping climate, biodiversity, pollution, agriculture, and food-security goals with national institutions, capacities, and priorities, rather than treating them as separate agendas.

Different nitrogen challenges, shared benefits from sustainable management

Participants cautioned against viewing the global nitrogen issue as uniform. Some regions experience high nitrogen inputs and significant environmental losses, while others, face inadequate or unaffordable access to nitrogen and other agricultural inputs. Sustainable nitrogen management offers benefits in both contexts, yet practical requirements differ. For this reason, discussions often described sustainable nitrogen management as offering potential “win-win” outcomes. Improving nitrogen use and developing alternatives can generate socioeconomic and food-security benefits while also reducing emissions and other forms of nitrogen pollution.

Although pathways must be tailored to specific contexts, five principal implementation challenges were identified throughout the discussions. The subsequent sections analyse participants’ descriptions of these challenges, the associated tensions, and trade-offs, as well as their experiences and potential responses.

1. Institutional Fragmentation and Sectoral Silos

Institutional fragmentation was repeatedly identified as a barrier to implementing nitrogen-related commitments at the national level. Nitrogen management spans multiple policy domains, including agriculture, food security, climate mitigation, water and air quality, biodiversity, public health, and industry. The experiences shared suggest that responsibilities for these areas are often divided among various ministries, agencies, government levels, and international processes, each with distinct mandates and priorities.

Fragmentation within national governments

A persistent issue is the division of responsibilities between environmental and agricultural institutions. Environment ministries generally lead climate and biodiversity reporting and participate in international environmental processes. In

contrast, agriculture ministries are responsible for fertiliser policy, extension services, support programmes, and farmer relations, as well as involvement in multilateral processes. This separation can result in a disconnect between those accountable for environmental commitments and those who manage key policy instruments for agricultural nutrient management.

Finance introduces another layer of complexity. Agricultural subsidies, investment programmes, credit, and infrastructure significantly influence nutrient use, but decisions about these resources often involve finance ministries or other bodies with broader objectives. Discussions emphasised both the importance and the challenge of aligning environmental goals with agricultural and economic priorities. Workshop discussions examined how various forms of support, including but not limited to subsidies, interact with environmental, food security, and livelihood objectives, rather than assuming agricultural support is inherently incompatible with sustainable nitrogen management.

Two workshop cases directly addressed the challenge of institutional fragmentation at the national level. Japan's national nitrogen strategy involves the ministries responsible for environment, agriculture, economy, transport, and health, in addition to researchers, producers, and private-sector stakeholders. Romania similarly emphasised the importance of formal inter-ministerial coordination, legal and strategic frameworks, scientific capacity, and long-term institutional development prior to major investments. These cases indicate that effective coordination requires more than simply convening relevant ministries. Coordination must be integrated into institutional mandates, evidence systems, and investment planning to influence implementation over time.

Fragmentation across international processes

Conversations also noted fragmentation at the international level. Nitrogen-related objectives are spread across multiple multilateral processes rather than managed under a single international framework. UNEA resolutions and the United Nations Environment Programme (UNEP) Working Group on Nitrogen address sustainable nitrogen management directly. The UNFCCC covers N₂O emissions and agricultural climate action, while the Convention on Biological Diversity addresses nutrient pollution. Nitrogen issues also intersect with the Montreal Protocol and the United Nations Convention to Combat Desertification (UNCCD).

This distribution offers multiple entry points for advancing nitrogen management, but participants expressed concerns about limited coordination across processes addressing different aspects of the nitrogen cycle. The challenge goes beyond duplication. International commitments are managed by different national ministries, focal points, reporting systems, and policy communities. As a result, progress in one process does not automatically lead to action in another.

This concern was evident at both the 2025 and 2026 Bonn workshops, which aimed in part to strengthen links between sustainable nitrogen management discussions under UNEA and agricultural and climate discussions under the UNFCCC. The workshops called for stronger synergies among UNEP, the climate, biodiversity, and desertification conventions, and other relevant processes. At the same time, bilateral conversations reinforced the need for greater interaction among officials and experts working on nitrogen across different international forums.

The United Kingdom's presentation, which emphasised collaboration with Brazil under the **Belém Declaration**, demonstrated that international cooperation can be advanced by integrating innovation, standards, and finance across the fertiliser value chain. While this approach differs from national inter-ministerial coordination, it shows that cooperation between countries can connect policy areas and stakeholders that are typically addressed in isolation.

Fragmentation beyond government

A related challenge involves the relationships among government, scientific experts, farmers, and private actors in the fertiliser and food systems. Across discussions, participants emphasised that governments may lack some of the knowledge, data, or implementation capacity needed for sustainable nitrogen management.

Data and monitoring illustrate this challenge. Participants noted that national fertiliser use estimates often rely on aggregate sales or import data, which do not reveal when, where, or how fertilisers are applied. Bilateral conversations also discussed the value and challenges of collaborating with fertiliser companies, distributors, and others who hold data not available through public reporting. These relationships are important for both implementation and for governments' ability to understand nitrogen flows and track changes over time.

Negotiators and technical experts also noted that scientific evidence does not automatically inform policy or agricultural practice. National research capacity varies,

and information for global assessments may not meet local needs for agricultural decisions. Meanwhile, farmers, agronomists, extension services, industry, and local institutions have valuable knowledge and implementation capacity that may not be well integrated with environmental agencies or international negotiations.

Workshop discussions highlighted several initiatives aimed at bridging these divides. One example was the formation of a multi-stakeholder working group following controversy regarding emissions targets with farmers. This initiative facilitated the creation of farmer discussion groups, the provision of site-specific soil information, and the establishment of demonstration farms, which helped reconnect key stakeholders after a period of tension. Despite differing experiences, conversations consistently observed that implementation becomes more challenging when stakeholders and institutions responsible for commitments, financing, agricultural policy, scientific information, and implementation lack effective coordination.

2. Data, Monitoring, and Measurement, Reporting, and Verification (MRV) Limitations

Data and monitoring limitations emerged as another recurring challenge for national implementation. Workshop and bilateral discussions identified significant gaps in measuring nitrogen emissions and losses, as well as in tracking fertiliser application rates, locations, usage methods, and changes in agricultural practices over time. These deficiencies hinder the accuracy of greenhouse gas inventories, the effectiveness of policy design and evaluation, and the capacity of countries to demonstrate progress towards climate and environmental objectives. In certain instances, these limitations also restrict access to finance that depends on measurable outcomes.

From fertiliser sales to actual nitrogen use

A recurring issue is the gap between fertiliser sales or import data and actual on-farm application. National inventories often use aggregate data because collecting detailed information is challenging and costly. Bilateral conversations noted that fertiliser purchased in a given year may not be applied that year, and national totals offer limited insight into where, when, and under what conditions nitrogen is used. Several discussions emphasised the importance of moving towards more locally specific data and Tier 2 approaches.

However, the issue extends beyond total quantities. Variations in fertilisers, soils, climates, crops, and management practices lead to different nitrogen outcomes that national data often fail to capture. Workshop participants and bilateral conversations highlighted the need for locally appropriate emission factors, soil data, and detailed activity information. Yet developing these systems requires scientific infrastructure, ongoing monitoring, institutional capacity, and financial resources, which differ significantly among countries.

Better data for policy, reporting, and finance

These limitations are significant because measurement systems now serve multiple purposes. Governments require data for greenhouse gas inventories and international reporting, as well as for setting priorities, designing policies, evaluating interventions, and communicating results domestically.

Bilateral conversations highlighted practical consequences of these challenges. The experiences shared noted the tension between the evidence required to establish baselines and demonstrate results, and the resources needed to generate such evidence. This is especially relevant when climate finance or results-based instruments demand measurable changes.

Negotiators and technical experts cautioned that obtaining more detailed data is not always straightforward. Farm-level reporting can increase administrative burdens, and governments may lack the capacity to manage large data volumes. Additional concerns regarding confidentiality and farmers' willingness to share information further complicate data collection. Therefore, a primary remaining challenge is to determine the specific information required for policy objectives and to establish credible and feasible methods for its collection.

Expanding the sources and uses of nitrogen data

Several discussions identified opportunities to improve monitoring without depending solely on new farm-level reporting systems. Private actors in the fertiliser supply chain may possess information not available to public agencies. Therefore, finding ways to increase collaboration with fertiliser producers, importers, and distributors could improve the quality of data concerning quantities and geographic distribution.

Case studies in the 2026 workshop discussed the potential of soil mapping, remote sensing, digital technologies, demonstration projects, and research networks to improve data. Some discussions highlighted the link between improved measurement and new financial incentives. Technologies like enhanced-efficiency fertilisers or nitrification inhibitors may require locally credible evidence before emissions reductions are included in inventories or recognised by climate-finance mechanisms. As a result, conversations suggested that private-sector interest in demonstrating these benefits could support research and validation, while emphasising the need for credible and transparent methods.

The workshop presentation from Sri Lanka demonstrated how these capabilities can facilitate more context-specific nutrient management. The approach integrated site-specific soil testing, digital soil data, mobile testing units, field demonstrations, and extension services. Furthermore, it sustained a balance of mineral and biological inputs, drawing on lessons from a prior policy change that disrupted farmers' access to conventional fertilisers. This case study demonstrated that enhanced information must be accompanied by accessible guidance and practical nutrient alternatives to effectively influence decision-making at the farm level.

Improving MRV without waiting for perfect information

An important point from the workshops was that data limitations should not prevent countries from taking action. In the discussions, participants recognised weaknesses in national data but cautioned against requiring perfect measurement before implementation. Participants recommended starting with context-specific “best bets” – practices already supported by sufficient evidence – while gradually strengthening monitoring and scientific capacity. Country representatives and workshop speakers generally viewed data improvement and policy implementation as processes that can advance together rather than as strictly sequential steps.

3. Subsidies and Policy Reform

Agricultural subsidies represent a significant policy instrument and constitute one of the more politically sensitive aspects of sustainable nitrogen management. Public support for fertiliser and other agricultural inputs can sustain farm incomes, increase production, and safeguard food security during periods of elevated input prices.

Nevertheless, certain forms of support may promote inefficient nitrogen use or discourage the adoption of alternative practices. Workshop discussions underscored the importance of evaluating the types of support provided by governments, the behaviours these incentives foster, and the effects of policy reforms on farmers with differing levels of vulnerability and resources.

Differentiating the effects of subsidies

Discussion emphasised the importance of distinguishing among various forms of agricultural support. Subsidies directly associated with fertiliser purchases or production can lower farmers' costs and increase nutrient availability. However, the environmental consequences of these subsidies are contingent upon local conditions. In regions with limited nutrient access, fertiliser support can improve agricultural productivity and food security. Conversely, in areas with already elevated nitrogen inputs, such subsidies may diminish incentives for more efficient nutrient management.

Evidence from the 2026 workshop placed this issue within the broader context of public agricultural spending. In some countries, input subsidies account for a significant portion of agricultural budgets. Research presented at the workshop linked certain types of coupled support to increased nitrogen losses to water. The discussion also distinguished these from investments in public goods and less production-linked assistance, which can support agricultural goals without encouraging additional nitrogen use.

These findings shifted the discussion towards repurposing agricultural support instead of eliminating it. Alternatives included investing in extension and advisory services, soil information, infrastructure, improved nutrient management, and incentives for positive environmental outcomes. This approach aligns with **Target 18** of the Kunming-Montreal Global Biodiversity Framework, which calls for reforming or phasing out incentives harmful to biodiversity and increasing positive incentives.

Reform is also a political and distributional question

Conversations emphasised that changing agricultural support is not only about adjusting economic incentives. Fertiliser subsidies and other support measures are integral to agricultural livelihoods, food security strategies, and the relationship between governments and farmers. Their significance becomes especially clear during periods of high fertiliser prices or broader food and energy crises.

This underlines the importance of sequencing reform. Reducing one form of support without providing affordable alternatives, knowledge, infrastructure, or transitional assistance can shift costs and risks to farmers. The specifics of repurposing will depend on national agricultural systems and current support structures. Indeed, country experiences discussed during the workshops show that governments are using a variety of approaches rather than following a single model for subsidy reform.

These discussions also highlighted the importance of alternatives available to farmers during reform. Where fertiliser imports are expensive or access is limited, participants considered support for local nutrient sources, organic fertilisers, biological inputs, improved nutrient cycling, extension, and soil information as complements or substitutes for conventional input support. These discussions reinforced that subsidy reform is closely linked to agricultural capacity, infrastructure, and access to alternatives. Discussions generally viewed reform as a process of reassessing and, where appropriate, repurposing existing support, with attention to national conditions, distributional impacts, and practical alternatives for farmers.

4. Financing the Transition

Across the discussions, a recurring concern was that many nutrient management changes require upfront investments in equipment, infrastructure, technical assistance, research, or new practices before benefits are realised. This challenge is especially significant for farmers, governments, and research institutions with limited access to resources.

Costs and risks of transition

Workshop discussions identified a significant distributional challenge: although the environmental benefits of improved nitrogen management are broadly shared, the immediate costs and risks are primarily experienced by farmers and other individual stakeholders. Investments in precision technologies, manure-management infrastructure, soil testing, enhanced-efficiency fertilisers, or alternative nutrient sources require substantial upfront expenditures and introduce uncertainty regarding their effects on yields, labour requirements, and profitability in specific local contexts.

This connection clarifies why discussions frequently associate financial considerations with the availability of viable alternatives and transitional support. A central issue is

whether resources are allocated to those expected to change practices and thereby reduce, rather than merely shift, transition risks. This issue is especially relevant for smaller or more economically vulnerable producers.

Workshop speakers also highlighted the economic benefits associated with reducing nitrogen losses. Nitrogen loss represents both an environmental concern and inefficient use of agricultural inputs. The discussions considered presenting improved nitrogen management as not only addressing environmental costs, but also as an investment in input efficiency, increased resilience to fertiliser price volatility, and potentially reduced production costs.

Connecting nitrogen management to existing finance

The discussions identified several potential sources of finance, such as national agricultural budgets, repurposed subsidies, international climate and environmental finance, development finance, private investment, and emerging results-based or carbon-finance instruments.

Conversations also highlighted a link to the data and MRV challenges described above. Certain climate and results-based finance mechanisms require credible baselines and measurable outcomes. Countries with limited monitoring capacity face the dual challenge of financing both interventions and the data systems necessary to demonstrate results.

The discussions of industrial N₂O emissions identified an additional pathway. Initiatives supporting catalytic abatement in nitric acid production have integrated technical assistance, established mitigation technologies, and climate-finance mechanisms. Contributors also noted opportunities to align sustainable nitrogen management more directly with existing multilateral climate and environmental finance, rather than establishing new financing structures.

Beyond additional funding

Several workshop speakers indicated that financing the transition is not only about mobilising new funds. Existing agricultural spending is already significant, and how these resources are allocated can be as important as securing additional finance. This relates to subsidy reform: redirecting some existing support towards extension, soil information, infrastructure, appropriate technologies, or environmental incentives

may help support transitions while maintaining focus on farmer livelihoods and food security.

Across the discussions, a broader question emerged: how can existing and new resources be aligned with the costs, risks, and capacities involved in implementation? From this perspective, finance is not a stand-alone solution. Its effectiveness depends on policy incentives, institutional coordination, scientific capacity, monitoring systems, and farmer engagement, as discussed throughout this report.

5. Socioeconomic Vulnerability, Stakeholder Engagement, and Farmer Backlash

The workshops and discussion sessions repeatedly emphasised that the move to sustainable nitrogen management is influenced by social and economic factors as much as by technical ones. Alterations in the use of fertilisers, in the way manure is managed, in production practices, or in environmental requirements can affect farm costs, yields, labour, and investment decisions. It was warned that even if an intervention is technically feasible it may still meet with resistance unless its costs, risks, or effects on agricultural livelihoods are thoroughly considered.

Discussions at the 2026 workshop and subsequent bilateral conversations indicated that farmers' resistance is not necessarily a rejection of environmental objectives. Rather, they reveal concerns regarding economic vulnerability, perceptions of fairness, the distribution of transition costs, confidence in alternative options, and the policy development process. This distinction helps to shift the focus from overcoming resistance to examining the conditions under which farmers and other stakeholders are expected to implement change.

Vulnerability and the distribution of transition risks

Farmers often make nutrient-management decisions amid significant economic uncertainty. Fertiliser and energy prices fluctuate, weather affects yields and nutrient needs, and changing established systems can introduce new costs or risks. Discussions noted that these factors vary widely across farms, and the ability to absorb losses, invest in equipment, try new practices, or wait for long-term returns is not evenly distributed.

This can create a mismatch between public environmental goals and the private risks farmers face during transitions. Reducing nitrogen pollution benefits climate, water quality, biodiversity, and public health, but farmers may bear immediate costs when changing practices. As discussed in the financing section, sustainable nitrogen management is not always costly for farmers; greater efficiency can lower input costs and improve profitability. However, the distribution and timing of costs and benefits remain an important barrier.

The 2026 workshop identified several factors relevant to understanding farmer resistance: the vulnerability of affected producers, perceptions of fair distribution of costs and responsibilities, and farmers' capacity to adapt through access to finance, knowledge, technology, infrastructure, and viable alternatives.

Trusted knowledge and practical learning

Extension services, agronomists, farmer organisations, and peer networks were identified as key intermediaries between national objectives and farm-level decisions. Both the 2025 and 2026 workshops emphasised the importance of ongoing technical advisory services and farmer-to-farmer learning, rather than relying solely on awareness campaigns or information provision.

Both workshop and bilateral conversations noted that how nitrogen policy is framed matters. Messages focused only on emissions reductions or restrictions may not address producers' immediate concerns. Instead, discussions highlighted links between nutrient efficiency and issues farmers already face, such as fertiliser costs, soil productivity, resilience, and volatile input markets.

From participation to social legitimacy

Several country examples showed that while stakeholder engagement is important it cannot take the place of dealing with the actual effects of policy changes. Just as financial assistance on its own will not overcome worries regarding trust, knowledge, or the fairness of the procedures, so too cannot consultation compensate for interventions which impose costs without having viable alternatives.

The discussions indicate that social legitimacy depends on several interrelated factors: meaningful opportunities for stakeholders to influence decision-making, access to reliable and trusted sources of knowledge, the practical feasibility of implementing alternative options, and thorough assessment of how costs, risks, and benefits are distributed. Resistance from farmers reflects not only attitudes toward environmental

policy but also potential issues with policy design, sequencing of implementation, provision of support, and the lived realities of those responsible for enacting change.

Conclusion

The workshops and bilateral discussions indicated a clear transition in the international nitrogen agenda, moving from advocacy for action to a focus on the practical requirements of implementation. Participants generally prioritised operationalising existing commitments rather than developing new international agreements. However, there was broad recognition that current progress remains inadequate to achieve the objective of halving nitrogen waste and pollution by 2030. This situation underscores the urgency of accelerated implementation and raises questions regarding the sustainability of political attention and cooperation beyond 2030.

One proposed option involved establishing a group of country champions under the United Nations Framework Convention on Climate Change (UNFCCC), in coordination with relevant United Nations Environment Assembly (UNEA) processes, to facilitate peer learning and coordination across institutional boundaries. Any such initiative must also acknowledge that implementation strategies cannot be uniform, due to variations in national nitrogen challenges, agricultural systems, institutional capacities, financial resources, and policy priorities.

These national differences are further exacerbated by geopolitical shocks. Enhancing nitrogen-use efficiency, increasing nutrient recycling, and diversifying nutrient sources can strengthen resilience to such shocks while supporting environmental objectives. However, the optimal combination of these approaches will depend on specific national circumstances.

In these varied contexts, the general view was that sustainable nitrogen management is not only about finding new technical solutions. While numerous relevant practices and technologies exist, successful implementation depends on their alignment with institutional frameworks, social conditions, incentives, available evidence, financing, and the circumstances of farmers and other stakeholders responsible for enacting change. Progress will require more effective integration of international objectives with national and local realities, as well as the creation of opportunities for countries to exchange knowledge and develop context-specific approaches.

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About Compassion in World Farming

Compassion in World Farming (CIWF) is an international non-governmental organisation dedicated to transforming global food systems. It works with governments, international institutions, food businesses, and civil society to promote farming and food policies that improve animal welfare and support human health, livelihoods, climate action, and the protection of nature. Its international policy work includes advancing sustainable nitrogen management and strengthening the role of food systems within multilateral processes.

About the International Nitrogen Network

The International Nitrogen Network (iN-Net) is a US National Science Foundation-funded global network of scientific and policy networks working to bridge the gap between knowledge and action on nitrogen pollution. It brings together researchers, policymakers, civil-society organisations, and other stakeholders to develop policy-relevant research, strengthen collaboration across disciplines and regions, and support nationally appropriate approaches to sustainable nitrogen management. Its work seeks to improve the evidence, governance and institutional capacity needed to translate international nitrogen commitments into action.



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