

Policy brief

Advancing Soil Health and Agroecology in the Nordic Region

Executive Summary

This policy brief outlines the urgency and opportunity for advancing soil health and agroecology in the Nordic region. It highlights the essential ecosystem services provided by healthy soils, the risks of continued degradation, and regionally adapted actions to support sustainable food systems. Key recommendations include developing Nordic-specific monitoring frameworks, incentivizing agroecological and adjacent practices, and fostering regional collaboration and innovation.

Recommendations

- Develop Nordic-specific policy briefs to influence EU and national agendas. Advocate for flexibility in EU soil health regulations to accommodate regional adaptations. Ensure that Nordic voices are represented in EU-level discussions on soil governance.
- Establish monitoring systems that reflect local soil types, climate conditions, and land-use patterns. This includes integrating traditional knowledge and farmer-led observations with scientific metrics. Invest in harmonized, practical monitoring systems that balance scientific rigor with farmer usability.
- Develop a dynamic online dashboard where current state of soil health can be viewed.
- Promote farming systems that enhance biodiversity, reduce dependency on external inputs, and build soil organic matter. This includes crop diversification, increased synergy between livestock and crop farmers, agroforestry, and organic amendments tailored to Nordic soils. Align subsidies and incentives with soil health outcomes to encourage adoption of sustainable practices. This by also supporting and initiate activities and research including sustainable agriculture, regenerative initiatives and soil health based initiatives including integrated conventional farming, which include a minimum of agroecological approaches.
- Fund interdisciplinary research that explores how agroecological and adjacent practices perform under Nordic conditions. Encourage pilot projects and living labs that test scalable solutions. Support Living Labs as platforms for innovation, co-creation, and policy testing.
- Promote soil literacy through education, transparent communication, and stakeholder-inclusive governance.

Overview

Soil provides multiple critical ecosystem services (ES) such as food production, biological habitat and gene pool, carbon storage, and water filtration. However, soil degradation threatens the delivery of soil ES worldwide. Healthy soil implies that the physical, chemical and biological components of soil function optimally. Addressing soil health implies a holistic approach from multiple disciplines and stakeholders. Bio-physical optimisation, socio-economic perspectives and political visions are the overarching drivers setting the priorities for measures for optimizing soil health. Methodologies and tools are necessary to monitor soil degradation, evaluate land management strategies and consider soil ES that are beneficial to human beings. Soil's inherent properties are not easily altered, while the dynamic soil properties are interlinked with land management and can be more readily changed. Soil health and ES are assessed through measuring carefully selected physical, chemical, and biological soil indicators related to dynamic soil properties, and compare these to thresholds or standard values that separate healthy from unhealthy conditions. Indicator selection is dependent on their sensitivity to land management and spatial variation, relation to soil ES, the soils functionality, and accessibility and cost of the analysis. It is of great importance that the threshold values linked to soil, climate and land use are agreed upon and adapted to specific environment within similar pedo-climatic conditions.

Agroecology is an approach that encompasses the whole food system from soil to the organization of human societies¹. Agroecology is based on scientific knowledge, sustainable use of local renewable resources, farmers' knowledge and priorities, to provide ES, resilience and solutions that provide environmental, economic, and social benefits. It seeks to optimize the interactions between plants, animals, humans and the environment while also addressing the need for socially equitable food systems within which people can exercise choice over what they eat and how and where it is produced². Agroecology is a concept for reconciling agricultural production and environmental sustainability by optimizing socio-ecological processes that enhance and reduce external input. The European Union's Farm-to-Fork Strategy sets out its ambitions and approach to how European's value food sustainability, and the accompanying opportunities for improving the environment as well as the lifestyles and health of EU citizens. It emphasizes how implementing agroecological approaches in primary production can help achieve ambitions, through new knowledge and innovations in land management and supply chains. The EU soil strategy for 2030 provides a framework and concrete steps towards protecting and restoring soils, ensuring that they are used sustainably. Several initiatives from IFOAM Organic Europe are on soil health, biodiversity and Agroecology³. The EU mission "A soil deal for Europe" in the Horizon Europe program has set a target to have at least 75 % of all soils in Europe in a healthy state by 2030. The EU biodiversity strategy aims to put Europe's biodiversity on the path to recovery by 2030 for the benefit of people, climate and the planet. Belowground biodiversity contributes to this aim, and forms part of the soil health concept.

On 20. March 2025 experts from most Nordic countries discussed the constraints and opportunities of the Nordic region for increasing soil health by adapting the agroecological approach and its principles. The seminar was organized by the TerraNordica network 'Nordic Partnership for Soil Health and Agroecology', funded by The Nordic Joint Committee for

¹ <https://www.agroecology-europe.org/our-approach/our-understanding-of-agroecology/>

² <https://www.fao.org/agroecology/overview/en/>

³ <https://www.organicseurope.bio/library/?qterms=8>

Agricultural and Food Research (NKJ). The seminar convened researchers and stakeholders from across the Nordic region to address the challenges and opportunities of soil health within agroecological production systems. The event emphasized the need for regionally adapted frameworks that include policies and incentives, collaborative monitoring frameworks, and stakeholder engagement to support sustainable soil management.

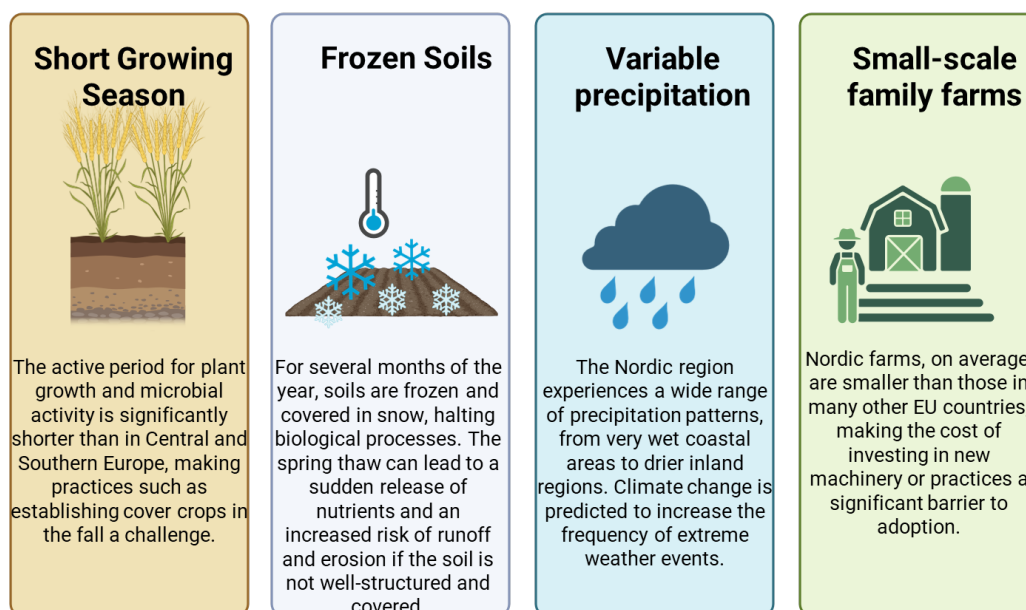
Key Messages

By embracing a regionally adapted agroecological approach, Nordic countries can lead the way in building resilient, climate-smart food systems rooted in healthy soils.

1. Regional Adaptation

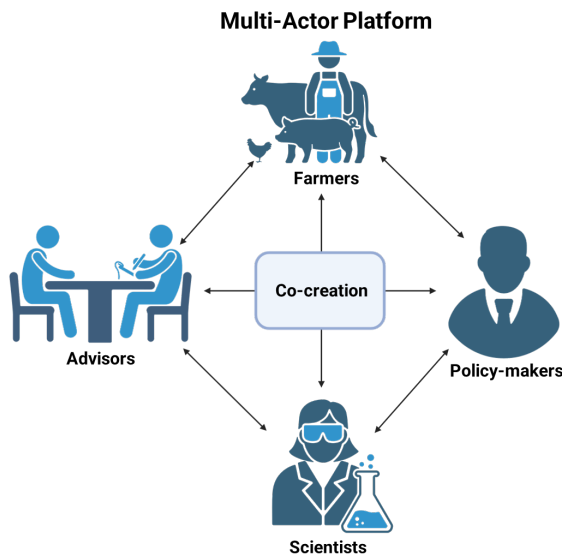
Nordic countries face unique pedoclimatic conditions that are not fully reflected in EU regulations. A context-sensitive, regionally adapted framework is essential to ensure that soil health policies are both effective and equitable across the Nordic region. Agroecological principles offer a promising pathway to achieve this by aligning ecological processes with local farming practices.

Nordic-specific conditions



2. Addressing threats to soil health, enhancing stakeholder engagement

Common Nordic soil threats include compaction, erosion, contaminants, soil organic matter decrease, and nutrient leaching. Mitigation strategies as part of the agroecological concept such as cover crops, reduced tillage, and increased soil organic matter must be tailored to local conditions. Trade-offs in management practices require transparent communication and adaptive strategies. Given that farmers face information overload and regulatory complexity, engagement should focus on practical education (e.g., farmer schools, continuing education), financial incentives, and shared responsibility (e.g., contractors). Existing networks and meeting arenas should be used to build trust and co-develop solutions.



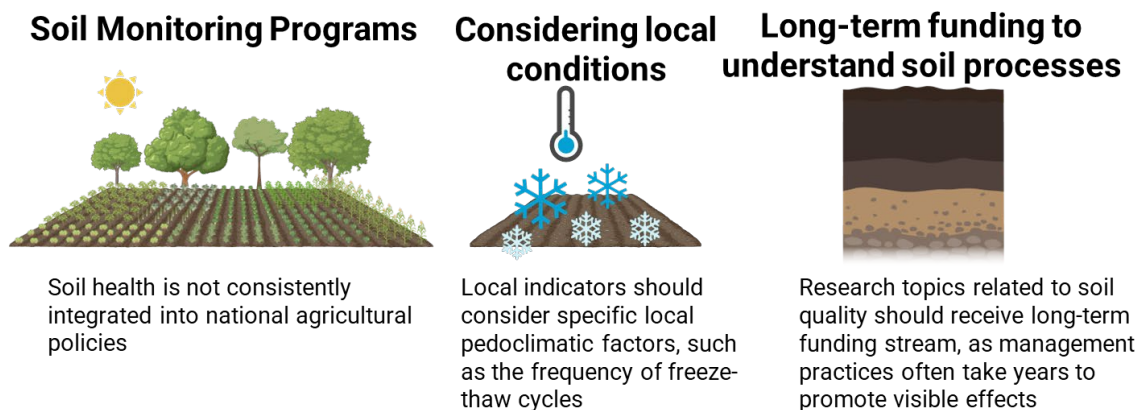
Multi-Actor Platforms: Initiatives where farmers, researchers, advisors, and policymakers can co-create and test solutions in real-world conditions should be encouraged by policies. Such initiatives could focus on regional specifics mentioned above and be co-owned by stakeholders, ensuring that farmers and stakeholders can be active partners in designing research questions and interpreting results rather than just being subjects of research. The generation of publicly available and region-specific data could be an excellent tool to promote tailored practices to a local context.

3. Policy Gaps and Opportunities

Soil health is not consistently integrated into national agricultural policies. There is a need for harmonized indicators, infrastructure investment, and long-term policy stability. The EU's Soil Monitoring Law introduces a tiered system of indicators but lacks harmonization and adaptation to regional systems across member states. National programs (e.g., Sweden's 10-year cycle program, Norway's anticipated Jorvaak program) offer models for scalable monitoring.

Local indicators should consider specific local pedoclimatic factors, such as the frequency of freeze-thaw cycles on soil structure and high native soil organic matter content. The creation of data open platforms, accessible to researchers, policymakers, and farmers are also encouraged.

Research topics related to soil quality should receive long-term funding stream, as management practices often take years to promote visible effects. Such funding should outlast short-term political cycles to accurately assess inherently slow-changing management practices. Long-term vision of soil health should be targeted in national legislation, committing to multi-decade efforts in maintaining and restoring soil organic matter, reducing soil compaction, and erosion.



This policy brief is composed by an international network on agrobiological and soil health: **Nordic Partnership for Soil Health and Agroecology (TerraNordica)** funded by The Nordic Joint Committee for Agricultural and Food Research (NKJ).

Members from the network came from:

Norway:	Norwegian Institute of Bioeconomy research (NIBIO) Norwegian Centre for Organic Agriculture (NORSØK) Norwegian Veterinary Institute
Sweden:	Swedish University of Agricultural Sciences (SLU)
Denmark:	University of Copenhagen SEGES Innovation Aarhus University
Iceland:	Icelandic Agricultural Advisory Centre Land and Forest Iceland
Finland:	Natural Resources Institute Finland (LUKE)

