

Public Consultation on the New EU Soil Strategy - healthy soil for a healthy life

ClientEarth response to the public consultation

ClientEarth is a non-profit European environmental law organisation with offices in Brussels, London, Madrid, Berlin, Warsaw and Luxembourg (as well as Beijing and Los Angeles). In total, ClientEarth currently has over 200 staff working on projects in more than 50 countries. Using the power of the law, we develop legal strategies and tools to address major environmental issues, we provide legal support and information to most of the environmental NGOs in Brussels (and beyond) and use the courts where necessary to enforce environmental law. The organisation is composed of programmes on Climate, Energy, Fossil Fuels Infrastructure, Trade, Oceans, Harmful chemicals, Plastics, Clean air, Wildlife, Forest, Agriculture and Environmental Democracy.

ClientEarth welcomes the “New Soil Strategy – healthy soil for a healthy life.” Pressures on European soils are increasing, with the risk of jeopardising the services provided by properly functioning, healthy soils. Soils are essential for food security and water purification, as well as for biodiversity and climate change mitigation.¹

Currently, soil protection in Europe derives from the protection of other environmental resources and threats and is fragmented among many policy instruments. These do not sufficiently address significant soil problems as they do not cover all soils and do not address all soil threats. This shows that soil

¹ European Environment Agency (EEA) (2019), [The European environment state and Outlook 2020. Knowledge for transition to a sustainable Europe. Publications Office of the European Union](#)

protection is still regarded as a beneficial side effect, rather than as a primary objective.² The multi-functionality of soil is also lost, since soil functions are addressed separately in different directives. What's more, the lack of a harmonised approach for the protection and sustainable use of soils throughout Europe translates into great discrepancies between Member States and increases degradation of soils.

ClientEarth considers it key that the EU elaborates a new EU-wide common legal framework for the protection and sustainable use of soil that addresses all existing threats to soil. This new legal instrument should at least include: i) common definitions of soil health; ii) harmonised indicators to monitor soil quality; and iii) binding and time-bound targets to restore and protect soil.

The importance of soil and land

Soil is a **non-renewable natural resource of common interest to Europe** because of the crucial functions it performs for society and ecosystems. Soil provides many other public services aside from food security, including the regulation of water, carbon and nutrient cycles, and the provision of biological habitats above and below ground. Its broader societal significance is evident where mismanagement causes floods, siltation of waterways and infrastructures, widespread decline of biodiversity, pollution of water and air, and emission of greenhouse gases driving climate change.³ Therefore, safeguarding soil functions is a **matter of public concern**.

In September 2006, the European Commission adopted the Soil Thematic Strategy,⁴ which included a proposal for a Soil Framework Directive with the objective of defining a common strategy for the protection and sustainable use of soil.⁵ However, a minority of Member States (the United Kingdom, Germany, France, Austria, and The Netherlands) did not accept the text of the proposed Directive. Subsidiarity considerations, excessive cost, and administrative burden⁶ were among the reasons of refusal to accept the European directive on soil protection. Consequently, the Commission decided to withdraw the proposal in 2014.

However, a recent research study shows that, in the five countries blocking the 2006 Soil Framework Directive, laws on soil-dependent degradation (*i.e.* organic matter decline, salinization, compaction, and landslides) and contamination are often more restrictive than the proposed EU regulation.⁷ Therefore, the worries over sovereignty could not have reasonably arisen in this aspect.

² Stankovics, Petra; Tóth, Gergely; Tóth, Zoltán. (2018), "Identifying Gaps between the Legislative Tools of Soil Protection in the EU Member States for a Common European Soil Protection Legislation" *Sustainability* 10, no. 8: 2886

³ Berge, H.F.M. ten, Schroder, J.J., Olesen, J.E. and Giraldez Cervera, J.V. (2017), Research for AGRI Committee – Preserving agricultural soils in the EU, *European Parliament, Policy Department for Structural and Cohesion Policies*, Brussels

⁴ Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions - Thematic Strategy for Soil Protection (2006)

⁵ Recital 8 of the Proposal for a Soil Framework Directive of the European Parliament and of the Council establishing a framework for the protection of soil and amending Directive 2004/35/EC (2006)

⁶ Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions—The Implementation of the Soil Thematic Strategy and Ongoing Activities (2012)

⁷ Stankovics, Petra; Tóth, Gergely; Tóth, Zoltán. (2018), "Identifying Gaps between the Legislative Tools of Soil Protection in the EU Member States for a Common European Soil Protection Legislation" *Sustainability* 10, no. 8: 2886

Despite the claims that soil is a national issue, most **national governments have not passed any new national or regional legislation to protect soils** in the last decade. Only a few Member States have legislation on soil protection, usually targeted at very specific threats (e.g. desertification in Greece, Italy, Portugal and Spain, or contamination in the Netherlands, Germany and Belgium). **Soil degradation also has clear transboundary consequences.** For instance, river systems carry pollutants and sediments over long distances across national borders and into coastal waters; and fine soil particles are carried by winds across northern plains.⁸ Therefore, as Member States do not uniformly protect soil and fail to consider the cross-border effects of soil, or the key role this value resource can play in the fight against climate change, the EU would be much better placed to achieve soil protection than national governments.

Furthermore, European environmental legislation is incomplete without soil policy. Failure to protect soil will hamper any effort undertaken to achieve the objectives of the European Green Deal such as climate neutrality, biodiversity restoration, zero pollution, healthy and sustainable food systems and a resilient environment. For all these reasons, we consider that the New Soil Strategy should establish some **common rules on soil protection**. In doing so, the New Soil Strategy should take into account the **multifunctionality of soil**. There is limited recognition in EU law of soil functions, what these are and how these can be maintained or improved. It is therefore crucial to raise awareness, among governments and citizens, of the importance of soil. A better understanding of soil functions will help justify the adoption of a new EU-wide legal framework on the protection of soil.

More than ten years have passed since the initial proposal of a common European Soil Protection Directive, and a large number of new evidence on soil degradation and its negative consequences have proved soil's compelling necessity.⁹ Soil is under ever-increasing pressure as global population growth increases demand for food. It means that **soil degradation processes are likely to further accelerate if nothing is done now to protect it.**

Causes of soil and land degradation

The 2006 Thematic Strategy for Soil Protection¹⁰ identified the key **soil threats** in the EU as: *erosion, floods and landslides, loss of soil organic matter, salinization, contamination, compaction, sealing, and loss of soil biodiversity*. It also recognised that a combination of some of these threats can ultimately lead to arid or sub-arid climatic conditions and even *desertification*. However, most of these threats are not addressed in existing European legislation.

Soil threats and soil functions are closely linked because **each soil threat leads to a decrease in soil functionality**. This means that soil threats must be addressed to maintain soil functions and ensure healthy soils. In ClientEarth's view, it is crucial that the New Soil Strategy sets legally binding protection targets, or reduction targets for all soil threats to maintain and improve soil functions in the future.

⁸ Berge, H.F.M. ten, Schroder, J.J., Olesen, J.E. and Giraldez Cervera, J.V. (2017), Research for AGRI Committee – Preserving agricultural soils in the EU, European Parliament, Policy Department for Structural and Cohesion Policies, Brussels

⁹ European Environmental Agency (EEA). (2020), Chapter 3.6. Soil Degradation. Environment in the European Union at the turn of the century. *European Environmental Agency*

¹⁰ Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions - Thematic Strategy for Soil Protection (2006)

The Common Agricultural Policy

Farmers, foresters and other land managers manage the majority of our soils. Although the soil is the farmer's most precious economic resource, there may be several reasons why farmers may not take specific action to protect or improve their soil for their own commercial interest.¹¹ It is therefore essential to better support these actors to apply sustainable soil management practices. If soil degradation is not prevented, its cost (land productivity lost) is externalised and transferred onto to **future generations of farmers**.

Unsustainable farming and intensive livestock production highly contribute to soil and land degradation. As improvements in agricultural practices would be beneficial to address most of the soil threats, the Common Agricultural Policy (CAP) is a key tool to address them. While an agreement on the CAP is still pending, co-legislators in trilogue negotiations have shown little or no appetite to increase the environmental and climate ambition of the main EU farming policy. This translates also into poor soil conservation measures. The so-called "green architecture" of the CAP is yet to be discussed by the co-legislators and there is still an opportunity to strengthen essential elements, such as eco-schemes¹² and conditionality.¹³ In addition, Farm Advisory Services (FAS) could be helpful to support the uptake of both eco-schemes and Pillar 2 agri-environment-climate commitments, as the European Parliament positively suggests in its amendment to Article 13 of the CAP Strategic Plans Regulation Proposal. Knowledge-sharing systems may even disseminate information on new practices to a broader number of farmers than those covered by the specific scheme. A minimum spending requirement for FAS targeted at environmental and climate objectives against the European Green Deal targets, would also be beneficial to ensure that farmers and landowners receive the support they need to shift to sustainable soil management practices.

An ambitious EU-level approach to soil protection within the CAP is even more essential in the framework of the post-2020 CAP. Under the 'new delivery model', Member States will have greater freedom to shape their intervention in the agricultural sector, deciding how and what type of activities to grant specific funding mechanisms (such as eco-schemes). On the one hand, clear EU provisions are crucial to guide Member States' actions and to monitor their performance. On the other, CAP National Strategic Plans will play an essential role in fostering sustainable soil management practices.

Finally, if trilogue negotiations fall short in meeting the ambition of the European Green Deal, the European Commission should take a strong political stance in the context of the approval of the CAP Strategic Plans.

¹¹ Berge, H.F.M. ten, Schroder, J.J., Olesen, J.E. and Giraldez Cervera, J.V. (2017), Research for AGRI Committee – Preserving agricultural soils in the EU, *European Parliament, Policy Department for Structural and Cohesion Policies*, Brussels

¹² During its Plenary session in October, the European Parliament diluted Article 28, CAP SP Proposal, on eco-schemes, admitting that eco-schemes - initially thought as a novel instrument to support farmers willing to engage in environmentally positive agricultural practices – could be used to "boost competitiveness." Broadening the scope of eco-schemes to include economic interests will not make this CAP suitable for the challenges ahead. These schemes should support farmers to build a more resilient and climate-proofing farming model. Watering them down by including competing economic interests is against the objective for which they were conceived in the first place.

¹³ Among others, both European Parliament and Council have removed, from the basic agronomic conditions, the Farm Sustainability Tool for Nutrients, helpful for farmers to record the nutrient flow and beneficial for Member States and the EU in monitoring progress towards the F2F's objective on nutrient reduction. Nutrients pollution is a severe cause of soil (and water) contamination.

As the New Soil Strategy is a pivotal element of the EU Biodiversity Strategy, the CAP Strategic Plans should also be assessed in light of their contribution towards the objective of increased soil health.¹⁴

Soil contamination

Contamination is the soil threat which is most addressed by existing legislative policies.¹⁵ Most of the existing rules in the chemicals and waste sectors aim to prevent or control contamination rather than focus on remediation of existing soil contamination. The New Soil Strategy shall **focus on both reducing soil contamination and restoring contaminated soil sites**. Currently, there is no European-wide monitoring of contaminated sites. Monitoring exists only on a country-by-country basis. Member States are at different stages of progress and apply different methodologies and definitions, making the existing data incomparable.¹⁶ Therefore, it is key to develop a set of common indicators to measure soil health across the EU and to require Member States to establish an inventory of contaminated sites.

In recent decades, modern agriculture has increasingly relied on inputs of fertilisers to meet plant nutrient demands. Availability and use of organic fertilisers, mainly livestock manure, are also increasing significantly due to the increase in livestock populations. Inappropriate manure management and excessive applications can have detrimental effects on the environment, contributing to the diffuse contamination of water and soil resources and to increased greenhouse gas emissions.¹⁷ The New Soil Strategy should therefore shed light on the importance of putting in place measures to prevent and reduce diffuse pollution from agriculture.

In addition, the New Soil Strategy should include a commitment to adopt regulatory measures to prevent and minimise the pollution of soil by chemicals, in particular persistent chemicals including plastics and microplastics.¹⁸ Agricultural soils are now being affected by plastic pollution, which seriously threatens soil health and food security. Currently, agriculture has a multitude of uses for various plastic products including containers, trays, pots, packaging, tunnel and crop row covers, drip irrigation tubing, and crop mulch films. Biosolids used in agricultural fertilisers (e.g. sewage sludge or compost) and other agro-chemicals also often contain plastic. In addition, an ambitious reform of the Industrial Emissions Directive¹⁹ is required to ensure the effective implementation of its provisions on soil protection.

Addressing all soil threats

The Biodiversity Strategy for 2030 highlights that it is essential to step up efforts to protect soil fertility, reduce erosion and increase soil organic matter by adopting sustainable soil management practices. It is essential that the New Soil Strategy addresses all soil threats to maintain soil functions and have healthy

¹⁴ It should be recalled that, as the European Green Deal's objectives have not been integrated in the CAP - unless positive future development in trilogues - the Commission will not be under a legal duty to assess the SPs in light of the EGD. This will remain a mere political decision.

¹⁵ The Waste Framework Directive, Industrial Emissions Directive, Sewage Sludge Directive, Landfill Directive, the Environmental Liability Directive and the Water Framework Directive, among others.

¹⁶ European Environmental Agency (EEA) (2020), [Chapter 3.6. Soil Degradation](#). Environment in the European Union at the turn of the century. *European Environmental Agency*

¹⁷ FAO (2018). [Nitrogen inputs to agricultural soils from livestock manure. New statistics](#). *Integrated Crop Management*. Vol 24

¹⁸ See more: Zhu et al. (2018), Exposure to nanoplastics disturbs the gut microbiome in the soil oligochaete *Enchytraeus crypticus*, *Environmental Pollution*, 239, pp. 408-415

¹⁹ [Directive 2010/75/EU](#) of the European Parliament and of the Council of 24 November 2010 on Industrial Emissions (integrated pollution prevention and control). Official Journal of the European Union.

soils. Currently, some soil threats such as **soil sealing, compaction and salinization are not addressed at all in EU law or only in non-binding measures.**

However, there is an evident lack of awareness and data on **soil compaction** that makes its prevention difficult. The New Soil Strategy should therefore support the collection of data on soil compaction and promote sustainable agricultural measures aimed at reducing the use of heavy machinery. What's more, **soil salinization** is one of the major threats to soil in Europe and is expected to further increase in the future as a consequence of current climate, land use and management changes, especially in Southern Europe where salinization problems are already widespread.²⁰ The New Soil Strategy should identify and promote good and innovative farming practices that can prevent and reduce the threat of soil salinization, or control its negative effects.

While biodiversity loss is receiving increased global awareness, the **biodiversity of soil and soil organisms** are rarely considered in EU legislation. Several policies are in place to protect and restore biodiversity (e.g. the Habitats Directive) and others have a strong impact on soil biodiversity (e.g. rules on pesticides) but **there is no a specific focus on soil biodiversity per se.** Even the CAP, while including elements to improve farm biodiversity, does not address this threat directly. The New Soil Strategy represents a crucial opportunity to raise awareness on this topic and to stimulate further collection of data and research.

Finally, soil sealing is one of the main causes of soil degradation in the EU.²¹ So far, there have been only strategies to address soil sealing.²² The New Soil Strategy should include concrete targets to reduce annual rates of land take and increase land recycling, in order to achieve no net land take by 2050. Limiting soil sealing should be a priority over mitigation or compensation measures, since soil sealing is an almost irreversible process.²³

How to address soil and land degradation effectively

Coherence and consistency

The New Soil Strategy must be **coherent** with EU international commitments related to soil such as the Sustainable Development Goals (SDGs)²⁴ and with the European Green Deal²⁵ objectives. The New Soil

²⁰ FAO and ITPS (2015), Status of the World's Soil Resources (SWSR). Chapter 11 – Regional assessment of soil changes in Europe and Eurasia. *Food and Agriculture Organization of the United Nations and Intergovernmental Technical Panel on Soils*

²¹ https://ec.europa.eu/environment/soil/sealing_guidelines.htm

²² The Roadmap to a Resource Efficient Europe, the 7th Environment Action Programme (EAP) and the Guidelines on best practice to limit, mitigate or compensate soil sealing

²³ European Environmental Agency (EEA) (2020), Chapter 3.6. Soil Degradation. *Environment in the European Union at the turn of the century.* *European Environmental Agency*

²⁴ Many of the Sustainable Development Goals of the UN Agenda 2030 refer to land and soil either directly (SDG 2, 3, 15) or indirectly (SDG 6, 11, 13, 14), by addressing other issues inherently linked to soil and land, such as food and water security and climate change

²⁵ Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and social Committee and the Committee of the Regions - The European Green Deal (2019)

Strategy must also be coherent with the policy initiatives under the European Green Deal, including the Farm to Fork Strategy,²⁶ the Biodiversity Strategy²⁷ and the Circular Economy Action Plan.²⁸

We highlight the need for **consistency** between ongoing initiatives. As there are several instruments that are expected to be adopted in the near future, consistent policy development is essential between the New Soil Strategy and the following policies or strategies: Zero Pollution Action Plan,²⁹ Chemical Strategy for Sustainability,³⁰ Strategy for a Sustainable Built Environment, 8th Environment Action Programme,³¹ Climate Law³² and nature restoration targets under EU biodiversity strategy.³³

The ongoing development of the nature restoration targets under the EU Biodiversity Strategy is particularly important. Both the nature restoration targets and the New Soil Strategy are indispensable instruments for the implementation of the European Green Deal. It is therefore key that these two instruments are meticulously coordinated, during both their drafting and implementation. To achieve the protection and sustainable use of soil, it is essential to **have measurable and legally binding restoration targets** for degraded and contaminated soils. These targets should ideally be included in a new directive on soil and, in any case, be consistent with the actions following the legislation on nature restoration targets.

Finally, policies on, among others, agriculture have a significant impact on soil. Soil protection will need to be further **integrated** into other policy areas, if the goals of this strategy are to be met.

A new legally binding framework

While we welcome the New Soil Strategy as a positive step towards a more comprehensive and coherent framework to protect soils, we consider that **a new legally binding instrument is urgently needed** to fulfil this strategy and to ensure a common and harmonised approach to soil health.

This notion seems to be supported by other EU institutions. On 16 April 2021, the European Parliament's Committee on the Environment, Public Health and Food Safety (ENVI Committee) voted on the Motion for a Resolution on Soil Protection,³⁴ which calls on the Commission to design an effective and EU-wide legal

²⁶ Communication from the Commission to the European Parliament, the Council, the European Economic and social Committee and the Committee of the Regions – A Farm to Fork Strategy for a fair, healthy and environmentally-friendly food system (2020)

²⁷ Communication from the Commission to the European Parliament, the Council, the European Economic and social Committee and the Committee of the Regions – EU Biodiversity Strategy for 2030 Bringing nature back into our lives (2020)

²⁸ Communication from the Commission to the European Parliament, the Council, the European Economic and social Committee and the Committee of the Regions – Circular Economy Action Plan for a cleaner and more competitive Europe (2020)

²⁹ Zero pollution action plan

³⁰ Communication from the Commission to the European Parliament, the Council, the European Economic and social Committee and the Committee of the Regions – Chemicals Strategy for Sustainability (2020)

³¹ The 8th Environment Action Programme (EAP) to 2030

³² European Climate Law – Proposal for Regulation (2020)

³³ Protecting biodiversity: nature restoration targets under EU biodiversity strategy (2020)

³⁴ European Parliament. Committee on the Environment, Public Health and Food Safety. Draft Motion for a Resolution further to Question for Oral Answer B9-0123/2021 pursuant to Rule 136(5) of the Rules of Procedure on Soil protection (2021/0000(RSP))

framework for the protection of soil in Europe. The Motion for a Resolution received a strong cross-group support, with 73 lawmakers voting in favour of the cross-group proposal and only 7 voting against.³⁵

As the 2006 Soil Framework Directive faced the opposition of a blocking minority of Member States, a few key elements should be taken into consideration – and reiterated - while designing a new EU legislation on soil.

EU-level is the right level

Five Member States opposed the 2006 Soil Framework Directive under the justification that it was in breach of the subsidiarity principle, embodied in Article 5(3) of the Treaty on the Functioning of the EU (TFEU). However, such a claim remains exclusively political and without a clear legal reasoning to support it.

Soil protection can be interpreted as an area of shared competences, pursuant to Article 4(2)(e) TFEU. A new directive on soil would also have its legal basis under Article 191 TFEU, defining the objectives of the EU action in environmental matters. To understand whether the principle of subsidiarity finds a correct application in the case of a new soil framework directive, two ‘tests’ can be carried out:³⁶

- a ‘negative test’ examining whether *the objectives of proposed action cannot be sufficiently achieved at Member State’s level*;³⁷
- a ‘positive test’ assessing whether such objectives *by reason of the scale or effects of the proposed action, be better achieved at Union level*.³⁸

In the case of a new directive on soil, **the negative test is met**. Regulating the matter at domestic level does not seem the adequate one to tackle the issue considering that soil degradation exists in all Member States and that they have not implemented and/or adopted national legal frameworks to address the issue. Such differences among Member States in dealing with soil problems may also distort competition within the single market. Moreover, soil degradation in one Member State or region can naturally have transboundary consequences. Uptake by food and feed crops of contaminants in the soil may also have an impact on the quality of products, which are traded freely within the internal market, posing a risk for human or animal health.

The positive criterion is met as well. Harmonising soil protection at EU-level, by ensuring an even degree of protection of soils all across Europe, is a clear benefit of the Union’s action. Scattered measures at national level would create discrepancies among Member States and would impede to consistently monitor and measure soil health. Soil also plays a vital role in the Earth’s ecosystems and in the mitigation of climate change by storing carbon, purifying water, improving fertility for food production and protecting biodiversity.

It can be concluded that EU-wide action is not only possible, but also *necessary* when it comes to soil protection, as it will close the existing gaps and ensure a consistent and efficient quality of environmental

³⁵ The vote by the ENVI Committee will be followed by a vote in Plenary, scheduled for the 27th and 28th of April 2021

³⁶ Sian Affolter (2021), The Subsidiarity Principle in EU Environmental Law, in G. Walzenbach and R. Alleweldt (eds.) *Varieties of European Subsidiarity A Multidisciplinary Approach*, p. 82

³⁷ Article 5(3), TFEU.

³⁸ Article 5(3), TFEU.

protection. The old proposal for a Soil Framework Directive was certainly compliant with the subsidiarity principle and so is a new directive protecting and restoring EU soils.

On the political level, one final consideration can be made in support of a new directive on soil. In line with the European Green Deal's ambition to make the EU a global leader for sustainability,³⁹ the EU should lead by example, by developing further knowledge on best practices to reverse soil degradation and acquiring new tools to manage soils sustainably.

Policy recommendations for a new legal framework

The Soil Framework Directive of 2006 left plenty of flexibility and time for Member States to counter the increasing degradation of soils. It defined common principles, objectives and actions for the protection and sustainable use of soil, but shied away from setting targets for Member States – based on flexibility and subsidiarity. While that was a first positive step, we consider it crucial to set **binding and enforceable protection targets to address all soil threats and restoration targets** for degraded soils. To do so, the new directive on soil must include a common soil health definition and identify common indicators to assess current soil status and track changes. It must also incorporate the creation of representative databases⁴⁰ and require Member States to elaborate an inventory of contaminated sites. Finally, the new directive on soil must identify regulatory measures to achieve soil restoration and ensure good status for different types of soil.

EU action on soil should be based on robust scientific data and on a common understanding of the need to step up EU efforts to protect it. An impact assessment prior to the publication of a new legislative proposal would be helpful to identify the best way forward. The impact assessment should pay particular attention to the costs and consequences of inaction, including the negative social, environmental and economic effects that soil degradation will continue to cause if not properly addressed. In 2018, the EU Joint Research Centre (JRC) concluded that only soil erosion – without considering the other soil threats – costed European countries €1.25 billion in annual agricultural productivity loss and €155 million in the gross domestic product (GDP) loss.⁴¹ Socio-economic and political landscapes are the main drivers of soil degradation, which cannot be looked at as a mere physical process.⁴² This means that an integrated assessment of social and economic benefits related to soil conservation is needed to foster adequate implementation of soil conservation measures.⁴³

The scrutiny of the causes that drive soil degradation should be accompanied by a stakeholder analysis, to determine the interactions and synergies among actors and policy communities. While designing a new legislation, participation mechanisms will be key to identify the actions that will better respond to local needs. Engaging with a plethora of stakeholders, from farmers and landowners to civil society organisations and scientists will promote acceptance and long-term adoption of soil conservation practices. Participation should also be ensured throughout the whole process of monitoring and evaluation

³⁹ European Commission (2019), EU as a global leader. The European Green Deal

⁴⁰ No standard approach exists regarding collection and interpretation of data and information needed to assess soil degradation in a consistent manner across EU countries

⁴¹ P. Panagos, G. Standardi, P. Borrelli, E. Lugato, L. Montanarella, F. Bosello (2018), Cost of agricultural productivity loss due to soil erosion in the European Union: From direct cost evaluation approaches to the use of macroeconomic models. *Land Degradation & Development*.

⁴² J. Boardman, J. Poesen and R. Evans (2003), Socio-Economic factors in soil erosion and conservation, in *Environmental Science and Policy*, Vol. 6, pp. 1-6.

⁴³ J. Albaladejo, E. Díaz-Pereira, and J. Vente (2021), Eco-Holistic Soil Conservation to support Land Degradation Neutrality and the Sustainable Development Goals, in *Catena*, Vol. 196

of the effectiveness of soil protection measures, while a set of indicators developed at EU-level will ensure that progress towards soil health is consistently monitored.

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