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The background of the cover features a photograph of a grassy field with numerous yellow dandelions under a clear blue sky. Below the surface, a cross-section of the soil is depicted, populated with various organisms drawn in a light yellow line-art style. These include a large bee on the left, several earthworms of different sizes, a centipede, a mite, and a complex network of plant roots on the right. The entire scene is framed by dark blue diagonal bands at the top and bottom right corners.

POSITION PAPER:

EEB position paper on the
Soil Health Law

EEB Position Paper on the Soil Health Law

We are Europe's largest network of environmental citizens' organisations. We bring together 180 civil society organisations from 38 countries. Together, we work for a better future where people and nature thrive together.

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Contents

Executive summary	1
 1. Why do we need this legislation?	3
1. Soil ecosystem services are strongly endangered by human pressures but are necessary to meet our big societal challenges.	3
2. Poor soil health is a result of <i>inter alia</i> lack of dedicated EU legislation. The Soil Health Law is a unique opportunity to meaningfully reverse soil and land degradation.	4
3. Without a progressive Soil Health Law, European environmental legislation will not be complete.	4
4. The subsidiarity principle allows for strong EU action on soil.	5
5. The benefits of taking action against soil degradation exceed the costs of inaction.	6
 2. Policy instruments.....	7
1. Measurable and legally binding targets	7
2. Restoring unhealthy soils and protecting intact soils.....	9
3. Sustainable soil management practices and principles	10
4. Including legal requirements on tackling sources of soil pollution	11
5. Other policy instruments	13
 3. Soil health definition, indicators and monitoring	14
1. A definition of soil health should be scientifically robust and reflect the importance of soil biodiversity.	14
2. The indicators should be based on a pro-biological progressive soil health understanding.	15
3. The SHL should include an effective, comprehensive and harmonised EU-wide soil health monitoring system.	15
 4. Governance, funding and research.....	16
1. Establishing a strong governance framework.....	16
2. Public participation, access to justice and transparency	17
3. Funding and polluter pays principle	19
4. Research, training and awareness	20

Executive summary

Soil ecosystems host 25% of our planet's biodiversity, regulate water and carbon cycles and provide 95% of the food we eat – they are the basis of all life. And yet, there is no legislation at EU level that protects them or sets obligations to bring them back to health.

A first attempt to legislate on soil was made in 2006, when the European Commission (which is referred to as the Commission or EC) proposed a Soil Framework Directive. After the proposal failed to gain the required majority in the Council, it was finally withdrawn by the Commission at the end of 2014. Since then, soil protection, conservation and restoration in the EU has been fragmented and merely a by-product of other legislation, without clear and effective EU-wide rules. As a result, European soils are in a devastating condition with 60 to 70% of soils in poor health¹. The costs associated with soil degradation in the EU exceed 50 billion euros per year², thus the cost of protecting and restoring soils is much smaller than the cost of inaction³. Halting and reversing negative trends of soil degradation could generate global economic benefits of up to 1.2 trillion euros per year⁴. These figures are likely higher as they do not take into consideration new scientific findings on relationships between soil microbes and human health.

In November 2021, the Commission presented the EU Soil Strategy for 2030, a vital component of the European Green Deal, setting out a framework for the protection, restoration and sustainable use of European soils. The Strategy has been endorsed by the Council and backed by the European Parliament, paving the way for EU action towards achieving the vision of good soil health across the EU by 2050. As part of this strategy, the Commission committed to propose a legislative proposal for a Soil Health Law (SHL) in 2023. This legislation offers a unique opportunity to safeguard and improve the health of European soils. If properly designed, it can give soils a strong legal framework that air, water and marine environments have had for some time, ensuring that they continue to perform their ecological functions, on which we rely so heavily.

While the EU rightly strives for green leadership, measures to protect, restore and sustainably use soils are largely missing, undermining the numerous ecosystems, habitats and species (ourselves included) directly dependent on it. Only through adoption of an ambitious Soil Health Law will EU environmental legislation be complete and successful. Neglecting soil health would create major obstacles in achieving the objectives of the European Green Deal, including halting and reversing biodiversity loss, reaching climate neutrality, zero pollution, circular economy and sustainable food systems, safeguarding human health as well as halting desertification and land degradation.

This position paper outlines why we urgently need an ambitious and progressive Soil Health Law and makes recommendations for EU decision makers on how it can be designed in order to accomplish its mission of achieving healthy soils by 2050 effectively, efficiently and providing an EU added value.

¹ Interim report of the Mission Board for Soil health and food (2020): "Caring for soil is caring for life". European Commission (https://research-and-innovation.ec.europa.eu/knowledge-publications-tools-and-data/publications/all-publications/caring-soil-caring-life_en).

² Interim report of the Mission Board for Soil health and food (2020): "Caring for soil is caring for life". European Commission (https://research-and-innovation.ec.europa.eu/knowledge-publications-tools-and-data/publications/all-publications/caring-soil-caring-life_en).

³ EU Soil Strategy for 2030, COM(2021) 699.

⁴ EU Soil Strategy for 2030, COM(2021) 699.

Key recommendations for a Soil Health Law

Policy instruments

- Include **measurable and legally binding targets**, including time-specific binding milestones for 2030 and 2040 and targets for priority issues.
- Set clear requirements and mechanisms for **the restoration of unhealthy soils**. Set obligations to **protect intact soils**.
- Establish **mandatory sustainable soil management practices for all land and soil users**, building on the conditionality rules currently set by the CAP.
- Establish a list of **key pollutants with mandatory thresholds** and include diffuse pollution in the scope. Exceedance of thresholds must trigger concrete action. Set the target of identifying all contaminated sites by 2030 and remediating them by 2040.
- Include a **legally binding “Passport for excavated soil”** to avoid non-contaminated soils being disposed of in landfills and promote reuse of excavated soils.
- Include a **legally binding “Soil Health Certificate”** to inform land buyers about the soil condition of the land they are purchasing.

Soil health definition, indicators and monitoring requirements

- A **definition of soil health** must be scientifically robust and reflect the importance of soil biodiversity. It must include that healthy soils (1) have a vital biodiversity and (2) fulfil their ecological functions.
- Base **soil health indicators** on a pro-biological progressive soil health understanding. Include sufficiently soil biodiversity indicators. In addition to setting indicators at European level, require Member States to define locally adapted indicators via their soil districts.
- Enable the creation of an effective, comprehensive and harmonized EU-wide soil health **monitoring system**. Establish an extensive sampling grid that measures on plot level.

Governance, funding and research

- Require Member States to identify **soil districts** along the lines of geographical and ecological soil characteristics and to ensure the development of **soil district management plans**.
- Apply the **polluter pays principle** by ensuring that industry and large-scale agricultural actors make an appropriate financial contribution to the costs arising from damage to soil ecosystems, for example via an **extended producer responsibility scheme** or a **financial liability mechanism** based on the Environmental Liability Directive.
- Include strong **public participation, access to justice and transparency** provisions.
- Put in place a system of public funding for independent **research and innovation**. Promote **training** for land users on sustainable soil management measures. Implement European **knowledge and awareness** programs on the value of soil to citizens.

1. Why do we need this legislation?

1. Soil ecosystem services are strongly endangered by human pressures but are necessary to meet our big societal challenges.

Soil is a non-renewable natural resource that, once lost, cannot restore itself in a human lifespan. Thus, ecosystems take up to 1000 years to produce 2 to 3 cm of soil⁵. Healthy soils deliver essential ecosystem services related to ...

... **biodiversity**: Soils host 25% of the Earth's biodiversity. Soil biodiversity determines important processes that make life on Earth possible. For example, soil organisms drive the transformations of nutrients that make them available to plants. The preservation of biodiversity below-ground is critical for the maintenance and enhancement of biodiversity above-ground⁶.

... **food security**: Healthy soils are the foundation of 95% of the food we eat. Soil health degradation could lead to a 25% decline in food production by 2050. Increasing soil biodiversity may contribute up to 2.3 billion tonnes of additional global crop production per year⁷. It is therefore fundamental to recognize the importance of healthy soils for food security.

... **climate**: Globally, soils, including permafrost, store two to three times the carbon in the atmosphere. However, carbon stocks are declining significantly due to land conversion to agricultural use, peatland drainage and intensive and unsustainable land and water management practices. Despite their small area, drained peatlands are among the largest sources of greenhouse gas emissions from the land use sector⁸.

...**water**: Soils play a crucial part in the planet's water cycles and therefore in the maintenance of the biosphere, providing water to plants, animals and humans. They store, absorb, transmit and filter water. As temperatures rise, evaporation increases and soils dry out. Consequently, rainwater runs off the hard ground, increasing flood risk and drought and disturbing the balance of water exchange between ocean and land.

...**air quality regulation**: Soils play a critical role in air quality regulation by promoting the growth of plants, which in turn produce oxygen. In addition, healthy, covered soils are less susceptible to wind erosion, which contributes to particulate matter in the air and causes dust storms. In turn, harmful soil management measures worsen air quality. The use of mineral fertilisers is responsible for 20% of the EU's agricultural ammonia emissions which can cause acute and chronic respiratory illnesses.

⁵ FAO: "Global Symposium on soil erosion" (<https://www.fao.org/about/meetings/soil-erosion-symposium/key-messages/en/>).

⁶ FAO: "The State of Knowledge of Soil Biodiversity" (<https://www.fao.org/resources/digital-reports/soil-biodiversity/en/>).

⁷ IUCN (2019): "Conserving healthy soils". Issues Brief (https://www.iucn.org/sites/default/files/2022-07/issues_brief_conserving_healthy_soils.pdf).

⁸ Frelih-Larsen et al. (2022): "Role of soils in climate change mitigation". Interim report. Ecologic Institute, Universität Giessen, Öko-Institut Berlin. Published by German Environment Agency (<https://www.ecologic.eu/sites/default/files/publication/2023/50061-role-of-soils-in-climate-change-mitigation.pdf>).

Despite these many vital functions, 60 to 70% of EU soils are in poor health⁹. They are threatened by a number of pressures, including loss of soil biodiversity, loss of soil organic matter, soil pollution (which includes both point pollution in the form of contaminated sites and diffuse pollution such as pesticide residues), salinisation, acidification, desertification, erosion, compaction and sealing. As a result, soils degrade and lose their capacity to provide these key ecosystem services.

Key drivers of soil health degradation are (1) intensification of agricultural and forestry practices, including widespread pesticide reliance, (2) urban sprawl, soil sealing and low land recycling rates, (3) climate change, (4) overexploitation and consumption of natural resources, (5) improper water management, reuse and irrigation and (6) industrial activities.

2. Poor soil health is a result of *inter alia* lack of dedicated EU legislation. The Soil Health Law is a unique opportunity to meaningfully reverse soil and land degradation.

As the Commission concluded in its Soil Strategy “the lack of dedicated EU legislation has been singled out by many as a major cause for the alarming state of our soils”¹⁰.

This legal vacuum resulted in very partial protection and highly fragmented governance on soil in the EU. Currently, soil protection is a by-product of legislation that protects other environmental resources, for example the Habitats Directive, and therefore addresses other environmental threats. Further key policies that address soil-related problems, such as the Zero Pollution Action Plan, are non-binding. There is still no clear and comprehensive legal understanding of soil ecosystems and their ecological functions at EU level.

A Soil Health Law could give soil the same legal footing that air, water and marine environments have long had. The health of soil ecosystems determines the health of all other parts of terrestrial ecosystems. The Soil Health Law has the potential to bring about important changes in land use and management and is a unique opportunity to tip the balance from degenerative to regenerative soil management and thus land use.

3. Without a progressive Soil Health Law, European environmental legislation will not be complete.

It is only by adopting a progressive Soil Health Law that the body of European environmental legislation will be complete and successful. Neglecting soil health would create major obstacles in reaching the objectives of the European Green Deal, including halting and reversing biodiversity loss, reaching climate neutrality, zero pollution, circular economy and sustainable food systems, safeguarding human health as well as halting desertification and land degradation. Similarly, the synergistic implementation of a robust and well-integrated Soil Health Law can generate co-benefits for these policy areas and may even be legally required for compliance with other pieces of EU

⁹ Interim report of the Mission Board for Soil health and food (2020): “Caring for soil is caring for life”. European Commission (https://research-and-innovation.ec.europa.eu/knowledge-publications-tools-and-data/publications/all-publications/caring-soil-caring-life_en).

¹⁰ EU Soil Strategy for 2030, COM(2021) 699.

legislation, given the contribution of good soil health to the achievement of their respective objectives. For example, rewetting and restoring Europe's degraded peatlands would reduce emissions by about 185 MtCO₂e per year—equivalent to 4% of the EU's total emissions in 2017¹¹.

The Soil Health Law must therefore enable achievement of soil-related targets of the European Green Deal. This includes objectives to reduce nutrient losses by at least 50% and consequently reduce fertiliser use by at least 20% by 2030¹²; reduce the overall use and risk of chemical pesticides and the use of more hazardous pesticides by 50% by 2030¹³; reduce soil pollution to levels no longer considered harmful to human health and natural ecosystems, and creating a toxic-free environment¹⁴; have at least 25% of agricultural land under organic farming by 2030¹⁵; legally protect at least 30% of the EU's land area and restore significant areas of degraded and carbon-rich ecosystems by 2030¹⁶; reduce the amount of microplastic released into the environment by 30% by 2030¹⁷; reach no net land take by 2050¹⁸; achieve land-based climate neutrality by 2035¹⁹; strive towards the Sustainable Development Goals (SDG) the EU subscribed to such as achieving land degradation neutrality by 2030²⁰, ensuring inclusive and sustainable urbanization^{21 22} and providing universal access to safe, inclusive and accessible, green and public spaces²³.

Policy coherence and consistency is an important principle in EU law, enshrined in Article 13.1 of the TEU and Article 7 of the TFEU. In addition, the integration principle in Article 11 of the TFEU requires that environmental protection be mainstreamed across all EU policy. The Soil Health Law should therefore ensure the integration of soil health principles into all relevant policy areas and funding instruments, for example by requiring Member States to identify, describe and assess the impact of sectoral policies on soil degradation processes.

4. The subsidiarity principle allows for strong EU action on soil.

As environmental protection is a shared competence under EU law, any legislative proposal of the Commission must undergo a subsidiarity check. The principle of subsidiarity states that a proposal is only justified when the objectives of the proposal cannot be sufficiently achieved by the Member States and when EU action has added value.

¹¹ Andrés et al. (2022): "Agricultural potential in carbon sequestration: Humus content of land used for agriculture and CO₂ storage". European Parliament Policy Department for Structural and Cohesion Policies ([https://www.europarl.europa.eu/RegData/etudes/STUD/2022/699655/IPOL_STU\(2022\)699655_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2022/699655/IPOL_STU(2022)699655_EN.pdf)).

¹² EU Farm to Fork Strategy, COM(2020) 381.

¹³ EU Farm to Fork Strategy, COM(2020) 381.

¹⁴ EU Zero Pollution Action Plan, COM(2021) 400.

¹⁵ EU Farm to Fork Strategy, COM(2020) 381.

¹⁶ EU Biodiversity Strategy for 2030, COM (2020) 380.

¹⁷ EU Zero Pollution Action Plan, COM(2021) 400.

¹⁸ Roadmap to a Resource Efficient Europe, COM/2011/0571; 7th EU Environment Action Programme, Decision No 1386/2013/EU; EU Soil Strategy for 2030, COM(2021) 699.

¹⁹ Proposal for a revision of the LULUCF Regulation, COM(2021) 554.

²⁰ "Transforming our world: the 2030 Agenda for Sustainable Development", SDG 15.3 (<https://sdgs.un.org/2030agenda>).

²¹ "Transforming our world: the 2030 Agenda for Sustainable Development", SDG 11.3 (<https://sdgs.un.org/2030agenda>).

²² Target 11.3. includes the indicator "ratio of land consumption rate to population growth rate" which can be consistent with a no net land take target in the Soil Health Law.

²³ "Transforming our world: the 2030 Agenda for Sustainable Development", SDG 11.7 (<https://sdgs.un.org/2030agenda>).

In 2006, some Member States argued that the principle of subsidiarity had not been respected in the Commission's proposal for a Soil Framework Directive. However, such a claim remains exclusively political. EU action on soil would comply with the principle of subsidiarity for the following reasons.

a) The objectives of the proposed action cannot be sufficiently achieved at Member State level.

As 60 to 70% of EU soils are unhealthy and soils are degrading across all Member States, it can be stated that Member State action has failed. Soil policy remains fragmented or absent throughout the EU. In addition, soil degradation has important transboundary effects that go beyond action at Member State level, for example on water cycles, droughts and floods. These transboundary effects not only include effects on both sides of a country's border but also the broad consequences of soil degradation on climate, biodiversity and food security and therefore the EU's ability to achieve its European Green Deal objectives.

b) The objectives of the proposed action can be better achieved at EU level.

As Member State action has failed to protect and restore soils, EU action is urgently needed. Harmonising soil health definitions, indicators and monitoring would bring added value. Monitoring practices vary across the EU with many Member States not having a comprehensive monitoring system. Many rely on old definitions and conceptions of soil health despite rapidly evolving soil science. Data is fragmented and incomplete. This is an example of critical EU-level action that cannot be achieved at Member State level. Additionally, some areas concerning soil are already regulated by the EU. For example, the authorisation of pesticide active substances is largely conducted at EU level. If soils are to be protected from excessive and hazardous pesticides, then EU level action on soils is justified. Harmonization of standards across the EU is also important from a common market and competition perspective. For example, inconsistencies between the standards for defining the contamination status of soil and the procedures required for its remediation and reuse may discourage investment in industrial facilities in one country with strict environmental legislation while favouring it in another with weaker legislation.

5. The benefits of taking action against soil degradation exceed the costs of inaction.

Estimates for soil degradation costs in the EU are still fragmented and incomplete. Figures from SYSTEMIQ & Soil Capital suggest costs of 97 billion euros²⁴, nearly double the Soil Mission's recent estimates of 50 billion euros²⁵. Many different factors have barely been quantified yet, including the costs of water vapour, green water and small water cycles. In addition, soils are a critical buffer against climate extremes, which are increasing in intensity and frequency. As soil ecosystem functions, such as water infiltration and percolation, become more important in the face of increasingly extreme

²⁴ SYSTEMIQ & Soil Capital: "Regenerating Europe's soils. Making the economics work" (<https://www.systemiq.earth/wp-content/uploads/2020/01/RegeneratingEuropessoilsFINAL.pdf>).

²⁵ Interim report of the Mission Board for Soil health and food (2020): "Caring for soil is caring for life". European Commission (https://research-and-innovation.ec.europa.eu/knowledge-publications-tools-and-data/publications/all-publications/caring-soil-caring-life_en).

weather patterns, the value of soil health to society rises over time. Therefore, the total costs of soil degradation, including non-monetisable effects, exceed by large margin even the highest estimates.

In addition, “halting and reversing current trends of soil degradation could generate up to 1.2 trillion euros per year of economic benefits globally”²⁶. The Economics of Land Degradation (ELD) initiative, which provides economic figures on sustainable land management measures on a global level, states that “in all ELD studies to date, the benefits of taking action have proven to be more rewarding economically than the costs of inaction”²⁷. Regenerative agriculture could offer significant benefits in the medium to long term, such as a 60% increase in farmers’ profits, a 50% reduction of yield losses in years marked by severe weather conditions and important socio-ecological benefits to society as a whole, which could amount to up to 8.5 billion euros per year in Germany, for example²⁸.

2. Policy instruments

1. Measurable and legally binding targets

The Soil Health Law should set a **general binding target of achieving healthy soils in Europe by 2050** as already put forward in the EU Soil Strategy. It should also set **time-specific binding milestones for 2030** (at least 75% of soils are healthy²⁹) and **2040** to enable efficient and effective implementation.

In addition, **the following targets should be made binding** in the SHL recognising that it is the right legal instrument for it:

- “No net land take” by 2050 target³⁰. This target should include a timeline with short- and medium-term milestones.
- Reduce nutrient losses by at least 50% and consequently reduce fertiliser use by at least 20% by 2030³¹.

Also, the Soil Health Law should refer to other EU-wide **targets for priority issues**, where achieving soil health strongly supports them. These should include at least the **targets and visions that are already set in existing EU legislation and strategies as well as relevant targets under negotiation** (targets for 2030, unless stated otherwise):

²⁶ European Commission: “Questions and Answers on the EU Soil Strategy” (https://ec.europa.eu/commission/presscorner/detail/en/qanda_21_5917).

²⁷ ELD: “Sustainable land management” (<https://www.eld-initiative.org/en/projects-activities/sustainable-land-management>).

²⁸ Kurth, Subei, Plötner & Krämer (2023): “The Case for Regenerative Agriculture in Germany – and Beyond”. Boston Consulting Group & NABU (<https://web-assets.bcg.com/76/27/7d265e864fa3b9b68bf4196497da/bcg-the-case-for-regenerative-agriculture-in-germany-and-beyond-jan-2023-rev.pdf>).

²⁹ Interim report of the Mission Board for Soil health and food (2020): “Caring for soil is caring for life”. European Commission (https://research-and-innovation.ec.europa.eu/knowledge-publications-tools-and-data/publications/all-publications/caring-soil-caring-life_en).

³⁰ Roadmap to a Resource Efficient Europe, COM/2011/0571; 7th EU Environment Action Programme, Decision No 1386/2013/EU; EU Soil Strategy for 2030, COM(2021) 699.

³¹ EU Farm to Fork Strategy, COM(2020) 381.

- At least 25% of agricultural land under organic farming³²;
- At least 10% of agricultural area under high-diversity landscape features, including buffer strips, hedges, non-productive trees and terrace walls³³;
- Reduce the overall use and risk of chemical pesticides and the use of the more hazardous pesticides by 50%³⁴;
- Legally protect at least 30% of the EU's land area and restore significant areas of degraded and carbon-rich ecosystems³⁵;
- Reduce microplastics released into the environment by 30%^{36, 37};
- Achieve land-based climate neutrality by 2035³⁸;
- Reduce soil pollution to levels no longer considered harmful to human health and natural ecosystems, thus creating a toxic-free environment³⁹;
- Achieve a climate-resilient society, fully adapted to the unavoidable impacts of climate change by 2050⁴⁰;
- Reach good ecological and chemical status in surface waters and good chemical and quantitative status in groundwater by 2027⁴¹;
- Legally binding targets to restore ecosystems important for biodiversity and climate including specific targets to rewet drained peatlands under all land use types⁴²;
- Achieve SDG 15.3 on land degradation neutrality⁴³.

We recommend that the SHL also includes **specific sub-targets and/or obligations to address the most urgent soil degradation issues** and to ensure that the SHL is additional to existing environmental acquis (targets for 2030, unless stated otherwise):

³² EU Farm to Fork Strategy, COM(2020) 381.

³³ EU Biodiversity Strategy for 2030, COM (2020) 380.

³⁴ EU Farm to Fork Strategy, COM(2020) 381.

³⁵ EU Biodiversity Strategy for 2030, COM (2020) 380.

³⁶ EU Zero Pollution Action Plan, COM(2021) 400.

³⁷ Additionally, EU legislation should better tackle the problem of microplastics at its source: It should set ambitious targets on the reduction of plastic production as such, promote packaging-free options and ban intentionally added microplastics in consumer products. EU legislation should also phase out intentionally added microplastics in agricultural products, promote and incentivise sustainable alternatives to plastic mulch and set short-term reduction targets for microplastic release from effluent and by-products of water treatment and wastewater treatment plants.

³⁸ Proposal for a revision of the LULUCF Regulation, COM(2021) 554.

³⁹ EU Zero Pollution Action Plan, COM(2021) 400.

⁴⁰ EU Strategy on Adaptation to Climate Change, COM(2021) 82.

⁴¹ Water Framework Directive, 2000/60/EC.

⁴² The Commission's proposal for a Nature Restoration Regulation includes article 9 (4) on peatland restoration requiring Member States to put in place restoration measures for organic soils in agricultural use constituting drained peatlands: "these measures shall be put in place on at least (a) 30% of such areas by 2030, of which at least a quarter shall be rewetted, (b) 50 % of such areas by 2040, of which at least half shall be rewetted; (c) 70 % of such areas by 2050, of which at least half shall be rewetted". The EEB calls for the inclusion of stronger targets: As rewetting is a prerequisite for peatland restoration, the separate rewetting target should be deleted and full rewetting should be a condition for all peatland restoration. In addition, the scope of the target should be expanded to all non-residential land uses on drained peatlands. The target percentages should be increased significantly and all drained peatlands should be restored by 2040. As the Nature Restoration Regulation is still being negotiated, this is subject to final agreement expected by the end of 2023.

⁴³ "Transforming our world: the 2030 Agenda for Sustainable Development", SDG 15.3 (<https://sdgs.un.org/2030agenda>).

- Set an obligation for restoring soil biodiversity.
- Refer to the peatland-related target set in the Nature Restoration Law and set additional requirements on peatland restoration and protection.
- Stop current soil organic carbon losses on managed land and revert to an increase in soil carbon storage through appropriate soil management practices.
- Include an obligation to prevent deterioration of intact and restored soils.
- Stop erosion on 50% of land with unsustainable erosion risk by 2030 and on 100% by 2040⁴⁴.
- Identify all contaminated sites by 2030 and put in place remediation measures as soon as possible. Remediate all contaminated sites by 2040.
- Reduce topsoil and subsoil compaction. Reduce soils with high-density subsoils by 50%⁴⁵. At the very least, the same maximum weights should apply for agricultural vehicles as for vehicles on roads.

Member States and public authorities of soil districts should identify priority soil issues and develop a set of measures in their plans (see Chapter 4) to contribute to the EU-wide targets. That way, specificities of the different soil types and ecological conditions as well as soil degradation hot spots can be considered. Member States will have to contribute to the achievement of the EU targets in a fair and equitable manner.

2. Restoring unhealthy soils and protecting intact soils

The SHL must set clear **obligations for the protection of intact soils and restoration of degraded soils**. If soil samples indicate poor soil health, Member States should be required to apply measures to restore soils to health. Considering the devastating state of soils in Europe and their value for climate mitigation and adaptation, biodiversity recovery and food production, restoration measures should be put in place as quickly as possible and at the latest by 2030, in line with the Soil Strategy.

However, in addition to addressing the restoration of degraded soils, the Soil Health Law should **set an obligation to protect intact soils**, especially those covered by natural forests, pastures, bogs, wetlands or grasslands. It should establish an additional obligation for their conservation as they contain the largest continental stock of organic carbon and host the most significant repository of terrestrial biodiversity in the entire European continent. Conservation of intact soils is of great importance for many of the habitats listed in the Annex I of the Habitats Directive (92 /43 /EEC). Their long-term protection could then be achieved in a number of ways, including through the designation of Natura 2000 sites, as nationally protected areas or through OECMs (other effective area-based conservation measures). Those measures can be described in the Soil District Management Plans.

⁴⁴ Interim report of the Mission Board for Soil health and food (2020): "Caring for soil is caring for life". European Commission (https://research-and-innovation.ec.europa.eu/knowledge-publications-tools-and-data/publications/all-publications/caring-soil-caring-life_en).

⁴⁵ Interim report of the Mission Board for Soil health and food (2020): "Caring for soil is caring for life". European Commission (https://research-and-innovation.ec.europa.eu/knowledge-publications-tools-and-data/publications/all-publications/caring-soil-caring-life_en).

Intact soils should also enjoy special protection in compensatory measures under the “no net land take” target and should not be sealed, as their loss is hardly compensable within human timescales.

Moreover, the SHL should set an obligation to **prevent the deterioration of the restored soils** in order to ensure that the long-term return of the investment in restoring soils to health is safeguarded. Financial investments in restoration will only remain effective in the long run if restored soils are kept in good condition without degrading again.

Conservation measures are also essential for Europe’s karst areas. 20% of the earth’s land surface consists of karst areas covered by an extremely thin humus layer. **Damage or destruction of vegetation easily leads to a complete loss of soil, leaving karst rocks uncovered.** In several European countries, karst landscapes supply up to 50% of the population’s drinking water. Rapid discharge of surface water through the underground cracks and cave systems results in a low level of filtering activity. Surface pollution and fertilisers easily infiltrate groundwater and affect the unique underground biodiversity. Threshold values must be adjusted to reflect the high vulnerability of karst areas and appropriate soil conservation measures must be put in place to protect them.

3. Sustainable soil management practices and principles

Conventional tillage methods such as intensive ploughing and harrowing are used on two-thirds of the EU’s total arable land⁴⁶. In addition, 65 to 75% of agricultural soils have nutrient inputs at levels risking eutrophication of soils and water and affecting biodiversity⁴⁷. These numbers illustrate the importance of sustainable soil management practices, with a particular focus on agricultural soils.

To our understanding, there are ongoing discussions about developing a list of sustainable soil management practices. We believe that creating such a list is difficult and doubt that it will be beneficial.

What we believe is possible, however, is for the Soil Health Law to establish **mandatory sustainable soil management practices for all land and soil users, building on the conditionality rules currently set by the Common Agricultural Policy (CAP)**. These should include at least Good Agricultural and Environmental Conditions (GAEC) on sustainable soil management practices (GAEC 5, 6 & 7), but also conditionalities regarding climate change (GAEC 1, 2 & 3), water (GAEC 4) and biodiversity (GAEC 8 & 9), all of which have an important impact on soil carbon stocks, soil pollution run-offs or soil biodiversity. This is all the more important given the need to adapt soil management practices to climate change. For instance, strong winds combined with bare fields can cause dust storms, due to wind erosion, which can lead to car crashes. Year-round soil cover in combination with vegetation strips or high-diversity landscape features such as hedges and trees around agricultural land would be an effective countermeasure. The link between the Soil Health Law and the CAP should be dynamic to ensure that future revisions of the CAP will be reflected. The SHL should emphasise that these requirements are the bare minimum of sustainable soil management practices and that further practices should go beyond these requirements.

⁴⁶ Eurostat (2020): “Agri-environmental indicator – tillage practices” (https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Agri-environmental_indicator_-_tillage_practices#Analysis_at_EU_level).

⁴⁷ Interim report of the Mission Board for Soil health and food (2020): “Caring for soil is caring for life”. European Commission (https://research-and-innovation.ec.europa.eu/knowledge-publications-tools-and-data/publications/all-publications/caring-soil-caring-life_en).

If, despite our concerns, a list is nevertheless included, it should be based on agroecology⁴⁸. This includes a strong focus on soil biological activity and an understanding of soil as part of a complex ecosystem with ecological interactions, synergies, diversity and complementarities. Sustainable soil management should promote soil life and diversity.

4. Including legal requirements on tackling sources of soil pollution

In Europe, more than 700 substances are recognised as soil pollutants⁴⁹, harming essential soil functions. Soil pollution is addressed to some extent by the **Industrial Emissions Directive (IED)**, which aims to control and reduce industrial emissions to air, water and soil. The IED requires industrial operators to obtain permits, monitor their emissions and remediate pollution if the associated risks are too high. Monitoring requirements are based on BAT (Best Available Techniques) conclusions, but very few of them address emissions to soil, which is another consequence of the lack of EU legal framework on soil. Conversely, links between the IED and regulatory standards in the EU on air and water have been established. As a result, many operating permits lack effective conditions to prevent soil pollution. In addition, the IED focuses on preventing and controlling the immediate impacts of pollutants instead of considering long-term impacts such as the loss of soil biodiversity and the resulting impacts on soil functions such as nutrient cycling. Finally, the IED only addresses industrial soil pollution and focuses mainly on traditional pollutants, while emerging pollutants such as pesticides or microplastics fall out of its scope. The IED is currently under revision. However, since none of the above elements are under discussion, it is essential that the Soil Health Law include stringent requirements to prevent, assess and remediate soil pollution, additional to the requirements in the IED.

Contaminated sites

As stated in the interim report of the Mission Board for Soil health and food, there are 2.8 million potentially contaminated sites in the EU, of which only 24% have been inventoried and about 2% remediated⁵⁰. When defining the term “contaminated site”, the entire life cycle of a pollutant must be considered. Potentially contaminated sites therefore include, for example, production sites, processing sites, waste deposits, landfill sites, storage facilities and treatment centres. The focus must not only be on industrial sites, but on **all cases where a substance enters the soil as a result of human activities and may affect human health or the environment**.

⁴⁸ Palomo-Campesino et al. (2022): “Do agroecological practices enhance the supply of ecosystem services? A comparison between agroecological and conventional horticultural farms”. Ecosystem Services 57 (<https://www.sciencedirect.com/science/article/abs/pii/S2212041622000705?via%3Dihub>).

⁴⁹ Norman 2014. Network of reference laboratories, research centres and related organisations for monitoring of emerging environmental substances. NORMAN List of Emerging Substances (<http://www.norman-network.net/?q=node/81>).

⁵⁰ Interim report of the Mission Board for Soil health and food (2020): “Caring for soil is caring for life”. European Commission (https://research-and-innovation.ec.europa.eu/knowledge-publications-tools-and-data/publications/all-publications/caring-soil-caring-life_en).

The SHL should include an obligation for Member States to identify and assess contaminated sites. We recommend including a **binding target to identify all contaminated sites by 2030 and remediate them by 2040**.

When setting requirements for the assessment and remediation of contaminated sites, the Soil Health Law should build upon and be additional to the provisions already set by the IED, for example, the SHL should ensure that **impacts on soil biodiversity** are adequately assessed and included in soil remediation measures.

Strict **transparency** measures should be put in place, for example through public registers of contaminated sites, including type of pollution, source of pollution and actions taken. This database should be updated regularly to track changes. In addition, Member States should report on progress in a transparent manner.

Diffuse pollution

In addition to intense and localised point pollution, the Soil Health Law should address diffuse sources of pollution. Diffuse pollution is pollution from widespread activities not attributable to one single source, such as pesticides, urban run-off or acid rain⁵¹. Agriculture contributes significantly to diffuse soil pollution in Europe, mainly through the use of agrochemicals. In a study based on LUCAS soil samples, 80% of tested soils contained pesticide residues in 166 different pesticide combinations. The study found that “the presence of mixtures of pesticide residues in soils are the rule rather than the exception”⁵². In addition, about 40% of agricultural soils show high-risk levels of nitrogen and 45% accumulate cadmium, mainly from mineral phosphorus fertilisers. Copper has also been widely used as a fungicide, especially in vineyards and orchards⁵³.

Focusing only on contaminated sites ignores much of the problem of soil pollution and puts ecosystems and human health at risk. We recommend for the SHL to promote a **holistic approach to soil pollution that includes both point source and diffuse pollution of soils**.

Regulatory framework to assess and remediate point and diffuse soil pollution

Approaches to address soil pollution vary greatly between Member States. For this reason, the Commission should ensure harmonisation by developing a **list of key pollutants with mandatory EU thresholds**. These should include at least heavy metals, active substances from banned or high-risk pesticides, microplastics, PFAS, Persistent Organic Pollutants (POPs), veterinary products and pharmaceuticals.

A regular monitoring system should be implemented and **exceedance of thresholds should trigger concrete actions**. Thresholds should account for potential effects on human health, biodiversity and ecosystem services in a broad sense, and should be based on the precautionary principle.

⁵¹ European Environmental Agency: “Diffuse pollution”. Glossary (<https://www.eea.europa.eu/help/glossary/eea-glossary/diffuse-pollution>).

⁵² Silva, V., et al., 2019, “Pesticide residues in European agricultural soils – a hidden reality unfolded” . Science of the Total Environment 653, pp. 1532-1545 (<https://www.sciencedirect.com/science/article/pii/S0048969718343420>).

⁵³ EEA (2019): “The European environment. State and outlook 2020” (<https://www.eea.europa.eu/soer/publications/soer-2020>).

In addition to mandatory thresholds and with a view to better cooperation and exchange of experience between Member States in urgent pollution cases, we recommend the creation of an **EU-wide database** in which Member States enter the threshold values applicable in their country for different pollutants. These can then serve as a guide for other Member States facing pollutants for which no EU-wide thresholds exist.

5. Other policy instruments

No net land take

The SHL should provide a common definition of land take⁵⁴ and include transparency and reporting obligations. Moreover, in order to achieve the long-standing commitment to achieve no net land take, the SHL should set a binding no net land take target. Voluntary measures do not do justice to the extent of the problem of land take and spread of artificialised land. During the last two decades, approximately 11 times more land was taken than re-cultivated in the EU-28, with the main drivers of land take being industrial and commercial land use as well as extension of residential areas and construction sites⁵⁵. We therefore strongly suggest introducing a **binding no net land take target**, including a timeline with short- and medium-term milestones.

“Land” must **not only be seen from a surface perspective** but be further differentiated: If land with soil in very good ecological condition is being taken, it must be replaced with land with soil in at least that condition. We also recommend including provisions on the conservation and regeneration of permeable and vegetated urban surfaces, which are essential for the provision of ecosystem services and the resilience to climate events at the urban scale.

When implementing such a target, Member States must take **social aspects** into account and ensure that low-income households are not disproportionately affected. Therefore, it is crucial that no exemptions are granted for industrial activities and large transport infrastructures and that local authorities are provided with sufficient, stable and long-term financial resources.

Passport for excavated soil

Excavated soils are the biggest source of waste produced in the EU. They are disposed of in landfills even though a majority of these soils is not contaminated and could be safely reused. At present, excavated soils are hardly dealt with in the EU waste policy. Article 9 of the Waste Framework Directive requires Member States to take measures to prevent waste generation, including construction materials and thus excavated soils. The revision of the Waste Framework Directive is ongoing but

⁵⁴ Land take is the loss of agricultural, forest and other semi-natural and natural land to urban and other artificial land developments such as industrial sites, roads or housing. A no net land take target does not aim to reduce soil sealing or construction to zero. It is about avoiding the sealing of agricultural and natural land as much as possible and focusing on building on land that is already sealed or in use. If new land is occupied by artificial developments, this should be compensated for elsewhere. Unused land would have to be returned to cultivation or be restored. In the EU, a surface of more than 500 km² is subject to 'land take' every year. Since the 1950s, the total surface area of cities in the EU has increased by 78%.

⁵⁵ European Environment Agency: “Land take in Europe, Indicator assessment” (<https://www.eea.europa.eu/data-and-maps/indicators/land-take-3/assessment>).

does not currently include new provisions on the safe reuse of excavated soil. These soils thus remain largely unregulated.

This is why, we call for the **inclusion of a mandatory 'passport for excavated soil'** in the Soil Health Law, setting minimum requirements and conditions that make excavated soil suitable for reuse. Most of these soils are not contaminated and should not be considered waste. Such a passport would therefore set the precondition for the reuse of this valuable resource.

However, considering the environmental cost of transporting soil and the risk of ex situ mixing and diluting of excavated soil by fraudulent operators, excavated soil should preferably be reused on site. In addition, a comprehensive traceability system and regular checks should be put in place.

Soil Health Certificate

Parties to land transactions should be aware of the soil condition of the land they are purchasing and be able to make informed decisions. Therefore, the SHL should include a legal obligation to inform the buyer of the land about the key characteristics of the soil in a **'Soil Health Certificate'**.

Such a certificate should be based on scientifically sound soil health indicators, including biodiversity indicators. Besides providing clear information about soil health, such a certificate should also document contamination status and external soil materials brought in and spread, for example to fill excavated areas. This is of special importance for any future construction and landscaping measures. A 'Soil Health Certificate' would therefore permanently minimise the risk of pollutants and poor soil health in purchased land and incentivise landowners to manage their land sustainably in view of possible future land transactions.

EU global footprint on soils

European imports cause soil degradation on other continents (linked to feed, meat, biofuels and raw materials). The Soil Health Law must cooperate with other mechanisms, treaties and food systems regulations and support investment in circular economy and bioeconomy to stop the outsourcing of soil degradation. It must be ensured that products imported from third countries to the EU comply with the same environmental and sustainable land use standards.

3. Soil health definition, indicators and monitoring

1. A definition of soil health should be scientifically robust and reflect the importance of soil biodiversity.

The SHL should include a **scientifically robust and operationalisable definition of soil health**. This definition must be based on a contemporary scientific understanding of the living soil ecosystem and consider the full range of soil properties and functions. It should recognise the importance of soil biological degradation and include at least two key elements: Healthy soils...

- 1) have a **vital biodiversity** and
- 2) fulfil their **ecological functions**, such as regulating carbon and water cycles.

The definition must cover all types of soil, including agricultural soil, forest soil, soil of industrial areas, soil from artificial and built areas and soil of natural or semi-natural ecosystems such as moorlands, grasslands and peatlands.

2. The indicators should be based on a pro-biological progressive soil health understanding.

Soil health indicators should be up to date with **current and progressive state of research** on soil health. Indicators must cover the whole range of soil properties and be based upon the various ecological soil functions. Contamination by pesticide residues and other diffuse pollutants should be an integral part of the assessment of soil quality.

The Soil Health Law must support the shift from a conservative soil science, focused on chemical and physical soil health indicators, to the **new soil health paradigm** that considers the soil ecosystem perspective, and thus biological indicators, as critical to a comprehensive soil health assessment. Biological indicators are also more susceptible to land use and management changes.

When setting a list of indicators at European level, the SHL should therefore sufficiently include **biodiversity indicators**. It is important to recognise that suitable indicators vary for different types of soils. Therefore, Member States should be required to define **additional, locally adapted indicators**, including biodiversity indicators, via their soil districts and benchmark those to the specific pedoclimatic region and land use categories.

3. The SHL should include an effective, comprehensive and harmonised EU-wide soil health monitoring system.

We call for an **effective, comprehensive and harmonised EU-wide soil health monitoring system**, building upon EU LUCAS Soil Survey. Compatibility with national soil monitoring systems should be kept in mind. Soil monitoring methods via satellite, artificial intelligence and in-situ data should be combined to provide a complete understanding of the status of European soils.

For soil health monitoring to be complete, comprehensive and impactful, it is essential to increase the number of soil sampling points. We recommend establishing an **extensive sampling grid that measures on plot level** and allows for the collection of one sampling point per specific land use. If the land use changes, so should the sampling point.

The **cost-benefit structure of soil health monitoring and action** allows for an extensive soil health monitoring system: While the costs of soil health degradation to society, businesses and biodiversity are accelerating, the costs of soil health monitoring and soil health regeneration are rapidly decreasing. Soil health degradation costs are driven by extreme weather events, water quality, climate change and yield losses, while monitoring costs are influenced by technology developments in the fields of in-situ sampling, soil pattern analysis, remote sensing, artificial intelligence and DNA sequencing. The cost of restoring soil health is driven by opportunity costs, i.e., potential lost profits

without sustainable soil management measures, which decrease when soil health regeneration mitigates climate change induced crop losses.

The **Soil Nutrient Health Scheme (SNHS) in Northern Ireland** is an example of a system that combines an extensive soil sampling grid with localised soil health information for farmers. In addition to sampling about 700.000 fields, the SNHS uses these samples to provide farmers with detailed information on their fields, for example through runoff risk maps for nutrient loss to waterbodies and training on the interpretation of soil nutrient. In addition to assessing soil quality status, such a system can therefore have the co-benefit of empowering farmers to manage their soils more sustainably. The Commission's plan to set up a **"Test your soil for free" initiative** is a good starting point. It should however be included in the SHL to ensure its application across the EU.

The monitoring requirements must not put disproportional financial burdens on small scale farmers, to avoid further threats to rural livelihoods, and take their economic vulnerability into account. The Soil Health Law should be developed as an opportunity to level the playing field between agricultural actors and to internalise externalities in the agricultural sector.

The **Soil Health Law Coalition (SHLC)** has done additional work in the field of soil health indicators and monitoring with a particular focus on soil biodiversity and made policy recommendations in their recently published joint position paper on the Soil Health Law⁵⁶. The SHLC is a broad coalition covering different sectors, including NGOs, farmers, scientists, biotechnology and farm consultancy firms. It advocates for an ambitious Soil Health Law, built on progressive soil science, that considers soil biology as a key aspect of soil health, soil degradation and soil functions. In March 2023, the coalition published an open letter to the Commission calling for a progressive and ambitious Soil Health Law⁵⁷.

4. Governance, funding and research

1. Establishing a strong governance framework

Soil District Management Plans

Member States should identify **soil districts** along the lines of geographical and ecological soil characteristics and pedo-climatic conditions and assign competent public authorities. These authorities should be required to monitor soil health in their district and put in place programmes of measures. The assessment of poor soil health should result in concrete measures. For example, if unacceptable pesticide residues which harm soil health are detected, public authorities must ensure a reduction or temporary cessation in applications. Depending on exceedance of pre-defined thresholds, unhealthy soils should be classified into different categories, with the worst categories requiring restoration as a priority.

⁵⁶ "Joint Position Paper: Towards a functional understanding and regeneration of soil biology in the EU Soil Health Law and beyond", 8 March 2023 (https://www.nabu.de/imperia/md/content/nabude/landwirtschaft/230508-joint_position_paper_eu_soil_health_law.pdf).

⁵⁷ "Joint open letter to the European Commission on the urgent need for an ambitious and progressive EU Soil Health Law", 13 March 2023 (<https://eeb.org/library/open-letter-soil-health-law/>).

Member States should ensure the publication of **Soil District Management Plans** for each soil district. These should include:

- a general description of characteristics of soil in the soil district;
- a summary of significant pressures and impact on soil health;
- a map of the monitoring network and the results of the monitoring programme;
- a list of objectives and a programme of measures to achieve these objectives;
- a summary of the public information and consultation measures taken.

These Soil District Management Plans can be **aggregated at national level in order to report and assess progress made by Member States**.

The Commission, with the assistance of scientific experts, should **assess the plans and evaluate whether they meet the objectives of the Soil Health Law**. Member States should take into account any comments and revise their plans accordingly. In addition, Member States should set up national monitoring committees, which should include academic actors and civil society organisations, to assess the plans, monitor their implementation and give recommendations.

The plans should be regularly reviewed and updated. This should include a summary of changes, an assessment of progress made and an explanation for any measures foreseen which have not been undertaken.

Member States should ensure extensive public participation processes related to the development, assessment and implementation of these plans as well as access to justice.

Cross border cooperation

When a soil district covers the territory of more than one Member State, it should be assigned to an **international soil district**. Each Member State concerned should ensure the appropriate administrative arrangements for effective cooperation.

The **Alpine Soil Partnership** (AlpSP) is an interesting example of cross-border cooperation in the field of soils. It brings together soil experts, public authorities, practitioners and NGOs to promote alpine-wide cooperation in soil protection, create links between local and regional authorities and exchange best practices. In addition to creating functional links between public authorities within international soil districts, the Soil Health Law should therefore also promote further cooperation and knowledge sharing, as is done in the Alpine Soil Partnership.

2. Public participation, access to justice and transparency

The EU and its Member States are parties to the Aarhus Convention and must therefore implement the legally binding requirements of access to information, public participation in decision-making, and access to justice in environmental matters in their legal systems. These three pillars are crucial to good environmental governance and a green and just transition.

Public participation

The Soil Health Law should include **strong public participation provisions** and consider the needs of local communities. Member States should follow the requirements laid down in Article 6 of the Aarhus Convention, which provides significant detail on how public participation shall be facilitated at all stages, from public notification of a proposed decision or initiative to the logistics of completing the public consultation.

Member States should be required to ensure that the public is given early and effective opportunities to participate in the **preparation, revision and implementation of the Soil District Management Plans**. Member States should set reasonable timeframes allowing time for the public to be informed, to participate, and express its views. Each Member State should provide a summary of the public participation processes explaining the public's views and how the public participation outcome was taken into account, when submitting such plans to the Commission.

When developing and implementing sustainable soil management strategies with a high impact on local populations, such as the rewetting of drained peatlands, Member States should require their public authorities to put in place public participation procedures and open a **timely and equal dialogue** focused on the most impacted and/or most vulnerable groups, such as farmers, local communities, and Indigenous communities.

Access to justice

At present, EU law does not provide a general requirement for Member States to guarantee the public the right of access to justice⁵⁸ in environmental matters as prescribed for by the Aarhus Convention, and Member States' implementation of that Convention is uneven and often flawed. Therefore, **access to justice must be guaranteed individually in EU environmental legislation, such as the Soil Health Law**.

The SHL should therefore include a **dedicated article on access to justice**, requiring Member States to ensure that the public has access to a review procedure before a court of law, or an independent and impartial body established by the law, to challenge the substantive or procedural legality of decisions, acts or omissions that fail to comply with the legal obligations provided for in the SHL. This article should be applicable to civil society organisations such as environmental NGOs, in addition to natural persons.

Transparency

Soil District Management Plans, their updated versions and progress reports as well as the Commission's comments thereon should be **published**, as required by the Directive 2003/4/EC on public access to environmental information.

In addition, **environmental data** should be publicly accessible online, specifically sensitive data such as on contaminated sites. Geospatial data must be made available, easy to use, and accessible to the public via the Internet, as required in the Directive 2007/2/EC (INSPIRE).

⁵⁸ In its communication on the European Green Deal (COM(2019) 640), the European Commission committed to take action to improve access to justice for citizens and NGOs before national courts in all Member States. Consequently, in 2020, the Commission published a Communication on the topic (COM(2020) 643).

3. Funding and polluter pays principle

Polluter pays principle and extended producer responsibility (EPR)

Soil degradation in the EU creates costs exceeding 50 billion euros per year. Member States should ensure that *inter alia* **industrial and large-scale agriculture actors make an appropriate financial contribution to the costs arising from damage to soil ecosystems through their activity as well as to the costs of remediation measures**. To this end, Member States should analyse who pays, who pollutes and who benefits in the soil use sector. This then opens the opportunity of recovering costs associated with the SHL in accordance with the **polluter pays principle** expressed in Article 191(2) of the Treaty on the Functioning of the European Union.

One of the instruments to operationalise the polluter pays principle can be an **extended producer responsibility (EPR) scheme**. EPR is a strategy that places the responsibility for managing the entire life cycle of a product on the producer rather than on the consumer or the taxpayer. An EPR scheme on soil health would ensure that industrial and agricultural actors that contribute to soil degradation and pollution make a financial contribution to costs related to soil monitoring and restoration. The contributions should be proportionate and the biggest polluters should bear a significant share of the costs. Pesticide companies, for example, make large profits from the sale of their pesticide products. Pesticides contribute significantly to soil degradation and are found in almost all agricultural soils in Europe. For this reason, these companies should contribute to the costs mentioned above.

In addition, any remediation of contaminated sites should involve polluter liability. The SHL should refer to the **Environmental Liability Directive** (ELD, 2004/35/CE) which aims to ensure that environmental damage is remediated by imposing liability on the polluter. However, the ELD provides exemptions under article 8 for cases where environmental damage has been caused within the emission limits of a legally valid permit. Furthermore, article 14 on financial security does not make these instruments mandatory and is poorly implemented in Member States. For this reason, the Soil Health Law should **include an article on financial liability for soil contamination that ensures that there are no exemptions justified by a valid permit and that financial guarantees are mandatory**, similarly to article 14 of the Extractive Waste Directive (2006/21/EC).

Preventing funding through carbon removal certification

Any **soil health monitoring system put in place by the SHL should not serve as a basis for certification of carbon removals**. The very nature of soil organic carbon makes it unsuitable for certification as a carbon removal. Soil carbon is constantly cycling, and concentrations vary strongly across and within plots of land and through time. Land management practices as well as soil types and climate conditions have huge impacts on the soil carbon cycle. This makes measurements for the purpose of certification highly uncertain, precise monitoring very expensive, and gains in carbon storage inherently reversible. Soil carbon sequestration should therefore not be pursued as a carbon removal solution, but rather as a proxy of overall soil health⁵⁹.

⁵⁹ For more information on the EEB's work on carbon removals, see the following publications: [EEB Policy Recommendations on the Carbon Removals Certification Framework](#); [Analysis of the legislative proposal for the Carbon Removal Certification Framework](#); [EEB Press Briefing on the Carbon Removals Certification Mechanism](#).

The Soil Health Law must **clearly and legally exclude the possibility of funding soil management measures through the certification of carbon removals.**

4. Research, training and awareness

The EU should put in place programmes to support the **shift from conservative soil research to the new soil science paradigm** which puts a strong focus on soil biodiversity. We recommend putting in place a system of public funding for independent research and innovation.

In addition, **permanent training** for professionals, land planners and farmers should be promoted, focused on the ecological significance of soil, its quality and health, the related ecosystem services and sustainable soil management. Soil ecology issues and the functions of soil biodiversity for agricultural practices should be more strongly integrated into existing agricultural training and studies. Platforms for the sharing of good practices should be put in place. Member States should **support the farm advisory system** through funding, training and coordination mechanisms, as advisors can play a key role in guiding farmers toward sustainable soil management.

There is an urgent need for **European knowledge and awareness programmes to be implemented across the EU**. These should provide information to citizens and raise public awareness on the urgent need for soil protection, the functions and value of soil and its role for our big societal challenges.

The Soil Health Law represents a unique opportunity to protect, restore and sustainably use European soils. Soil health is directly linked to many of our greatest societal challenges, including climate change, biodiversity loss and pollution. An ambitious and progressive Soil Health Law is therefore urgently needed. To reach its full potential, it should provide a strong governance framework that ensures action, measures progress and allows for accountability. It should include biodiversity indicators for soil health, set binding targets, require Soil District Management Plans and apply the polluter pays principle. Only an ambitious Soil Health Law can turn the tide and allow us to achieve healthy soils by 2050.

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