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PART 2/5

COMMISSION STAFF WORKING DOCUMENT

IMPACT ASSESSMENT REPORT

ANNEXES

Accompanying the proposal for a

Directive of the European Parliament and of the Council

on Soil Monitoring and Resilience (Soil Monitoring Law)

{COM(2023) 416 final} - {SEC(2023) 416 final} - {SWD(2023) 416 final} -
{SWD(2023) 418 final} - {SWD(2023) 423 final}

ANNEX 1: PROCEDURAL INFORMATION

1 LEAD DG, DECIDE PLANNING/CWP REFERENCES

Lead DG: DG ENV

Decide Planning reference: PLAN/2021/13172

CWP reference:

In the Commission Work Programme 2023[1] 'A Union standing firm and united' COM (2022) 548 final, this initiative is foreseen under the policy objectives for the European Green Deal, under 'Healthy soil': 'initiative on protecting, sustainably managing and restoring EU soils' (legislative, incl. impact assessment, Article 192(1) TFEU, Q2 2023)'

2 ORGANISATION AND TIMING

The Inception Impact Assessment (Call for evidence) was open for feedback from 16 February 2022 until 16 March 2022.

The Open Public Consultation on the initiative was open for feedback online from 1 August 2022 until 24 October 2022.

An Inter-Service Group was set up in 2021 to steer and provide input for the EU Soil Strategy for 2030. In 2022, this group also undertook to follow up the implementation of the strategy and in particular the development of the Soil Health Law by providing steer and input to the impact assessment for the Soil Health Law.

The Inter-Service Group (ISG) includes representatives from the Directorate Generals ENV, AGRI, BUDG, CLIMA, CNECT, COMP, DEFIS, DGT, EAC, ECFIN, ECHO, EMPL, ENER, ESTAT, FISMA, GROW, INTPA, JRC, JUST, MOVE, NEAR, REFORM, REGIO, RTD, SANTE, SG, SJ, TAXUD, TRADE as well as the EEAS.

The ISG discussed the initiative on Soil Health Law on 27/1/2022, 3/5/2022, 29/9/2022, 1/12/2022.

The draft of the Impact Assessment has been shared with the ISG before its submission to the RSB.

The revised draft of the Impact Assessment for the resubmission to the RSB has been shared with the ISG before its submission.

The comments received have been systematically taken into account and integrated.

The planned adoption date in the Commission Work Programme for 2023 is Q2 2023.

3 CONSULTATION OF THE REGULATORY SCRUTINY BOARD (RSB)

The draft Impact Assessment was submitted to the RSB on 18 January 2023. The RSB provided a first set of detailed comments in its Impact Assessment Quality Checklist on 10 February 2023. The meeting with the RSB on the draft impact assessment took place on 15 February 2023.

[1] https://ec.europa.eu/info/publications/2023-commission-work-programme-key-documents_en

On 17 February 2023, the RSB issued a negative opinion and provided a set of comments to DG ENV. DG ENV revised the draft Impact Assessment, accordingly, addressing all the comments of both the opinion and the Quality Checklist, and re-submitted it to the RSB on 27 March 2023.

The RSB issued a positive opinion with reservations to be rectified by DG ENV on 28 April 2023, via written procedure. DG ENV addressed all submitted comments in the revised draft of the Impact Assessment before planned submission for adoption.

The Table 3-1 gives an overview of the comments by the RSB in its first opinion on the draft Impact Assessment and indicates how the Commission has addressed each of these comments in the revised Impact Assessment. The Table 3-2 provides an overview of the comments by the RSB in its second opinion on the revised draft Impact Assessment and indicates how the Commission has addressed them.

Table 3-1 Overview of comments from the RSB issued in the opinion of 17 February 2023 and how DG ENV addressed them in the revised draft Impact Assessment

Comments from the RSB	How they have been addressed
(1) The report should further explain and better substantiate the scale of the problem. It should be more precise about the proportion of impacted areas, and be more specific about the root causes of the types of degradation, while clearly flagging the lack of data and corresponding level of uncertainty. For each type of soil degradation, the report should clearly set out existing legislation and policies. The report should clearly identify the gaps it needs to fill in terms of EU regulation of type of soils, land use and practices. It should also clearly present the existing measures in different Member States. This should be summarised in a table building on table 1 in Annex 7 (on categories of soil degradation and EU land surface affected) thereby bringing together all the relevant elements.	The description of the scale of the problem has been revised (in section 2.1 of the report). Several tables have been inserted in the report showing: scale of the problem, trends and outlook by aspect of soil degradation - table 2-1. share of quantified soil health issues by Member State for each available indicator – table 2-2. It also includes a reference to the recent EU Soil dashboard by JRC that gives a more detailed, graphic view of the soil degradation across the EU. The root causes of the degradation processes are now explained in the problem description in section 2.1.1. A gap analysis is included in section 2.2 of the report considering the legislative gap is one of the identified regulatory failures (problem drivers). Regarding existing legislation and policies, Annex 6 sets out the details on the legal context by describing the existing EU legislation and its relevance for soils. It is reflected in the impact assessment in table 5-3. Chapter 5 includes now a revised section analysing in details the contribution of recent initiatives (including the new CAP) – see also table 5-2 for an overview.

	Existing measures in different Member States and their contributions to soil protection are presented in annexes 6 and 8.
(2) The report should improve its analysis of the baseline and in particular as regards the expected impact of the existing policies and different initiatives expected to provide incentives to improve soil management practices (e.g. LULUCF, Nature restoration law, CAP, etc.). While the report identifies a gap for soil contamination in existing EU rules, it should be clear about what proportion of the estimated 60-70% of unhealthy soils would already be tackled by existing policies and other initiatives covering other types of soil degradation. The report should better explain what the ranges of the estimated yearly cost caused by soil degradation are. This should be presented per type of soil degradation to better explain the costs and benefits expected by the proposed options compared to the baseline.	Section 5.1 of the report and annex 8 provide a detailed analysis of the expected contributions of recent initiatives (NRL, LULUCF, Carbon removing and new CAP) on the one hand and existing legislation and policies on the other hand. The table 5-2 in section 5.1 of the report contains the quantified impact of the expected contributions of these initiatives to tackle each of the types of soil degradation. Concerning the estimated yearly cost caused by soil degradation, the report contains a dedicated section 2.1.4.
(3) The report should significantly strengthen, with evidence, the cross-border nature of the problem. It should clarify any resulting issues with market fragmentation and unfair competition. It should clearly set out how the initiative respects the subsidiarity principle.	Further explanations on the cross-border aspect of the problem have been added in section 3.2 of the report. Section 3.3 aims to explain the market risks and impacts on competition. Examples on market distortion were added, considering the limited information available on these aspects. The policy options developed in chapter 5 contain different degrees of flexibility for Member States, considering also the effectiveness of the intervention. Sections 3.2 and 3.3 now explain the subsidiarity principle more in detail, supported by the subsidiarity grid in the separate staff working document. Furthermore, the policy options were reviewed in chapter 5 to ensure that the EU intervention reflects well the subsidiarity principle for this proposal, taking into account different degrees of flexibility for Member States.
(4) The report should clarify how, and which, mandatory objectives and targets and binding principles will be incorporated in the legislation, with what time horizons. It should point to the underlying analysis that would justify such targets	The description of the options within the building blocks has been reviewed to clarify the obligations. A new option 1 assesses the consequences

and set out realistic pathways to achieve them. The report should clarify if there are trade-offs between the objectives, and show how these have been considered in the analysis, in particular regarding food security and the EU dependency towards the production of biomass.	of putting in place of a soil monitoring system only. Based on this analysis the option is discarded; the conclusions informed the choices made in the preferred option. The preferred option was revised and is based on a staged approach (further details in the reply to point 5) and chapter 7.1 describes the indicative timeline for a 2-stage implementation of the obligations, setting clear time horizons and pathways to achieve the objectives. Section 4.4 explains the main synergies and trade-offs with other objectives, in particular for food and biomass production. Section 7.1 indicates the necessary actions and their impacts on various types of stakeholders to describe the pathway to achieve the objectives of this initiative.
(5) The report should more clearly show if the options and policy choices are feasible and appropriate to achieve the objectives of the initiative. The description of the content of each option should provide information on expected actions, including what they would imply in addition to existing obligations. The report should better justify why some elements (e.g. mandatory targets) are common to all options without alternative approaches and explain whether there is consensus on this by the stakeholders and Member States. The report should also explain why it has not looked into staged approaches given the uncertainty regarding the scale of the problem and the likely costs and benefits of measures. It should clarify whether it explored alternative combinations of measures (than those presented in the four options) that might be relevant for decision making, and if yes why these were not contained in the analysis.	Chapters 5 and 6 have been revised to explain the policy options, the key elements and the possible choices, as well as their implications. The new figure 5-2 – summary of policy options – reflects this revision. Chapter 7.1 makes explicit the specific objectives for each aspect of soil health and the applicable limitations and exclusions, presenting as well the rationale on why those objectives are achievable and proportionate. See tables 7-3 – possible actions/type of degradation and 7-4 – implications for stakeholders. Chapter 7 now also includes information on stakeholder and Member State's views. Chapter 5.2 – description of the policy options was revised to clarify the elements of building blocks and their relevance. The new policy option 1 considers the option of a "monitoring only" approach. Nevertheless, a staged approach was analysed and chosen for the preferred option - chapter 7.1. It proposes a 1st phase focusing on monitoring assessment and setting in motion the transition to

	sustainable soil management and a 2nd phase based on the assessment of soils and targeting restoration and sustainable soil management, with flexibility for the MSs.
(6) The report should be explicit about how Member States are expected to achieve far reaching goals such as the obligation to restore all unhealthy soils, and the mandatory principle of non-deterioration, as well as how, in concrete terms, such immediately applicable principles would work. The report should clarify what tangible actions Member States will be expected to undertake, as well as the scale of such actions (also taking into account different starting positions) and the expected timelines.	Chapter 7.1 explains how the objectives can be achieved. It is important to note that specific objective (b) in chapter 4 has been streamlined by clarifying the definition of healthy soils (see also table 7-1) and adjusting the goal to the inherent uncertainties at this stage (taking into account what is technically feasible and proportionate). The goal would be subject to exclusions and exemptions. The staged approach is conceived in the same vein, to make sure it sets out a coherent and feasible timeline. Chapters 4, 5.2 and 7.1 have been revised along these lines. The non-deterioration principle was clarified in chapters 5.2 and 7.1 – it will not apply in phase 1 until the assessment of soils is completed, and after this the Member States will be given the flexibility to apply it in a proportionate manner.
(7) The report should improve its coherence analysis. The report should clearly explain how duplication of actions under the initiative with existing rules and actions that Member States are taking will be avoided. For example, the report, which currently focuses mostly on arable land and agriculture practices, should be clearer how actions proposed for the soil initiative will align with actions taken in the context of CAP, which are currently contained in EU rules as well as national CAP Strategic Plans approved by the Commission. The report should also clarify if relevant information is already being collected and show how the suggested monitoring measures fit with other environmental monitoring systems (like forest, air, water, etc.). It should clarify if the foreseen soil health national plans will make use of existing plans/measures stemming from other legislation and how the integration of various work strands and efforts will be ensured.	Chapter 5.1 presents in a revised baseline description the expected contribution of the new EU initiatives on soil health and the remaining gaps filled in by the SHL; this provides an overview of the complementarity of SHL action. Chapter 7.1 presents for the preferred option of each building block an analysis of the coherence with respect to other relevant initiatives. The description of sub-problem A in 2.1.5 clarifies that Member States data on soil are not collected at EU level; the preferred option on monitoring in 7.1 explains for which other environmental monitoring systems can soil monitoring data be used and vice versa. Synergies between existing plans/measures stemming from other legislation and the envisaged programme of measures under this initiative are

	described in section 7.1 of the report (table 7-2) and will be supported by this initiative.
(8) Although the initiative would mainly impose obligations on national authorities, these would translate into obligations on stakeholders, and the report should be more granular about the stakeholders likely to be directly and indirectly impacted by the measures that Member States put in place to achieve the objectives. The impact on landowners and managers should be more explicitly described in the impact analysis. The SME test annex is not sufficiently clear about the impact on SMEs and how this was considered in the options. Social impacts, on both rural and urban areas, should be further analysed. The report should also indicate the impact on stakeholders' competitiveness, including international competitiveness.	The report contains in section 7.1 a list of possible impacts and a quantification of the cost and benefits of the preferred option for certain stakeholder groups. It explains as well the extent to which is expected that soil managers will be impacted through the measures that Member States will take and the current stating point / use of measures of individual soil managers. This may vary very much from one Member State to another depending on the situation of soils and the choices to be made. The flexibility in formulating the objectives, and the staged approach will allow the Member States to adjust and support the effects on stakeholders. The SME test in Annex 11.3 clarifies the impact on SMEs with respect to the relevant obligations in the options; the test result is summarized in the new section 7.1.2 A section with an overview and assessment of the impact of the preferred option on competitiveness has been introduced in chapter 7.
(9) The distributional impact needs to be further developed by showing which Member States would have to make more of an effort than others to achieve the set of mandatory objectives. The report should clarify whether Member States would have the necessary resources, including access to EU funding, and expertise to implement the presented options.	Section 2.1.2 presents the table of available quantifications of soil health issues at Member State level, providing a provisional distribution of the likely level of effort needed to achieve soil health objectives. A section on funding and expertise was added to chapter 7. The IA will be accompanied by a separate Staff Working Document with funding opportunities for sustainable soil management and restoration.
(10) Costs and benefits should be better substantiated and presented. The report should go beyond listing examples of potential measures and their costs and instead provide a comprehensive overview of costs and benefits of each option. This should include the estimates of the totals for	The cost and benefits for the main categories of the preferred option are better explained – chapter 7.1. It is now clearer where the biggest impact will be. The cost of soil degradation and no action

the key categories of costs (such as the cost of investigation of contaminated sites, the cost of remediation of contaminated sites, the cost of sustainable soil management practices, the cost of restoration and the administrative costs) so that it is clear where the biggest impact will be. The report should be clear about the risks of over or underestimation of the costs and benefits.	has been further clarified with an indication of the level of confidence and the risk of over- or underestimation – chapter 2.1.4. The costs of certain actions and measures that Member States may undertake has been further detailed chapter 7.1.2.
(11) The comparison of options and the choice of the preferred option should be clear. The report should explain the methodology of cost and benefit analysis. Given that the report states that the costs will be spread over 15 or 25 years, the costs and benefits should be discounted (with a clear indication of the appraisal period(s)). The analysis should be clear in which year the benefits will occur. It should also calculate the net impact and Benefit Cost Ratio for each option. These, together with non-monetised impacts, should then be used in the comparison of options and justification of the choice of the preferred option. The report should better explain and justify the scoring of the options and the choice of preferred option including by linking it better with the results of the cost benefit analysis.	The costs and benefits have been considered for an appraisal period up to 2060, placed on a timeline and referred to the present using a discount rate of 3% per year. – chapter 7.3 A temporal profile of the main costs and benefits of the preferred option have been added and mapped the impacts on a timeline. The benefit-cost ratio and net impact has been calculated for the preferred option and the selection and scoring of the preferred option has been better justified.
(12) The report should systematically present the views of the different groups of stakeholders given the potentially significant implications for each and should be explicit about how widespread the support is for certain views. It should transparently point to any campaigns identified in the context of the consultation activities. It will be important to show Member State views on the measures considered and the preferred option given that many measures have significant consequences for implementation by local authorities.	A comprehensive overview of stakeholder's inputs on each building block is now included under each respective section in Annex 9. Their views on the preferred options is included in chapter 7 of the IA's main part. A brief description of possible campaigns has been inserted in Section 4.2 of annex 2. SMEs' views have been summarized within the SME test in Annex 11.3

Table 3-2 Overview of comments from the RSB issued in the opinion of 28 April 2023 and how DG ENV addressed them in the revised draft Impact Assessment

Comments from the RSB	How they have been addressed
(1) The report should better bring out the main policy choices related to the various options. It should provide further clarification of the content of the options, in particular further detail on stage 1 and stage 2 of implementation, and on how and when these	Further details on how and when stage 1 and stage 2 will be applied in the various buildings blocks have been inserted in section 7.1 and 7.1.1

will be applied in the various building blocks, including in the building block on sustainable soil management and the one on restoration and remediation. The report should explain how, by whom and based on which criteria the technical and economic feasibility will be decided under the building block dedicated to restoration and remediation measures. The report should revise the intervention logic considering the revised design of policy options and the need to better integrate the 'no net land take' add-on in it.	Explanations on the exemptions have been added in section 7.1 (under the description of the preferred option for BB5). The intervention logic has been revised to reflect the staged approach and better integrate net land take
(2) The report should more systematically address the implementation risks related to the different options, in particular as regards resource implications for Member States and affected actors.	Chapter 6 on the impacts and comparison of the policy options has been updated to better reflect possible risk to implementing the different options due to resource implications for Member States and affected actors. The relevant updates can be found in sections 6.1.5, 6.2.5, 6.3.5, 6.4.5, 6.5.5, and 6.4.1.
(3) The cost benefit analysis should be improved by better reflecting the uncertainties and the risks of not reaching the general objective to achieve healthy soils across EU by 2050. To this end, the report should undertake a sensitivity analysis. The report should be clearer about the expected short- and long-term impacts. Given the costs incurred by certain stakeholder groups, in particular the landowners and the land users, the analysis of the possible impact on competitiveness should be clearer about the short term impact on those groups.	Section 7.3 contains now a sensitivity analysis, and related conclusions, of the benefit to cost ratio for the key selected variables that present higher uncertainties. Section 7.1.3 now clarifies what can be expected in the short vs medium and long term concerning competitiveness, consistently with what is already explained in other parts of the document.
(4) When comparing the options the report should better reflect the trade-offs between achieving the soil health objective and the objective of food safety and more widely the objective of strengthening the strategic autonomy of the European Union. It should better explain the methodology used to score and compare the options.	Section 6.3.7 and 6.5.7 now clarifies how the transition to sounder food security in the medium and long term contributes to the objective of EU strategic autonomy. The beginning of chapter 6 better explains the methodology used.
(5) The report should be more explicit about the views of all groups of stakeholders, in particular the views of Member States as regards those options and measures that would require the most effort from their side. It should highlight the possible difference between those Member States where there is	Sections 6.1.6, 6.2.6, 6.3.6, 6.4.6, 6.5.6 now include a brief summary of the available views expressed in particular by Member States on the envisaged measures, highlighting when views reflect a known major difference in starting conditions, namely for those Member States having

already in place a monitoring with a good overview of soil health and ongoing deployment of sustainable soil management practices and action plan for restoration and remediation and those Member States with very limited overview of the situation.	national legislation in place on soil monitoring or where the remediation of contaminated sites is well under way.
(6) The report should clarify the relationship of the net land take definition with the measures in the building block dedicated to monitoring.	The scheme of the summary of policy options in section 5.4 has been updated to include net land take monitoring in block 2; section 6.2 now clarifies terms and references for net land take in block 2; section 7.1 reflects now the inclusion of net land take in the block 2.

4 EVIDENCE, SOURCES AND QUALITY

References to key sources and evidence (not exhaustive): Data and knowledge on the EU's soil (state, pressures, trends etc.) has been drawn from published reports which are authored and reviewed by experts in the field, such as:

- FAO (2020), State of knowledge of soil biodiversity – Status, challenges and potentialities for European Environmental Policy.
- IPBES (2018), The assessment report on land degradation and restoration.
- Nkonya et al. (2016), Economics of Land Degradation and Improvement – A Global Assessment for Sustainable Development.
- European Academies Science Advisory Council (2018), Opportunities for soil sustainability in Europe

A wide range of specific scientific sources/publications have been used for the impact assessments of the Soil Health law and they are available in the Annexes 7 and 10.

Policy-related studies/reports:

- European environment Agency (2019), The European environment – state and outlook 2020
- European environment Agency (2019)) EEA Signals 2019, Land and Soil in Europe
- Wageningen Environmental Research (2019), Providing support in relation to the implementation of soil and land-related Sustainable Development Goals at EU level
- Deltares (2019), Soils4EU: Providing support in relation to the implementation of the EU Soil Thematic Strategy
- Ecologic Institute (2017), Inventory and Assessment of Soil Protection Policy Instruments in EU Member States

5 ROBUSTNESS AND QUALITY OF DATA

As mentioned in chapter 2 (Problem definition), figures and data on soil degradation come from a variety of sources, data sets and monitoring methodologies (e.g. reporting by Member States, LUCAS Soil Survey, Copernicus land monitoring etc.). Information and data on soil health and management are however lacking or incomplete. Despite these shortcomings they do provide trends, from which clear conclusions can be drawn.

External expertise: Service contract 090201/2022/869906/SFRA/ENV.D.1 “Study to support the impact assessment of the Soil Health Law” with Trinomics under Framework Contract ENV/F1/FRA/2019/0001 “Economic Analysis of Environmental Policies and Analytical Support in the Context of Better Regulation”. The study includes the compiling, assessing and synthesizing of evidence for the impact assessment as well as drafting (an) analytical support document(s) to inform the impact assessment throughout the duration of the exercise. The expected results of the study is to provide technical support, research and analysis to underpin the legal proposal and impact assessment**.**

ANNEX 2: STAKEHOLDER CONSULTATION (SYNOPSIS REPORT)

1 INTRODUCTION

This report provides an overview of the consultation methods and feedback gathered as part of the study to support the impact assessment of the Soil Health Law, which is being introduced as part of the EU Soil Strategy. The report covers all consultation activities, including, the call for evidence, public consultation and the targeted consultation, which included a targeted questionnaire, interviews, and one stakeholder meeting with the EU Expert Group on the Implementation of the EU Soil Strategy. This report also considers ad-hoc contributions received throughout the duration of the study.

2 CONSULTATION STRATEGY

The consultation strategy laid out the two aims of the stakeholder consultation activities: (i) to confirm the scope and gather factual information, data and knowledge to underpin the assessment of impacts of different policy options; and (ii) to gather views of stakeholders on the different policy options and scenarios and the feasibility of their implementation. The table below outlines which types of stakeholders were targeted by which consultation activities.

Table 2-1 Stakeholder groups consulted under each consultation strategy

Stakeholder groups	Consultation activity				
	Call for evidence	Public consultation	Targeted question-naires	Interviews	ESEG Stakeholder meeting
Public authorities	✓	✓	✓	✓	✓
Industry & businesses[2]	✓	✓	✓		✓
Civil society & NGOs	✓	✓	✓		✓
Academia & research	✓	✓	✓		✓
EU Citizens	✓	✓			

3 METHODS OF STAKEHOLDER ENGAGEMENT

3.1 Call for evidence

The call for evidence gathered feedback from stakeholders between 16 February and 16 March 2022. The call for evidence allowed all stakeholders to share their views on the problem to be tackled, objectives and policy options for the EU Soil Health Law.

3.2 Public consultation

The public consultation consisted of introductory questions related to the profile of respondents, followed by a questionnaire divided into two main parts: a general section focused on views on soil health issues which did not require technical or expert knowledge of the Directives, and a specialised section addressed to respondents with such knowledge. The public consultation was available in all EU languages and the consultation period lasted 12 weeks and ended on 24th October 2022.

[2] Including small and medium sized enterprises, represented through EU level associations

3.3 Stakeholder meeting

In the course of the support study, one stakeholder meeting of the extended EU Soil Expert Group on the Implementation of the EU Soil Strategy (ESEG) was organised as a hybrid event with 56 participants present in Brussels and 82 online via WebEX. The stakeholder meeting took place on 4 October 2022. The main topics discussed were: (i) general comments on the presentation by the Commission and (ii) the development of the Soil Health Law. Besides EU citizens, all relevant identified stakeholder groups participated in the stakeholder meeting.

Furthermore, throughout the course of 2022, 7 stakeholder meetings with representatives of Member States were held, during which the formulation of the policy options for the impact assessment were discussed.

3.4 Interviews

Two interviews were organised, with the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (via a call) and with the Austrian Federal Ministry of Agriculture, Regions and Tourism (where a written reply was provided). The interviewees were chosen because of the pioneering role of Austria and Germany regarding their implemented soil legislations. These interviews focused on learning from experiences and filling gaps in knowledge on the costs and benefits related to health soil legislations, notably around the feasibility and means of implementation of the various options considered.

3.5 Targeted questionnaires

The targeted questionnaires intended to gather views of expert stakeholders on potential (regulatory and non-regulatory) measures, notably on their costs, feasibility and potential impacts. The answers were collected between 14th and 28th November 2022. Most of the relevant stakeholder groups that were identified responded to the questionnaire.[3]

3.6 Participating stakeholders

A high participation of stakeholders was witnessed during each of the consultation activities. The number of participating stakeholders, per stakeholder type, is displayed in table 3-1. Each EU Member State contributing to at least one of the consultation activities.

Table 3-1 Number of participating stakeholders per consultation activity and stakeholder type

Consultation activity	Call for evidence	Public consultatio	Targeted question-naires	Interviews	ESEG Stakeholder meeting
Public authorities	8	96	12	2	103
Civil society & NGOs	40	180	2	0	7
Industry & businesses	70	273	4	0	17
Academia & research	11	267	0	0	7
EU & non-EU Citizens	43	4 698	0	0	0
Others	17	268	0	0	4
TOTAL	**189**	**5 782**	**18**	**2**	**138**

[3] No response was received from Biodiversity and environmental protection organisations

All feedback received was analysed and views were reflected in the stakeholder reports and in the project reports (see supporting study). Views of stakeholders are reported for different options throughout this Impact Assessment.

4 OVERVIEW OF FEEDBACK RECEIVED

4.1 Call for evidence

A total of 189 responses were received from the call for evidence. The majority of inputs were received from EU citizens (n=41, 22%) and business associations (n=37, 20%). Approximately 79% of feedback received provided positive views (i.e. 'supported' or 'strongly supported' the Soil Health Law). Critiques of the proposed Soil Health Law included (inter alia): subsidiarity concerns (business associations), lack of emphasis on soil protection (NGOs / environmental organisations), coherence with other policy domains, potential excessive administrative burden (Member States and business associations) and the need for clear indicators and definitions (Member States).

4.2 Public consultation

After cleaning the dataset, a total of 5 782 responses were included in the analysis. The majority of respondents identified themselves as EU citizens (r=3 543; 61%) and non-EU citizens (r=1 155; 20%). In terms of number of responses these categories were followed by 268 'other' respondents (5%) and 267 academic / research institution respondents (5%). Regional-level public authorities are the highest represented public authority grouping (r=37; 1%). One particular observation is the high representation of non-EU respondents (20%), mainly from India (14%; r=784) and the United Kingdom (6%; r=329).

The high number of responses received from India can be viewed as a campaign as this unusually high number of contributions from a non-EU country point to a potential dissemination in this country from one or a limited number of sources. The rather high diversity in the answers provided form 'non-EU citizens' based in India points to a loosely-organised campaign leaving flexibility to contributors to tailor their answers, but also to a high level of motivation of respondents, as they have taken the time to devise their own answer. Furthermore, a mini-campaign has been detected with 19 respondents from Germany providing identical responses to virtually all the open questions (some left certain open questions blank). These respondents are all active in the forestry and hunting sector and a large number of them have indicated that they work for the Bavarian Forest Owners Association

In terms of the sectors of activity of the respondents (n=5 782), most came from the 'other' sector (29%, r=1 693), followed by the sectors of education (15%, r=861), environment & nature protection (11%; r=648) and agriculture (11%; r=626).

The public consultation covered the views of stakeholders on the **current management of the causes of soil and land degradation at the EU level**. The vast majority of respondents think these causes are not sufficiently or not at all addressed (88%; r=5 070 of n=5 782). However, two stakeholder categories stand out in the number of respondents who think that the causes of soil and land degradation are sufficiently addressed at EU level, namely business associations (47%; r=47 of n=100) and trade unions (2 out of 7 respondents).

When asking respondents to rank **provisions for achieving healthy soils in the EU by 2050, all proposed measures were regarded very favourably**. The top three provisions labelled as either very important or important are mandatory requirements for the sustainable management of soil (97%), the obligation for Member States on Soil health monitoring and reporting (96%) and the obligation of results for Member States to achieve healthy soils (96%).

Due to the technical nature of soil health, the respondents could choose to not fill in the second part of the questionnaire. This second part contained 'specialised questions' focusing on scientific conditions and sustainable soil management. When asked to reflect on the **effectiveness of certain measures in ensuring sustainable soil management (SSM) practices across different economic sectors**, the majority of respondents indicated that all measures are very effective or reasonably effective. The most favourably regarded measures were 'Member States funding SSM training for farmers and farm advisory services' (90%; r=1 200) and 'creating networks, collecting and disseminating good practices and success stories' (90%; r=1 192).

One final important observation from the public consultation analysis is the **position of stakeholders towards the content of the Soil Health Law**. According to respondents, measures which should definitely be included are 'Establish mechanisms to prioritise action for sites with the highest risk' (60%; r=802),[4] 'Set binding intermediate targets between now and 2050 for the identification, registration and remediation of contaminated sites' (60%; r=804)[5] and 'Harmonise at EU level the criteria for a "significant risk" that would consider a site as contaminated' (58%; r=772).[6]

4.3 Stakeholder meeting

The ESEG stakeholder meeting benefited from active stakeholder participation. General remarks were made regarding the approach on securing soil health and potential difficulties around implementation of the Soil Health Law, as soil health is highly context specific. As such, a learning-by-doing or adaptive management approach was recommended (e.g. as per the Water Framework Directive, with regular updates). The Commission agreed and acknowledged that this is an iterative process that should allow for adaptation (e.g. to new technologies). Based on the stakeholder input, the building blocks were restructured to the final categorisation, guiding the following sections.

Land take

An environmental services approach was considered on net land take, acknowledging difficulties in quantifying services' stocks and delivery. It was underlined that land take considerations should be embedded within broader soil health concerns. If land take was excluded from the new law, all focus would be on agricultural land. This would be likely to cause a lot of resistance.

Soil passport

Stakeholders noted that soil passports could align with other policy domains (e.g. circular economy) and would increase transparency and traceability. However, common definitions, e.g. on waste, were still needed. In this context, the waste law should be considered as a useful model. Stakeholders added that passports could first prioritise chemical information (adding biological ones later) and should be practical, simple and robust.

Soil health certificate

Many stakeholders did not see the benefits of soil health certification. Some were concerned that it could commodify soils and put additional costs on farmers. Stakeholders acknowledged that certificates could increase transparency in land transactions as well as incentivise soil testing and remediation practices, required to benefit from market rewards. However, it was flagged that certification should be voluntary and there was a need for clarity on where in the supply chain it

[4] 8%; r=102 answered "I don't know / no opinion / not applicable"
[5] 7%; r=91 answered "I don't know / no opinion / not applicable"
[6] 8%; r=100 answered "I don't know / no opinion / not applicable"

should be applied. Soil certification could be inspired by existing certification schemes (e.g. certification of contaminated soils could be expanded to healthy soils or learn from certificates for houses).

Soil health and soil districts

Some stakeholders emphasised the need for flexibility regarding the districts' size (e.g. districts could be based on the soil's historic condition or natural borders). Others flagged the need to be risk-based and that administrative borders could be counterproductive. Member State flexibility regarding the establishment of soil management practices was also a point of discussion. One stakeholder worried about incentivising a race to the bottom if too much flexibility was allowed. However, many respondents agreed on some flexibility being crucial. A general consensus existed for the need to establish EU-guidance to Member States on defining at a high level which practices are mandatory/banned, preferably based on thresholds. Most stakeholders agreed to apply science-based indicators, with ranges and thresholds for Member States.

Monitoring

Stakeholders agreed that standardised monitoring is key, though the criteria are still to be defined. This should be done at EU level in their view. Furthermore, stakeholders underlined limitations in the suggested approach regarding spatial planning and flagged that soils conditions per Member State should be considered. It was further stressed that monitoring needs to be conducted over the long term, uncovering trends.

Definition and identification of contaminated sites

The identification of contaminated sites was defined as a challenge by stakeholders. Generally, many stakeholders wanted to differentiate ranges for soil descriptors as it depends on the soil type, climatic condition and the land use. Stakeholders referred to already existing scientific indicators, which would need more advanced monitoring techniques and should be agreed on by other actors and land managers. Further alternatives like focussing on the soil's function were suggested. Also, targets should be based on reference values and thresholds. A risk-based and site-specific approach for contaminants was clearly favoured. Focusing on minimum values could broaden the scope of pollution but would result in an infinite list. Lastly, nature-based solutions and soil biodiversity were found to be key to solving a lot of problems but simultaneously under-researched and under-funded. One stakeholder suggested that the SHL additionally focuses on preserving healthy soils (as opposed to solemnly identifying unhealthy ones).

Remediation

Stakeholders identified potential to further improve remediation practices and sustainable soil management without enforcement. However, they agreed that parameters are needed, such as defining triggers for remediation and restorative action, types of actions acceptable for remediation, who pays for actions (liability) and how to consider natural processes. Current strategies differ and are site-specific. It was stressed that before defining remediation strategies, the definition of healthy soils must be clarified. As remediation strategy for sites that are difficult to reach, possibilities of offsetting of costs were suggested to be explored. Soil displacement was seen as the last resort. Further, a distinction between historical and new pollution was deemed necessary. Costs for orphan sites were suggested to be publicly covered, if risks are high enough to demand action.

Sustainable Soil Management

It was generally agreed that sustainable soil management might need further incentives to be implemented. As such, social aspects of sustainable soil management should be considered. For example, citizens and farmers could be encouraged to shift to more sustainable practices when

being provided with guidance on the possibilities provided by legal frameworks (e.g. incentives for subsidised voluntary practices in agriculture and forestry) and how to make best use of certification schemes. Current funding was described as insufficient for the provision of advisory services. It was suggested that Common Agricultural Policy (CAP) funding should be spent on training land users. Flexibility for Member States and EU-wide best-practice sharing was suggested. The SHL should not ban or enforce specific management methods but stay open for innovation.

4.4 Interviews

Member State representatives indicated during the interview that national-level data were available during the interviews on monetary information on losses of ecosystem services, costs for monitoring and enforcing the legislation or for operators. This information would be difficult to evaluate due to differing measurement approaches between Member States, and differing starting points or soil and climatic conditions. It was also pointed out that several authorities are responsible for soil protection, leading to various legal regulations in place. Additionally, data were rarely shared among national competent authorities. The lack of data also resulted in uncertainty on the question of whether existing national legislation places farmers at competitive disadvantages on the EU-level. Furthermore, a criticism arose regarding the distribution of responsibility. As such, it was the public paying for remediation when no polluter can be identified, or the polluter cannot cover the costs. Interviewees noted the need to involve all stakeholders in the policy making (i.e. the agricultural and building sectors as well as land developers).

4.5 Targeted questionnaires

It should be noted that no specific questions were targeted towards sustainable soil management as part of the targeted consultations, due to the lack of identified information gaps.

Land take

The definition of land take, if given, has shown to be inconsistent, sometimes even within one country. This seemed to result in a lack of land take targets at Member State level and the inability to monitor developments or estimate related costs. If measured, it was often done by the spatial planning department or, occasionally, the national statistics organisation. Thereby, land take was quantified by measuring soil sealing within an area, while aspects of soil health and ecosystem services were perceived as too complex. The observed time frame was also undefined. Alternatively, land take could be measured by generating data on the loss of biologically productive soil through development for settlement and transport purposes as well as intensive recreational uses, landfills, mining, power plants and similar intensive uses. To measure this some Member States have national tools in place. For instance, Belgium uses a tool, detecting infrastructure/built environment change. This was recommended for whole Europe since it would cause no additional costs. Sample-based monitoring (such as LUCAS) was perceived as inaccurate in mapping rare phenomena/changes. Instead, using European Copernicus Land Monitoring data could be more efficient.

Soil passport

Regarding the quantities of reused excavated soils, data were scattered. If measured, the definitions of included material and recycling resulted in highly varying percentages. As such, Austria stated that about 25% of (balanced) excavated soils are reclaimed for backfilling, recultivation or processed to recycled aggregates. Belgium recycled more than 90% if the soil's quality complies with the soil standards. The Netherlands stated that they reuse 95% of its excavated, clean soils. Most Member States had no quantitative targets for reclaiming/recycling excavated soils. EU action is felt to be needed in order to provide guidelines on this. To provide monetary and other resource requirements, the treatment and reuse of excavated soils was included into the general waste

treatment (Austria), the construction sector (Finland) or structured as a business itself (Belgium). For industry, reused soil was a valuable internal resource since soil that is clean but considered as waste causes costs, e.g. for landfilling. One key element of effective management was space for storage and the treatment of contaminated soil. The relative waste management costs were likely to increase when the amount of waste produced onsite decreases. However, treatment costs depended on the technologies available, regulatory obligations, administrative costs, taxation and energy costs.

Soil health certificate

Certificates of soil health rarely existed. Instead, soil was often tested only if pollution in an area due to current or previous activities was suspected. Then the polluter pays principle often applied (e.g. in Finland, the hierarchy of obligation to assess, investigate and take the responsibility to clean the site when needed was 1) polluter, 2) site owner, 3) municipality). The state is typically not legally responsible but in certain cases it has paid a variable proportion of the costs. Thereby, some counterintuitive laws were in place. For example, Finland did not differentiate between old and new contamination. In cases, where contamination happened before the enforcement of the first Finnish Waste management Act in 1979, the current site occupier is responsible, regardless of having caused the contamination or not. Soil health itself remained undefined which is why it was suggested that the EU should establish a list of parameters. Because of the lack of an agreed definition the costs for soil testing were not assessable and prices for classical soil analysis cannot be used as a proxy because current soil testing focused on the soil type (e.g. particle size distribution), rather than 'soil health'. Moreover, soil health investigations generally must be site-specific and designed in a manner affordable by small and medium-sized enterprises. Furthermore, the costs for testing depend on the level of detail, the number of sites included, the desired resolution over time and the environmental metrics included (soil, groundwater and possible influence on surface water). Generally, it was suggested that the testing should be standardised, with fixed protocols for analysis (like ISO standards).

Costs for testing were generally reported to be decreasing, partly because of economies of scale and digitalisation. Additionally, soil health certificates can be self-funding when being paid during property transitions. In Belgium, 20 000 transactions/year à EUR50 each covered a significant budget. However, the perceived additional value of certificates on land transactions was limited. Land transactions are mostly private and confidential between Selling and Buying parties. Based on existing EU-regulations, the buyer can request numerous types of information on the land from the seller. Because of the varying factors, land transactions are mostly set up case-specific and privately between the buyer and seller. Thus, fixed requirements would probably not cover all project-specific needs. However, certificates were still found to be able to increase the awareness among landowners.

Soil health and soil districts

Indicators and descriptors should be standardised across the EU, however, only for those that are relevant to all Member States. EU laws on soil health monitoring were demanded to consider already existing practices in the Member States and rather add on to those to secure the continuity of soil monitoring. To equalise previously derived data, reference points could be recalculated, e.g. via spline functions for a sampling depth of 20cm if the standard depth of soils in Member States is deeper. The EU was also asked to provide minimum requirements and guidelines for monitoring practices, including sampling strategies and analytical methodologies. A systematic sampling covering all soils is currently not feasible. Thus, threshold levels and ranges considering regional soil conditions are useful at the national level. Instead, the obligation to identify national monitoring needs could be included in the soil health law. Strategies addressing identified contaminated sites can also not be standardised to ensure a proper treatment while not risking harm to water resources, nature and human health. LUCAS was identified as promising for standardising

measurements across Europe. However, it should be combined with national strategies to cover more soil health indicators. Furthermore, it was suggested that LUCAS broadens its spatial coverage at the expense of its as high perceived sampling frequency. Nonetheless, LUCAS was seen as unlikely to be able to replace national monitoring and develop optimised remediation strategies.

Monitoring

It was indicated that the results of soil analyses are highly dependent on the applied processes. To ensure comparability across Europe, one central laboratory would be beneficial, however, this was not felt to be feasible. However, changing laboratories poses risks to comparability of samples. Accordingly, the general laboratory capacity across Europe was felt to be sufficient, although technical capacity was thought to constitute a bigger challenge. Ring testing was frequently recommended to ensure comparability. To increase the monitoring feasibility, it was recommended that national systems that are risk-based should be established. Additionally, it should be based on output targets and consider cost-benefit aspects, thus not simply testing for a pre-defined set of actions. To harmonise testing across laboratories and increase transparency of testing capacities, associations including both public and private laboratories could be established. Costs were reported as being dependent on the tested sample set and it was also reported that costs can be reduced by economies of scale and improving technologies. LUCAS was found to add only limited value to the monitoring of Member States that already have a system in place because of its lower level of detail. To increase its usefulness for national monitoring activities, adequate documentation and quality control of the sampling procedure would be needed.

Definition and identification of contaminated sites

While stakeholders preferred to define the details of this aspect on Member State level, there was an interest for the EU requesting Member States to adopt a risk-based approach (testing sites only if contamination is suspected). Factors considered in the risk assessment could be historical evidence, districts with general critical level of pollution, industrial activities and scope of pollution. Furthermore, Member States asked for non-binding indications from the EU to increase knowledge in this area, for example on contamination typical for certain districts. However, it was felt that defining the concentration limits and thresholds should be left to the Member State to allow for case-specific judgements. When the EU wants to intervene, it could happen via a framework for the Member State, including a time schedule for an action plan. Most Member States reported that they have already implemented a national assessment method to identify contaminated sites and remediation which was mostly risk-based. Its costs were dependent on the definition and case.

Remediation

Member States recognised increasing interest of national governments and municipal institutions in the topic (already prior to the Soil Health Law initiative) and expect that the remediation would continue without the implementation of an EU-wide law on Soil Health. However, it was recognised that the EU-law could contribute to covering the financial needs. In Austria, it is estimated that about EUR 62.5 million are annually invested into the remediation of historically contaminated soils, the Netherlands dedicated an annual budget of EUR 70 million for 2023-2030. EU instrument could also include costs for remediation, i.e. when the landowner is expected to cover the expense but is neither responsible for the pollution nor has the financial means to rectify it. The potential derogation from remediation differs among Member States, and sometimes within a country, depending on applicable laws. Reasons for derogation were potential negative, external impacts of remediation strategies (e.g. on local species or shift of the location of pollution), or the lack of urgency. Occasionally, excessive costs were also stated. Furthermore, remediation was found to be limited by technical capacity. Postponing the deadline for derogating remediation until 2055 was not perceived as useful, reasons for this include because new polluted areas and

pollutants might be uncovered. Furthermore, countries like the Netherlands, Austria and Belgium perceived the intervention of the EU as helpful only if the Member States stay in charge for management of implementation. Countries like Czechia and Slovenia welcomed an EU-wide law.

4.6 Other contributions

In addition to the response to the online public consultation, a total of 74 position papers were received, mostly from industry and business (n=36), academia/research (n=12) and civil society/NGOs (n=12). The majority of position papers touched on the following areas (of specific relevance to the impact assessment): 'soil health descriptors' (n=18), 'monitoring' (n=12) and 'remediation' (n=10). Cross cutting themes touched upon in position papers included aspects relating to pressures on soil health (n=10), coherence with other legislation/regulations (n=6), subsidiarity (n=6). Pressures noted included microplastics, nitrogen (over application), soil acidification, wetland draining, and pesticide usage. Relating to 'coherence', papers (n=8) noted that legislation such as the Industrial Emissions Directive which are complementary to the proposed Soil Health Law, particularly the monitoring procedures therein (and baseline reporting). Finally, relating to subsidiarity, multiple papers (n=8) noted the need to avoid a 'one-size fits all' to ensure local/national conditions are considered when defining 'healthy soils'.

ANNEX 3: WHO IS AFFECTED AND HOW?

1 INTRODUCTION

This annex sets out the practical implications of the preferred policy package for stakeholders. It describes the obligations and indicates the likely costs and benefits.

2 PRACTICAL IMPLICATIONS OF THE INITIATIVE

The preferred option will lead to a significant improvement in soil health, allowing for the general objective to be met "to achieve healthy soils across the EU by 2050, ensuring that soils can supply a balanced mix of ecosystem services at a scale sufficient to meet environmental, societal and economic needs, and reducing soil contamination to levels no longer considered harmful to human health and the environment." The objectives will be met over a long timeframe, and the time profile for the delivery of the benefits and costs will reflect this. Where possible, benefits and costs are provided per annum assuming a steady speed of delivery.

The following tables provide the summary of costs and benefits, following to some extent the different building blocks for the preferred policy package (Options 3 with Option 2 for remediation). Main economic elements have been assessed in the main report, sections 7.1.2 and 7.3, and more in detail under Annex 11, including a specific analysis as regards SSM practices. Some results, especially figures, should be interpreted as illustrative only as several assumptions have been made. In addition, in long term prospect some production cost can be reduced while economic benefit can be extended. Costs and benefits are presented at the level of the preferred policy package which may differ from the impacts for individual measures. For example, there will be significant synergies for sustainable soil management and restoration measures, with sustainable soil management contributing significantly to restoration targets.

I. Overview of benefits (total for all provisions) – Preferred option (*Estimates are relative to the baseline)*		
Description	***Amount***	***Comments***
Member States ensure that all soils are used in a sustainable manner. Soils assessed as unhealthy require restoration whenever possible and proportionate so that by 2050 all EU soil ecosystems should be in healthy condition	Quantified saving of up to EUR 52 billion per annum (see main report, table 5.2 page 21). This amount does not include several benefits that could not be quantified, in particular off-site benefits. The annual on-site benefits of some specific measures are quantified to be e.g. up to EUR 9.4 billion for cover crops, up to EUR 12 billion for reduced tillage, up to EUR 2.7 billion when using organic manures, up to EUR 2.7 billion for reduced	Benefits consist in continued, and enhanced, provision of ecosystem services with benefits including improvements in food production and food security, sequestration of carbon and reducing climate change risks, improve quality of natural resources (soil, air, water, and biodiversity), improvements to public health and safety.

	stocking density. The off-site benefits could not be quantified for the specific measures.	
Remediation of contaminated sites	Benefits are largely unquantifiable. The prudent value used is EUR 24.4 billion. In the cases where partial quantification is possible, they are significant e.g. if 166 000 sites were remediated, the increase in land value could represent a benefit of EUR 360 million per annum if used for agricultural purposes, or more if used for higher value activities (e.g. housing, commercial property, etc).	The benefits are considered to outweigh the costs, even if they are difficult to estimate.

3 BENEFITS OF PREFERRED OPTION - BY ENVIRONMENTAL, ECONOMIC, SOCIAL

The following table indicates the environmental, economic, and social benefits for the different building blocks for the preferred policy package (Options 3 with Option 2 for remediation).

Building block	Environmental	Economic	Social
Core building blocks			
SHSD – Option 3	• No direct impact. However, defining soil health descriptors, thresholds and districts is a critical facilitating step to determining the action and measures needed to achieve good soil health.	• Small, direct benefit through investment in research to refine the descriptors and thresholds, which would also involve innovation (not quantified).	• Direct benefit through the generation, provision and use of information and improvements in governance around soil health (not quantified).
MON – Option 3	• No direct impact. However, defining monitoring methods is a critical facilitating step to determining the action and measures needed to achieve good soil health.	• Small, direct benefit through investment in research to define the monitoring methods which would also involve innovation (not quantified).	• Direct benefit through the generation, provision and use of information and improvements in governance around soil health (not quantified). Benefit from the increased effectiveness of measures taken to address soil degradation through to improved data and information.
SSM – Option 3	• SSM practices will contribute to the preservation and improvement of the quality of all natural resources (soil, water, air), including the preservation and restoration of biodiversity. The magnitude and type of these benefits will depend on	• Some SSM practices could deliver economic returns – e.g. through stabilized or increased yield, reduced input (e.g. fuel, fertilizer, pesticides), or through offsite effects such as reduced water treatment or dredging costs. In certain circumstances some measures may deliver a net	• Sustainable practices ensure the continued provision of vital ecosystem services such as food and biomass production, water and nutrients cycling, climate mitigation and adaptation, and recreation. They reduce the risk and impacts of floods and droughts, of

	the actual changes of the practice type, its location and extent of implementation (not quantified). • Improvements to air and water quality can be achieved for example by introducing cover crops, which can reduce soil erosion, water evaporation, and limit nutrient leaching into ground and surface water. SSM practices can also retain water and reduce water demand, reduce salinisation and increase drought resilience, and reduce flooding risk (not quantified). • Many SSM practices will deliver a climate benefit, e.g. by increasing soil organic carbon (SOC) and hence the sequestration of carbon, or by reducing the use of fuel consumption (not possible to quantify as depends on the type of practice implemented and its context). • Positive impacts on biodiversity include for example the provision of habitats for wild pollinators nesting in soils, and a diverse soil life with positive effects on aboveground biodiversity, such as providing food for birds and mammals. Soil biodiversity is an indicator for soil health, as it supports the correct functioning of soil processes. E.g., soil organisms, in particular earthworms and arbuscular mycorrhizal fungi (AMF) are positively affected by reduced tillage, which in turn reduces leaching of soil nutrients and loss of soil carbon (not quantified).	positive return. • Estimating overall benefits is challenging as this will depend on a broad number of factors, including the basket of measures selected, the extent of implementation and the current state of practices used. Illustrative analysis of a sample of selected measures if implemented EU-wide demonstrate the order of magnitude of effects: cover crops €9.4bn pa; reduced tillage €6-12bn pa; crop rotation €0.6bn pa; organic manures €1.4bn to 2.7bn pa bn pa; stocking density €0.6bn to 2.7 bn pa. Hence investing in SSM will not only improve the sustainability of food production and its resilience but also farmers' incomes. • In the longer term, SSM practices work towards avoiding the costs of inaction on soil health, which can be substantial: the costs continued soil degradation have been estimated to amount to EUR 50 billion annually for all 27 Member States. The cost of inaction on soil degradation outweighs the cost of action by a factor of 6 in Europe. • The economic analysis has focussed on agricultural practices only but similar conclusions can be expected for practices recognized to prevent soil degradation under other land uses.	food insecurity crisis, and of heat island effects. • An obligation on Member States to use soil sustainably significantly improves governance around soil health. • Improvements in soil, food, water and air quality all have a beneficial impact on human health (not quantified). • Although the impact varies by practice, some SSM practices can increase labour inputs and hence have a positive impact on employment (not quantified). • Implementing SSM can increase landowner and farmer's skills, knowledge, and expertise, and also networks. • In urban areas, social benefits (well-being, health, recreational value) are expected to be significant if urban soils are used in a sustainable way.
DEF – Option 3	• Indirect impact. Identifying contaminated sites is a critical facilitating step to subsequent remediation activities. The existence of legal instruments has proved to be a determining factor in	• Direct benefit of levelling the playing field between Member States partly resolving high variance in contaminated site management between Member States (not quantified). • Indirect benefit through encouragement of	• Direct benefit through the generation, provision and use of information and improvements in governance around soil health (not quantified). • Help local communities suspecting

	making progress in CS management.	broader changes in land use practices to make them more sustainable and hence contribute more broadly to sustainable development (not quantified). • Small, direct benefit through development in expertise in soil investigation to support identification of sites (not quantified).	contaminated sites to fulfil their demands and advocacy queries for remediation (not quantified).
Restoration – Option 3 Remediation Option 2	• Restoration and remediation contribute to the preservation and improvement in the quality of natural resources, namely soil. The size and type of benefit delivered will depend on the practice type, location and extent of implementation (not quantified). • Restoration and remediation practices can also deliver improvements to air and water quality. Restoration practices can also improve water retainment and reduce water needs, reduce salinisation and resilience to droughts, and reduce flooding risk (not quantified). • Some restoration and remediation practices will deliver a climate benefit – e.g. many increase the capacity of soil to sequester carbon, whereas others reduce the use of fuel consumption (not possible to quantify as depends on the type of practice implemented and its context). • Restoration and remediation practices can also positively impact biodiversity. Soil biodiversity is an indicator for soil health, as it supports the correct functioning of soil processes. E.g., soil organisms, in particular earthworms and arbuscular mycorrhizal fungi (AMF), are positively affected by reduced tillage, which in turn reduces leaching of soil nutrients and loss of soil carbon (not quantified).	• Many restoration measures could deliver a positive economic benefit, e.g. through stabilized or increased yield, reduced fuel or raw materials inputs. Estimating overall benefits is challenging as this will depend on a number of factors, including the basket of measures selected for and the extent of implementation. • As illustrated above under SSM, many SSM practices would also deliver restoration of soils to good health. The economic benefits of such measures could run into the €10's billions pa. • Remediation of CS would improve land values of these sites and their potential viability for re-use in other economic activities. Conservative estimates suggest increase in land values could be worth €360m pa where land is used for agricultural uses, more for higher value land uses.	• Public attitudes moving towards climate and sustainability awareness means soil restoration will likely improve social perception of farming and therefore its licence to continue operating (not quantified) • Some restoration practices can increase labour inputs and hence employment, such as manual weeding. Remediation activities will also drive economic activity and employment in their deployment (not quantified). • Some restoration practices can offer important improvements in safety and human health risk, e.g. greater absorption of floodwaters in wetlands. Likewise eliminating toxic chemicals through remediation reduces the bioaccumulation of harmful substances through the food chain for both animals and humans (not quantified) • Contribution to sustainable development through delivery of environmental benefits (not quantified).
Add-on options			

Land take definition and obligation for monitoring and reporting	• No direct impact. But possible subsequent, indirect impact on reducing net land take due to better comparison of data across the EU. The indirect environmental benefits of limiting land take, include climate impacts, overall soil health improvements and related soil biodiversity, and potentially lower risk of flood events due to reduce water runoff from impermeable surfaces.	• No direct impacts.	• Providing a definition is likely to improve the level and overall completeness of EU-wide data on land take (not quantified).

The following table gives an overview of costs of the preferred options (Note: no costs have been identified for citizens or consumers hence this category is omitted from the table below; all upfront administrative burdens have been annualized over 20 years at a discount rate of 3%; N/A = negligible or not applicable).

		Businesses		**Administrations**	
		One-off	**Recurrent**	**One-off**	**Recurrent**
Definition of Soil Health & Soil District - preferred Option 3	Direct adjustment costs	N/A	N/A	N/A	N/A
	Direct administrative costs	N/A	N/A	**Member States** incur an upfront burden associated with defining descriptors, thresholds and ranges (around EUR 370 000)	N/A
	Direct regulatory fees and charges	N/A	N/A	N/A	N/A
	Direct enforcement costs	N/A	N/A	N/A	N/A
	Indirect costs	N/A	N/A	N/A	N/A
Monitoring - preferred Option 3	Direct adjustment costs	N/A	N/A	N/A	N/A
	Direct administrative costs	N/A	N/A	**Member States** also incur an upfront burden associated with defining the monitoring method	**Member States** incur an ongoing cost associated with sampling, transportation and analysis of samples, and reporting (around EUR 42 000 000)

				for specific descriptors and transfer functions, and setting up reporting and monitoring systems (around EUR 480 000)	
	Direct regulatory fees and charges	N/A	N/A	N/A	N/A
	Direct enforcement costs	N/A	N/A	N/A	N/A
	Indirect costs	N/A	N/A	N/A	N/A
SSM - Option 3	Direct adjustment costs	N/A	The implementation of SSM practices or the discontinuation of prohibited practices will in many cases incur an ongoing cost, spread over the time period to 2050. The total cost will be driven by a range of factors, including the practices selected for implementation, and which, how many and for what reason certain areas within districts are identified as unhealthy. Restoration is anticipated to present a significant, ongoing cost of the order of tens of billions. However, in some cases, where implemented optimally, some SSM/restoration practices can deliver a positive economic return for the landowner/soil manager. It is uncertain where costs will fall: initial obligation is on Member States. However, there is expected to be a share of costs for Businesses related to the transition to SSM. The share will be determined by the SHL implementation choices taken at Member State level along the years up to 2050. Since on-site benefits of SSM may not always	N/A	The implementation of SSM practices or the discontinuation of prohibited practices will in many cases incur an ongoing cost, spread over the time period to 2050. The total cost will be driven by a range of factors, including the practices selected for implementation (either by Member State or EU-wide), and which, how many and for what reason certain areas within districts are identified as unhealthy. It is uncertain where costs will fall but initial obligation is on Member States This is anticipated to present a significant, ongoing cost. However, in other cases, where implemented optimally, some SSM can deliver a positive economic return. Illustrative, order of magnitude, estimates for a selection of SSM practices suggest the costs could be in the €10's billions (e.g. if cover crops would be applied in croplands all over EU it would cost €6bn pa; if reduced tillage was applied in all agricultural land it would costs €13bn pa; similarly: crop rotation €120m pa; use of organic manures €1.5 to 10.5bn pa ; reduced livestock density €8.1bn pa).

			compensate on-site costs, and benefits are often foreseen in the medium and long-term, Member States are expected to facilitate adequate financial incentives that address the financial risks of the transition.		
	Direct administrative costs	N/A	N/A	**Member States** incur an upfront burden associated with engaging in development of SSM list (around EUR 45 000)	N/A
	Direct regulatory fees and charges	N/A	N/A	N/A	N/A
	Direct enforcement costs	N/A	N/A	N/A	N/A
	Indirect costs	N/A	N/A	N/A	The implementation of SSM practices would have an overlap (and could reduce) the costs of achieving restoration targets
Definition and identification of contaminated sites - Option 3	Direct adjustment costs	N/A	It is uncertain where the costs of investigation and risk assessment of CS will fall. Historically around 57% of the costs of investigating and remediating sites has fallen on private actors on average. Assuming this would apply to the identification of sites going forward, this implies a cost of €910m per annum. This is not all additional as it also captures costs of activities that would otherwise occur in the baseline, so the actual cost would be a fraction of this. Furthermore, an estimated 1% of these costs would be for the recording of the information, which is a direct administrative cost.	N/A	It is uncertain where the costs of investigation and risk assessment of CS will fall. Historically around 43% of the costs of investigating and remediating sites has fallen on public actors on average. Assuming this would apply to the identification of sites going forward, this implies a cost of €690m per annum. This is not all additional as it also captures costs of activities that would otherwise occur in the baseline, so the actual cost would be a fraction of this. Furthermore, an estimated 1% of these costs would be for the recording of the information, which is a direct administrative cost.
	Direct administrative costs	N/A	The direct administrative cost related to the recording of the identification of contaminated sites is estimated to be 1% of the overall cost indicated in direct	N/A	The direct administrative cost related to the recording of the identification of contaminated sites is estimated to be 1% of the overall cost indicated in direct adjustment costs, that is €6.9

			adjustment costs, that is €9.1 million as best estimate.		million as best estimate.
	Direct regulatory fees and charges	N/A	N/A	N/A	N/A
	Direct enforcement costs	N/A	N/A	N/A	Where the responsibility for investigation and risk assessment of CS is passed through to landowners or operators, Member States may face some additional enforcement costs (but these are likely to be outweighed by the savings in costs of investigation).
	Indirect costs	N/A	Identification of the contamination status of sites and developing the public register will also define the ambition (and direct costs) of remediation activities under building block 5.	N/A	Identification of the contamination status of sites and developing the public register will also define the ambition (and direct costs) of remediation activities under building block 5.
Restoration Option 3 / Remediation - Option 2	Direct adjustment costs	N/A	It is somewhat uncertain where the costs of remediation measures will fall. Historically, around 57% of expenditure on contaminated site management has fallen on private actors. The total cost is highly uncertain. The cost of remediating CS for businesses could be around €469m pa (spread over 25 years). Not all of these costs are additional as it also captures costs of activities that would otherwise occur in the baseline. Soil restoration measures are expected to imply significant, ongoing costs. As illustrated under SSM, restoration practices could imply costs in the range of EUR 28-38 billion pa. These would be distributed over the 25 year or so implementation period. However, in other cases, where implemented optimally, some restoration practices	N/A	It is somewhat uncertain where the costs of remediation measures will fall. Historically, around 43% of expenditure on contaminated site management is from public budgets. The total cost is highly uncertain. The cost of remediating CS for authorities could be around €354m pa (Spread over 25 years). Not all of these costs are additional as it also captures costs of activities that would otherwise occur in the baseline. It is somewhat uncertain where the costs of implementing restoration measures will fall. The obligation is placed on Member States to ensure all districts achieve good health status. In some cases, there may be significant, ongoing costs. As illustrated under SSM, restoration practices could imply costs in the €10's billions pa. These would be distributed over the 25 year or so implementation period. However, in other cases, where implemented optimally, some restoration practices (e.g. through raw material

			(e.g. through raw material input savings or yield improvements) and even remediation practices (e.g. through improvement to the value of land) could deliver a positive economic return. There is expected to be a share of soil restoration costs for Businesses. The share will be determined by the SHL implementation choices taken at Member State level along the years up to 2050. Since on-site benefits of soil restoration may not always compensate on-site costs, and benefits are often foreseen in the medium and long-term, Member States are expected to facilitate adequate financial incentives that address the financial risks of the restoration.		input savings or yield improvements) and even remediation practices (e.g. through improvement to the value of land) could deliver a positive economic return.
	Direct administrative costs	N/A	N/A	**Member States** incur an upfront burden associated with developing a soil health plan (around EUR 551 000).	**Member States** incur a moderate, ongoing additional burden associated with the 5 yearly reporting, review and possible revision of the soil health plan (EUR 1 400 000).
	Direct regulatory fees and charges	N/A	N/A	N/A	N/A
	Direct enforcement costs	N/A	N/A	N/A	There may be a small, ongoing cost for Member States to ensure the implementation of restoration and remediation practices.
	Indirect costs	N/A	N/A	N/A	N/A
Action – Land take	Direct adjustment costs	N/A	N/A	N/A	N/A
	Direct administrative costs	N/A	N/A	**Member States** incur an upfront burden associated with establishing monitoring networks, compiling information and reporting – including defining a baseline (around EUR 366 000)	**Member States** incur a moderate, ongoing burden associated with ongoing monitoring and reporting around land take (where Member States make use of EEA or Copernicus services, these costs may be smaller) (around EUR 3 600 000).

	Direct regulatory fees and charges	N/A	N/A	N/A	N/A
	Direct enforcement costs	N/A	N/A	N/A	N/A
	Indirect costs	N/A	N/A	N/A	N/A

Administrative costs and burden for offsetting	Citizens/Consumers		Businesses		Administrations	
	One-off	Recurrent	One-off	Recurrent	One-off	Recurrent
Costs related to the 'one in, one out' approach						
Administrative costs (for offsetting)	N/A	N/A	N/A	Administrative cost of EUR 9.1 million pa related to the recording of the identification of contaminated sites. The actual administrative burden element for offsetting will be smaller as not all additional to the baseline.	N/A	N/A

4 CONTRIBUTION TO SDGS

Soil health directly contributes to the achievement of several of the **Sustainable Development Goals:** SDG 2 (zero hunger), 3 (good health and wellbeing), 6 (clean water and sanitation), 11 (sustainable cities and communities), 12 (responsible consumption and production), 13 (climate action) and 15 (life on land), and indirectly impacts all other SDGs. Through SDG 15.3, the EU committed to combat desertification, restore degraded land and soil, including land affected by desertification. See annex 11 for details.

ANNEX 4: ANALYTICAL METHODS

1 METHODOLOGY FOR THE ASSESSMENT OF IMPACTS

The impacts have been assessed with a methodology that is in line with the Better Regulation Guidelines and that facilitates timely evidence collection, stakeholder engagement and analysis of information.

Based on the Better Regulation Guidelines, interventions were compared on the basis of how well they address the objectives, considering their effectiveness, efficiency and coherence. All options were screened against the long-list of potential impacts as defined in Tool #18 – identification of impacts. An initial assessment of the expected absolute and relative magnitude of these impacts and their likelihood was carried out to produce a shortlist of impact types, prioritised on the basis of their significance (see table in Annex 9 on "Significant impacts for in-depth assessment and core indicators"). This shortlist was used as a guide for the assessment of all options. Not all impacts were rigidly assessed for all options as in some cases, the impacts were considered insignificant. In the assessment, greater attention was paid to those impacts identified as 'high priority' and greater effort made to quantify these effects, in contrast to those defined as 'low priority' which were assessed qualitatively. The result of this screening of impacts was that 35 economic, environmental, and social impact categories were selected for further consideration and assessment of which 11 were identified as 'high priority'. The table provides the impact screening alongside a brief description of the specific impacts and proxy indicators considered in this assessment of options for the Soil Health Law.

2 QUANTITATIVE AND QUALITATIVE ASSESSMENT

Across each of these specific indicators, available evidence on the effectiveness, efficiency and coherence of the options was collated and assessed in comparison to the baseline. Where possible, the impacts have been assessed quantitatively, but this has not been possible in all cases. Where quantification was not possible, impacts were assessed in a qualitative way, clearly indicating the type of the most important impacts and their magnitude.

3 ECONOMIC IMPACTS ASSOCIATED WITH SSM

One area of focus for the quantification of impacts was the economic costs and benefits associated with implementing both sustainable soil management practices (SSM) and remediation of contaminated land.

A wide range of SSM practices exists with varying applicability across different climates, soil types and land-uses. Furthermore, the soil threat that is addressed, and the costs and benefits of each practice, can vary widely depending on the location, means and extent of implementation. Given limitations in the underlying evidence base, a sample of SSM practices has been selected for quantitative analysis to illustrate the potential costs and economic benefits of such measures. Measures were selected that are more universally applicable, cover a broad range of soil threats and likely deliver significant economic impacts. For each SSM practice, publicly available literature and data have been used to build a bottom-up quantification of economic costs and benefits, scaled up to the EU level. There are many environmental and social benefits associated with SSM practices, however, the economic analysis has focussed purely on the economic costs and benefits e.g., impacts on yields or impacts on use of external inputs.

The analysis sought to illustrate the order of magnitude of effects that could be expected if the selected SSM practices were implemented.

4 STANDARD COST MODELLING

In light of the "one-in-one-out" agenda, a second area of focus was the quantification of the administrative burdens associated with the options. A bottom-up cost modelling approach estimated the additional administrative burden on businesses, citizens and public authorities that would result from the adoption of the options, inspired by the Standard Cost Modelling approach outlined in Tool #58 of the Better Regulation Toolbox, and following these steps:

1) **Preparatory analysis**. This included the qualitative identification of the scope and type of administrative impacts on businesses, citizens and public authorities. This was followed by the identification of evidence needs, e.g., baseline administrative requirements and additional inputs required, their intensity and frequency over a period (e.g. next 20 years) and unit costs. Finally, sources were identified and desk research and a rapid evidence review were carried out, building on the consultation activities, and other key sources.
2) **Data capture and standardisation**. Available data were collated for all the parameters identified in step 1, structured and saved within an Excel workbook.
3) **Calculation**. A baseline for each option was quantified and the potential additional administrative burden generated by the options was calculated with the bottom-up cost modelling approach.

Annual averages or annualised figures were calculated and presented for comparison. A 3% real discount rate was employed as outlined in the Administrative Burden Calculator. These assessments were quality assured by experts in the supporting consultant team and validated, and uncertainties and sensitivities considered.

5 SUBSIDIARITY

Across the five building blocks, the key difference between the options is subsidiarity and flexibility. A key consideration in comparing between the options therefore is the potential impact that different levels of subsidiarity could have on implementation in practice. This is an important area of uncertainty in the analysis. Therefore, the experiences in other areas of EU legislation with similarities and parallels to soil health were considered.

6 KEY DATA SOURCES

6.1 Literature review

The literature review formed a critical part of the data collection and formation of the evidence base underpinning the impact assessment. The literature review included information from a wide range of stakeholders, including industry, local, regional and national authorities, researchers, and non-governmental organisations (NGOs). Key data sources included policy reports from the European Commission and other public bodies (including evaluations, impact assessments, studies, audits, information on infringements, complaints, court rulings, etc.), academic papers, techno-scientific publications, databases, in particular data from Eurostat to support the quantitative assessment, and other grey literature, such as position papers, proceedings of conferences, symposia and meetings. The literature review started with the identification of 'information and data' needs for the overall project along with the identification of relevant data sources. The identified literature was subject to a preliminary screening that determined the availability and reliability of information. A final list of relevant references was then identified for critical assessment. The detailed review of the literature allowed the identification of potential gaps, contradictory statements, and additional questions that were then discussed during the consultation activities.

6.2 Consultation activities

The consultations conducted sought to validate or refine any findings (from the above analytical steps) and to fill any identified information gaps.

6.3 Call for evidence

The call for evidence took place between 15 February and 16 March 2022, and received 189 responses. The majority of respondents were EU citizens (n=41, 22%), business associations (n=37, 20%) and non-governmental organisations (n=35, 19%). The majority of respondents supported or strongly supported the Soil Health Law (n=149, 79%), despite a number of critiques and concerns as highlighted in the consultation report (cfr. annex 2).

6.4 Online public consultation

An online public consultation was accessible between 1 August and 24 October 2022, receiving a total of 5,782 responses. The questionnaire consisted of: 1) a general section focused on views on soil health issues which did not require technical or expert knowledge, and 2) a specialised section addressed to respondents with such knowledge. The questionnaire covered aspects related to, inter alia, the drivers of soil degradation, the current management of these drivers, and views on potential measures to address soil degradation. In addition to the questionnaire, respondents were given the opportunity to provide any further documentation (such as position papers, scientific literature, sector analysis reports). 75 documents were received and analysed as part of the impact assessment.

6.5 Targeted interviews and engagement

As part of the consultations, two interviews were organised with German (Federal Ministry for the Environment) and Austrian (Federal Ministry of Agriculture, Regions and Tourism) representatives. These interviews focused on learning from experiences and filling knowledge gaps on the costs and benefits related to soil health legislations, notably around the feasibility and means of implementation of the various options.

In addition to these interviews, a targeted questionnaire was disseminated to expert stakeholders between 14 and 28 November 2022. The questionnaire sought to fill any information gaps throughout the impact assessment, with questions for stakeholders with relevant experience in the thematic areas. 18 responses were received.

6.6 Meetings of the Soil Expert Group

The Soil Expert Group, with soil experts appointed by the different Member States, met seven times online in 2022 (on 17/2, 23/3, 20/4, 19/5, 08/06, 29/6, 08/09) with participation of almost all MS and on average hundred experts per session. In these meetings key elements of the building blocks and add-ons of the Soil Health Law were discussed on the basis of working papers drafted by the Commission. The minutes of these meetings are available online (Register of Commission expert groups and other similar entities).

6.7 Meeting of the Enlarged Soil Expert Group

Following a call for application, the Soil Expert Group with Member States' representatives has been enlarged with 25 organizations (see Register of Commission expert groups and other similar entities). The first stakeholder meeting in this new configuration took place on 4 October 2022. The event was hybrid with both in-person (n=56) and online participants (n=82) present. The meeting focussed on gathering stakeholder feedback on the potential options put forward in the Soil Health Law, with specific Q&A sessions for each of the thematic areas.

ANNEX 5: POLITICAL CONTEXT

The soil file has a long history at EU level. Regulating this precious and finite natural resource at EU level is challenging but urgently necessary. The Soil Health Law is a crucial centrepiece of the European Green Deal[7] and an indispensable policy instrument to achieve EU policy objectives such as climate neutrality, circular economy, zero pollution, sustainable food systems, clean energy, resilient nature and biodiversity, human health and well-being. Without healthy soils, the Green Deal objectives cannot be achieved. Legislating soils in an integrated and holistic manner is needed but complex due to the many interconnections with other policies and the wide scope (touching on all terrestrial ecosystems). It is also ground-breaking pioneering work that is being closely watched by the rest of the world.

"Soil is the Green Deal connector" modified from EEA Signals 2019 - www.eea.europa.eu/legal

History of the soil file before the European Green Deal

In April 2002, the Commission announced for the first time its intention to develop a Strategy for Soil Protection and to prepare the ground for a proposal for EU soil legislation.[8] As a result, the Soil Thematic Strategy[9] (STS) was adopted in 2006 around four pillars: integration of soil-protecting measures in other policies, closing knowledge gaps through research, increasing public awareness, and the development of EU soil framework legislation.

The STS was accompanied by a proposal for a Soil Framework Directive[10] supported by an impact assessment.[11] The European Parliament adopted a positive opinion on the text in first reading in November 2007.[12] Difficult political discussions took place in the Council of the EU under successive EU presidencies, but without agreement due to a blocking minority of five Member States.[13] As a result, the proposal was withdrawn in May 2014 by the Commission with the statement that "*the Commission remains committed to the objective of the protection of soil and will examine options on how to best achieve this. Any further initiative in this respect will however have to be considered by the next College*".[14]

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[8] COM/2002/179 final
[9] COM/2006/231 final
[10] COM/2006/232 final
[11] SEC/2006/620
[12] Position of the European Parliament adopted at first reading on 14 November 2007 with a view to the adoption of Directive 2008/.../EC of the European Parliament and of the Council establishing a framework for the protection of soil
[13] Procedure File: 2006/0086(COD) | Legislative Observatory | European Parliament (europa.eu)
[14] Withdrawal of obsolete Commission proposals (2014/C 153/03) OJ C 153, 21.5.2014, and Corrigendum OJ C 163, 28.5.2014

In 2012, the Commission reported on the implementation of the STS, the soil degradation trends in the EU and globally, and the future challenges for soil protection.[15] In November 2013, the EU agreed in its 7th Environment Action Programme[16] that "*the Union and its Member States should also reflect as soon as possible on how soil quality issues could be addressed using a targeted and proportionate risk-based approach within a binding legal framework. Targets should also be set for sustainable land use and soil.*" Therefore, the Commission set up an expert group with soil specialists nominated by the Member States and with a connection with national authorities dealing with soil issues at a political level. The expert group first met in October 2015 and has been supporting the Commission in the development and implementation of the Soil Strategy and the new legislative proposal.

Lessons learnt from the previously proposed Soil Framework Directive

The debates on the **proposal of 2006 for the Soil Framework Directive** and its subsequent withdrawal in 2014 showed that regulating soil at EU level can trigger resistance from different stakeholder groups and Member States. Therefore, the Commission has invested extensively in meeting and consulting **stakeholders** (e.g. presentations, conferences, networking, targeted meetings, missions, etc.) and keeping an open and constant dialogue with Member States and some regions (e.g. Salzburg, Lower Saxony, Flanders, Wallonia) through the establishment of the **EU expert group on soil protection**.[17,18] Soils are often privately owned but at the same time provide public benefits, and while land users usually have the prerogative on soil management, the costs of soil degradation and the reduced provision of ecosystem services also impact society. Maintaining the principles of **subsidiarity** and **proportionality** through sufficient **flexibility** is key. A new proposal should take sufficient account of the variability of soils, climatic conditions, and land use. A more **result-oriented approach** with clear targets and less focus on the process or measures to be implemented should allow for sufficient flexibility at national level, while still satisfying the need for protecting soil coherently across the EU. At the same time, the latest data show that soil health is further deteriorating and the consultations indicate that a majority of relevant stakeholders acknowledges the necessity to act at EU level.

Biodiversity Strategy for 2030

As part of the Green Deal, a new Biodiversity Strategy for 2030 was adopted in 20 May 2020,[19] which aimed to address land take and restore soil ecosystems, and that stated the following on soil:

- Soil is one of the most complex of all ecosystems. It is a habitat in its own right, and home to an incredible diversity of organisms that regulate and control key ecosystem services such as soil fertility, nutrient cycling and climate regulation. Soil is a hugely important non-renewable resource, vital for human and economic health, as well as the production of food and new medications.
- In the EU, the degradation of soil is having considerable environmental and economic consequences. Poor land management, such as deforestation, overgrazing, unsustainable farming and forestry practices, construction activities and land sealing are among the main causes of this situation. Despite recent reductions in the pace of soil sealing, fertile soils continue to be lost to land take and urban sprawl. When compounded by climate change, the

[15] COM/2012/46 final
[16] Decision 1386/2013/EU of the European Parliament and of the Council of 20 November 2013 on a General Union Environment Action Programme to 2020 "Living well, within the limits of our planet"
[17] Register of Commission expert groups and other similar entities: expert group on soil protection
[18] Register of Commission expert groups and other similar entities: expert group on the Soil Strategy
[19] COM/2020/380 final

effects of erosion and losses of soil organic carbon are becoming increasingly apparent. Desertification is also a growing threat in the EU.

- It is therefore essential to step up efforts to protect soil fertility, reduce soil erosion and increase soil organic matter. This should be done by adopting sustainable soil management practices, including as part of the CAP. Significant progress is also needed on identifying contaminated soil sites, restoring degraded soils, defining the conditions for their good ecological status, introducing restoration objectives, and improving the monitoring of soil quality.
- To address these issues in a comprehensive way and help to fulfil EU and international commitments on land-degradation neutrality, the Commission will update the EU Soil Thematic Strategy in 2021. The Zero Pollution Action Plan for Air, Water and Soil that the Commission will adopt in 2021 will also look at these issues. Soil sealing and rehabilitation of contaminated brownfields will be addressed in the upcoming Strategy for a Sustainable Built Environment. A mission in the area of soil health and food under Horizon Europe will aim to develop solutions for restoring soil health and functions.

EU Soil Strategy for 2030

The new EU Soil Strategy for 2030[20] was adopted on 17 November 2021 and sets the vision that by 2050, all EU soil ecosystems are in healthy condition and are thus more resilient, which will require very decisive changes in this decade. By 2050, protection, sustainable use and restoration of soil has become the norm. As a key solution, healthy soils contribute to address our big challenges of achieving climate neutrality and becoming resilient to climate change, developing a clean and circular (bio)economy, reversing biodiversity loss, safeguarding human health, halting desertification and reversing land degradation. The Soil Strategy contributes and reconfirms the following medium- and long-term EU objectives that are relevant and linked to soil health:

Medium-term objectives by 2030:

- Combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world (Sustainable Development Goal 15.3).[21]
- Significant areas of degraded and carbon-rich ecosystems, including soils, are restored[22].
- Achieve an EU net greenhouse gas removal of 310 million tonnes CO_2 equivalent per year for the land use, land use change and forestry (LULUCF) sector.[23]
- Reach good ecological and chemical status in surface waters and good chemical and quantitative status in groundwater by 2027.[24]
- Reduce nutrient losses by at least 50%, the overall use and risk of chemical pesticides by 50% and the use of more hazardous pesticides by 50% by 2030.[25]
- Significant progress has been made in the remediation of contaminated sites.[26]

Long-term objectives by 2050:

- Reach no net land take[27,28].

[20] COM/2021/699 final
[21] United Nations (2015), Transforming our world: the 2030 Agenda for Sustainable Development.
[22] EU Biodiversity Strategy for 2030, COM(2020)380.
[23] LULUCF Regulation, 2023/839.
[24] Water Framework Directive 2000/60/EC
[25] EU Farm to Fork Strategy, COM(2020) 381 and Commission proposal for a Regulation on the sustainable use of plant protection products and amending Regulation (EU) 2021/2115, COM(2022) 305.
[26] EU Biodiversity Strategy for 2030, COM(2020)380.
[27] Roadmap to a Resource Efficient Europe, COM/2011/0571.

- Soil pollution should be reduced to levels no longer considered harmful to human health and natural ecosystems and respect the boundaries our planet can cope with, thus creating a toxic-free environment.[29]
- Achieve a climate-neutral Europe[30] and, as the first step, aim to achieve land-based climate neutrality in the EU by 2035.[31]
- Achieve for EU a climate-resilient society, fully adapted to the unavoidable impacts of climate change by 2050.[32]

The Soil Strategy also defines soils as healthy when they are in good chemical, biological and physical condition, and thus able to continuously provide as many of the following ecosystem services as possible:

- Provide food and biomass production, including in agriculture and forestry;
- Absorb, store and filter water and transform nutrients and substances, thus protecting groundwater bodies;
- Provide the basis for life and biodiversity, including habitats, species and genes;
- Act as a carbon reservoir;
- Provide a physical platform and cultural services for humans and their activities;
- Act as a source of raw materials;
- Constitute an archive of geological, geomorphological and archaeological heritage.

The Soil Strategy outlines a number of legislative options that should be considered in this impact assessment:

- Indicators for soil health that should be achieved by 2050, and their range of values;
- Requirements for the sustainable use of soil so that its capacity to deliver ecosystem services is not hampered, including the option of setting legal requirements;
- Provisions on monitoring soil and soil biodiversity and reporting on the condition of soil, building on existing national and EU schemes, including the LUCAS soil module;
- Legal basis for the LUCAS soil survey to legally anchor the objectives, conditions, funding, access to land, use of data and privacy issues;
- Options for proposing legally binding provisions to:
    - Identify contaminated sites,
    - Set up an inventory and register of those sites,
    - Remediate the sites that pose a significant risk to human health and the environment by 2050;
- Adequate integration and coordination of soil and water management;
- Need for legal provisions to make the reporting on the progress in managing soil contamination mandatory and uniform across the EU;
- Measures that can contribute to achieving the objective of the reduction of nutrient losses by at least 50% (resulting in the reduction of use of fertilizers by at least 20%), including the option of making this target legally binding;
- Definition of net land take and provisions for Member States to monitor and report on progress in achieving their targets to reduce net land take by 2030;

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[28] 7th EU Environment Action Programme, Decision No 1386/2013/EU.
[29] Pathway to a Healthy Planet for All, EU Action Plan: 'Towards Zero Pollution for Air, Water and Soil', COM(2021)400.
[30] Climate Law Regulation (EU) 2021/1119.
[31] LULUCF Regulation (OJ L 156, 19.6.2018, .
[32] EU Climate Adaptation Strategy, COM/2021/82.

- Options for monitoring and reporting on progress towards the land take targets that Member States should set and the implementation of the land take hierarchy on the basis of the data reported by Member States;
- Feasibility of the introduction of a soil health certificate for land transaction to provide land buyers with information on the key characteristics and health of the soils in the site they intend to purchase;
- Need and potential for legally binding provisions for a passport for excavated soil.

Position of the European Parliament

On 28 April 2021, the European Parliament adopted by 605 votes to 55, with 41 abstentions, a resolution on soil protection.[33] The resolution highlighted that soil is an essential, complex, multifunctional and living ecosystem of crucial environmental and socioeconomic importance which performs many key functions and delivers services vital to human existence and ecosystem survival so that current and future generations can meet their own needs.

The resolution stressed that the lack of a comprehensive, adequate, coherent and integrated EU legal framework for protecting land and soil resources has been identified as a key gap that contributes to the continuous degradation of many soils within the EU, reduces the effectiveness of the existing incentives and measures, and limits Europe's ability to achieve its environmental, sustainable development and climate-related agenda and international commitments. In relation to this EU legal framework the Parliament:

- Emphasises the importance of protecting soil and promoting healthy soils in the Union, bearing in mind that the degradation of this living ecosystem, component of biodiversity, and non-renewable resource continues, in spite of the limited and uneven action being in some Member States; stresses the costs of inaction on soil degradation, with estimates in the Union exceeding EUR 50 billion per year;
- Underlines the risks stemming from the absence of a level playing field between the Member States and their different protection regimes for soil to the functioning of the internal market, which should be addressed at Union level in order to prevent distortion of competition between economic operators; underlines that the new framework would address the problem of lacking legal certainty for companies and that it has strong potential to stimulate fair competition in the private sector, develop innovative solutions and know-how and strengthen the export of technologies outside the Union;
- Stresses that soil, which is a common resource, is, unlike air or water, not covered by specific legislation; welcomes, consequently, the Commission ambition to propose a coherent and integrated EU soil protection framework;
- Calls on the Commission to design an EU-wide common legal framework, with full respect for the subsidiarity principle, for the protection and sustainable use of soil, addressing all major soil threats, which shall include, inter alia:
    - common definitions of soil, its functions, and criteria for its good status and sustainable use;
    - objectives, indicators, including harmonised indicators, and a methodology for the continuous monitoring of and reporting on soil status;
    - measurable intermediate and final targets with harmonised datasets and measures to tackle all identified threats and appropriate timelines, taking into consideration best practices learned from 'first mover' efforts and respecting land ownership rights;

[33] 2021/2548(RSP)

    - clarification of the responsibilities of different stakeholders;
    - a mechanism for the sharing of best practices and training, as well as adequate control measures;
    - adequate financial resources;
    - effective integration with relevant policy targets and instruments;
- Calls on the Commission to accompany its legal proposal with an in-depth impact assessment study based on scientific data, which will analyse both the costs of action and non-action in terms of immediate and long-term impacts on the environment, human health, the internal market and general sustainability;
- Points out that the common framework shall also consist of provisions regarding the mapping of risk areas and of contaminated, brownfield and abandoned sites, as well as for the decontamination of contaminated sites; calls on the Commission and the Member States to apply the polluter pays principle and to propose a mechanism for the remediation of orphan sites; considers that the remediation of these sites could be funded by European funding mechanisms;
- Calls on the Commission to consider proposing an open list of activities which can have significant potential to cause soil contamination, to be compiled from comprehensive lists at national level; stresses that this list should be publicly accessible and regularly updated; calls on the Commission, furthermore, to facilitate the harmonisation of risk assessment methodologies for contaminated sites;
- Believes that past efforts by Member States to identify contaminated sites should be taken into account; underlines that the identification of contaminated sites reflected in national inventories should be updated regularly and made available for public consultation; believes, furthermore, that provisions need to be adopted in the Member States to ensure that parties to land transactions are aware of the state of the soil and able to make an informed choice;
- Calls on the Commission to include in this common framework effective measures on prevention and/or minimisation of soil sealing and any other land use affecting soil performance, giving priority to brownfield land and soil recycling and the recycling of abandoned sites over use of unsealed soil with the aim of reaching the objective of no land degradation by 2030 and no net land take by 2050 at the latest, with an interim target for 2030, in order to achieve a circular economy, and to also include the right to effective and inclusive public participation and consultation on land use planning and to propose measures providing for construction and drainage techniques that would allow as many soil functions as possible to be preserved, where sealing occurs.

In its resolution on the Biodiversity Strategy for 2030 of 8 June 2021,[34] the European Parliament repeated its call on the Commission to submit a legislative proposal for the establishment of a common framework, with full respect for the subsidiarity principle, for the protection and sustainable use of soil and for the effective integration of that protection in all relevant EU policies. A common framework on soil should address all the main soil threats, including loss of soil biodiversity, loss of soil organic matter, contamination, salinisation, acidification, desertification, erosion and soil sealing.

The Soil Strategy and the announcement to propose a Soil Health Law, was presented by the Commission in the ENVI Committee on 6 December 2021[35] and the AGRI Committee of 3 February 2022,[36] followed by an exchange of views.

[34] European Parliament resolution of 9 June 2021 on the EU Biodiversity Strategy for 2030: Bringing nature back into our lives (2020/2273(INI)).

[35] See minutes https://www.europarl.europa.eu/doceo/document/ENVI-PV-2021-12-06-1_EN.pdf

Position of the Council of the EU

The Council of the EU supported the Commission in stepping up efforts to better protect soils and reaffirmed its commitment to land-degradation neutrality. The Council wants to address desertification and land degradation in the EU and make progress towards the objective of 'zero net land take' by 2050.[37]

In reply to an oral question from the European Parliament,[38] the Council confirmed its commitment to the Sustainable Development Goals (SDGs) and SDG 15.3, which aims to combat desertification, restore degraded land and soil, including land affected by desertification, droughts and floods, and strives to achieve a land degradation neutral world by 2030. The Council Presidency remained fully committed and determined to work with the Parliament and the Commission on soil protection once the updated Soil Strategy has been put forward and on any emerging initiatives that would be proposed in this regard.

The Soil Strategy and the announcement to propose a Soil Health Law, was presented by the Commission in the Environment Council of 20 December 2021, followed by an exchange of views.[39]

Position of the European Committee of the Regions

The European Committee of the Regions (CoR) called on the Commission to propose a Directive on agricultural soils and welcomed the announcement of the Soil Health Law to halt the decrease in organic matter content, stop erosion and prioritise soil life in agricultural practices.[40]

In its opinion on the Zero Pollution Action Plan,[41] the Committee "welcomes the EU Soil Strategy and the announcement of the EU Soil Health Law, as supporting soil protection through a European framework is a crucial step towards climate neutrality, biodiversity restoration, zero pollution, as well as healthy and sustainable food system. The Committee argues at the same time for flexibility in the national implementation of actions under the action plan and the new Soil Strategy because there are major regional differences in terms of spatial planning, landscape, soil (composition) and soil use."

Position of the European Economic and Social Committee

The European Economic and Social Committee (EESC) adopted an opinion on the new EU Soil Strategy on 23 March 2022 and welcomed the initiative.[42] As regards the Soil Health Law, the Committee:

- Urges the Commission to promote a European legal framework that is effective at preventing soil degradation, supporting restoration programmes and fixing the road map towards a good soil health status. The Committee also calls for the necessary allocation of resources from the European budget for the implementation of the Soil Strategy.

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[36] See minutes https://www.europarl.europa.eu/doceo/document/AGRI-PV-2022-02-02-1_EN.pdf
[37] Council Conclusions of 16 October 2020 on Biodiversity – the need for urgent action
[38] Question for oral answer O-000024/2021 from the Parliament to the Council on soil protection
[39] https://www.consilium.europa.eu/en/meetings/env/2021/12/20/
[40] Opinion NAT-VII/010 of the plenary session of 3, 4 and 5 February 2021 on Agro-ecology
[41] Opinion ENVE-VII/019 of the plenary session of 26-27 January 2022 on the EU Action Plan: 'Towards zero pollution for air, water and soil'
[42] Opinion NAT/838 on the new EU Soil Strategy of 23 March 2022

- Recommends carrying out the planned impact assessment and then to decide upon the most appropriate instruments. The EESC also recommends for the framework to build on the following principles, so as to ensure a level playing-field for all stakeholders operating in the economic sectors linked with soil and its use:
    - providing a clear definition of "healthy soils", indicators and threshold values developed on a scientifically sound basis;
    - setting clear targets for 2030 based on the definition of "healthy soils";
    - guaranteeing an adequate level of environmental protection and climate action;
    - fully respecting the principle of subsidiarity, given the heterogeneity of soils, the variety of uses and demands for use, the different geological, climatic and landscape conditions as well as the differentiated hazards and national rules already in place;
    - prioritising of measures on education, advice, knowledge transfer and incentives for soil protection over additional legal obligations;
    - keeping the administrative burden for all actors to a reasonable level while ensuring its affordability.
- Recommends having the broadest possible discussion, with economic and social actors as well as with civil society organisations, about the contents of the legislative initiative. For this reason, the Committee calls on the Commission to present a proposal as soon as possible, in order to allow time for the discussion before the vote of the text within the current legislative mandate.
- Highlights the need to address all aspects of soil degradation, with a special focus on the topics of soil contamination, land take by urban developments and infrastructure, and of organic matter depletion in agricultural soils, as these phenomena have a particularly deep and potentially irreversible impact on soil health and its capability in terms of providing ecosystem services.
- There is a great diversity of soils in Europe, reflecting differences in climate, geology and land use; the threats to which soils are exposed also differ in type and intensity, therefore the policies developed in order to prevent soil degradation requires adaptation to different geographical and cultural contexts. Legislation for soil protection in Member States (MSs) is heterogeneous and fragmented, and many soil threats are not addressed by the policy and legislative frameworks of several MSs.
- Expresses great concern about land take caused by urbanisation processes which, in the vast majority of cases, affect fertile soils of plains and coastal areas. The goal "zero net land take" to be pursued by 2050, must be accompanied by incentives to encourage the reuse of abandoned sites and the restoration of unused impermeable surfaces.

European Court of Auditors

The European Court of Auditors performed an audit in 2018 on ‘Combating desertification in the EU: a growing threat in need of more action’. In its final report the ECA “found that the risk of desertification in the EU was not being effectively and efficiently addressed. While desertification and land degradation are current and growing threats in the EU, the Commission does not have a clear picture of these challenges, and the steps taken to combat desertification lack coherence. We found that there is no agreed methodology for assessing desertification and land degradation within the EU. Although the Commission and the Member States collect data about various factors with an impact on desertification and land degradation, the Commission does not analyse it to come up with a conclusive assessment on desertification and land degradation in the EU.”

The Court also recommended that:

- The Commission, in cooperation with the Member States, should: (a) establish a methodology and relevant indicators –starting with the UNCCD's three indicators – to assess the extent of desertification and land degradation in the EU; (b) based on agreed methodology, collate and analyse relevant data on desertification and land degradation, much of which is already being collected, and regularly present it in a clear, user-friendly way for public use, preferably in the form of interactive maps for use in the EU.
- The Commission should assess the appropriateness of the current legal framework for the sustainable use of soil across the EU, including addressing desertification and land degradation.
- The Commission should: (a) further detail how the EU's commitment to land degradation neutrality will be achieved by 2030, and report periodically on progress; (b) provide guidance to Member States on practical aspects of preserving soil and achieving land degradation neutrality in the EU, including dissemination of good practices; (c) on their request, provide technical support to Member States to establish national action plans to achieve land degradation neutrality by 2030, including identifying targeted measures, clear milestones, and a plan for intermediate reporting at Member State level.

International context

At global level there is growing awareness on soil degradation and the need to preserve and restore this finite and precious natural resource. This evolution is reflected in the agenda of several international conventions and initiatives.

2030 Agenda for sustainable development

Soil health directly contributes to the achievement of several of the Sustainable Development Goals, e.g. SDG 2 (zero hunger), 3 (good health and wellbeing), 6 (clean water and sanitation), 11 (sustainable cities and communities), 12 (responsible consumption and production), 13 (climate action) and 15 (life on land), and indirectly impacts all other SDGs. Through SDG 15.3, the EU committed to combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world by 2030.

United Nations Convention to Combat Desertification (UNCCD)

Since its adoption in 1994 and entry into force in 1996, the UNCCD combats desertification and mitigates the effects of drought in countries experiencing desertification, particularly in Africa, through international cooperation and partnership arrangements. All 196 Parties have obligations in terms of the collection of information, research, capacity building and the financial support of countries affected by desertification. Thirteen EU Member States have declared themselves as affected by desertification, based on their own self-assessments: Bulgaria, Greece, Spain, Croatia, Italy, Cyprus, Latvia, Hungary, Malta, Portugal, Romania, Slovenia and Slovakia. These affected Parties have to develop and carry out national, sub-regional and regional action programmes in close cooperation with the local stakeholders. The UNCCD is active on the concrete development and the implementation of the land degradation-neutrality (LDN) principle that is enshrined in the SDG target 15.3. The LDN objective is to compensate losses with gains, and to achieve a position of no net loss of healthy and productive land.

Convention on Biological Diversity (CBD)

The Earth's biological resources are vital for economic and social development but human activities are taking a toll on many animal and plant species, including also on soil biodiversity. After its adoption in 1992 and entry into force in 1996, the Convention on Biological Diversity pursued the global protection of biodiversity and the sustainable use of biological resources, and also addressed soil biodiversity. The Convention established an International Initiative for the Conservation and

Sustainable Use of Soil Biodiversity as a cross-cutting initiative within the programme of work on agricultural biodiversity, and invited the Food and Agriculture Organization of the United Nations, and other relevant organizations, to facilitate and coordinate this initiative. This cross-cutting initiative aims to increase the recognition of the essential services provided by soil biodiversity across all production systems and its relation to land management, to share information, and to increase public awareness, education and capacity-building.

The EU and its Member States have agreed on 19 December 2022 at the 15th Conference of Parties to the UN Convention on Biological Diversity the "Kunming-Montreal Global Biodiversity Framework" (GBF), including four goals and 23 targets for achievement by 2030.

Acting on the maintenance, enhancement, or restoration of soil health at EU level will be a major contribution to the Goal A of the global agreement "The integrity, connectivity and resilience of all ecosystems are maintained, enhanced, or restored, substantially increasing the area of natural ecosystems by 2050", as well as Goal B "Biodiversity is sustainably used and managed and nature's contributions to people, including ecosystem functions and services, are valued, maintained and enhanced, with those currently in decline being restored, supporting the achievement of sustainable development, for the benefit of present and future generations by 2050."

The actions envisaged in the Soil Health Law will be also essential to achieve some of the specific targets for 2030 signed up by the EU in the Kunming-Montreal Global Biodiversity Framework, notably:

- TARGET 2: Ensure that by 2030 at least 30 per cent of areas of degraded terrestrial, inland water, and coastal and marine ecosystems are under effective restoration, in order to enhance biodiversity and ecosystem functions and services, ecological integrity and connectivity.
- TARGET 7: Reduce pollution risks and the negative impact of pollution from all sources, by2030, to levels that are not harmful to biodiversity and ecosystem functions and services, considering cumulative effects, including: reducing excess nutrients lost to the environment by at least half including through more efficient nutrient cycling and use; reducing the overall risk from pesticides and highly hazardous chemicals by at least half including through integrated pest management, based on science, taking into account food security and livelihoods; and also preventing, reducing, and working towards eliminating plastic pollution.
- TARGET 10: Ensure that areas under agriculture, aquaculture, fisheries and forestry are managed sustainably, in particular through the sustainable use of biodiversity, including through a substantial increase of the application of biodiversity friendly practices, such as sustainable intensification, agroecological and other innovative approaches contributing to the resilience and long-term efficiency and productivity of these production systems and to food security, conserving and restoring biodiversity and maintaining nature's contributions to people, including ecosystem functions and services.
- TARGET 11: Restore, maintain and enhance nature's contributions to people, including ecosystem functions and services, such as regulation of air, water, and climate, soil health, pollination and reduction of disease risk, as well as protection from natural hazards and disasters, through nature-based solutions and ecosystem-based approaches for the benefit of all people and nature.
- TARGET 12: Significantly increase the area and quality and connectivity of, access to, and benefits from green and blue spaces in urban and densely populated areas sustainably, by mainstreaming the conservation and sustainable use of biodiversity, and ensure biodiversity-inclusive urban planning, enhancing native biodiversity, ecological connectivity and integrity, and improving human health and well-being and connection to nature and contributing to inclusive and sustainable urbanization and the provision of ecosystem functions and services.
- TARGET 14: Ensure the full integration of biodiversity and its multiple values into policies, regulations, planning and development processes, poverty eradication strategies, strategic

environmental assessments, environmental impact assessments and, as appropriate, national accounting, within and across all levels of government and across all sectors, in particular those with significant impacts on biodiversity, progressively aligning all relevant public and private activities, fiscal and financial flows with the goals and targets of this framework.

United Nations Framework Convention on Climate Change (UNFCCC)

The UNFCCC was adopted in 1992 and aims to achieve stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner. Today there are 197 parties to the Convention as it is probably the best known international environmental treaty. The Convention contains the basic framework for climate agreements like the Kyoto protocol or the Paris Agreement. In the context of UNFCCC soil carbon sequestration is recognised as an important way to mitigate and adapt to climate change. At COP 21 in 2015 in Paris, an initiative was launched by the French government to increase the global soil carbon stock with 4 ‰ annually, in order to stop the increasing CO2 accumulation in the atmosphere.

Global Soil Partnership (GSP)

The Global Soil Partnership (GSP) has been established, following intensive preparatory work of the United Nations Food and Agriculture Organization (FAO) in collaboration with the European Commission, as a voluntary partnership coordinated by the FAO in September 2011. The GSP is open to all interested stakeholders: governments (FAO Member States), universities, research organizations, civil society organizations, industry and private companies. It is a voluntary partnership aiming to provide a platform for active engagement in sustainable soil management and soil protection at all scales: local, national, regional and global. For the implementation, the GSP relies on the Regional Soil Partnerships, the European Soil Partnership being one of them. Meantime, the GSP, together with its regional partnerships and the Intergovernmental Technical Panel on Soil (ITPS) is well recognized for its actions and expertise on soil at global level with the adoption of a revised World Soil Charter, the publication of the Status of the World's Soil Resources report and the Voluntary Guidelines on Sustainable Soil Management.

UN Decade on Ecosystem Restoration 2021-2030

The UN Decade on Ecosystem Restoration aims to prevent, halt and reverse the degradation of all ecosystems. Running from 2021 until 2030, the UN Decade launches a global movement to restore ecosystems worldwide. An area that has scope for restoration can be fully restored to its natural state, or be rehabilitated to serve a specific land use. Restoration can provide co-benefits for food security by safeguarding ecosystem services, such as soil protection, pollination, nutrient cycling and soil water-holding capacity. Restoration is essential for keeping global temperature rise below 2°C, ensuring food security for a growing population and slowing the rate of species extinctions. It helps to achieve multiple global goals, including the Post-2020 Global Biodiversity Framework under the CBD, the Paris Agreement under the UNFCCC, the Sustainable Development Goals (SDGs) under 2030 Agenda and the Land Degradation Neutrality targets under the UNCCD. Commitments by more than 115 governments to restore a total of nearly 1 billion hectares of land, almost the size of China, now need to be delivered.

ANNEX 6: THE CURRENT LEGAL FRAMEWORK

This annex provides an overview of main existing EU legislation with a description of its relevance for soils and identifies also the gaps in the existing EU acquis.

1 MAIN EXISTING EU LEGISLATION RELEVANT FOR SOILS

A detailed overview of the legislative acts mentioned in this section is provided in table 1-1.

1.1 Existing EU environmental legislation

In the past 30 years, the EU has adopted a substantial and diverse range of environmental measures aimed at improving the quality of the environment for European citizens and providing them with a high quality of life. EU environmental legislation covers sectors such as air, water, nature, circular economy and chemicals.

Regarding existing **sectorial environmental** EU legislation, several provisions in the **water** sector are of relevance for soil. EU water legislation establishes a framework for the protection of inland surface waters, transitional waters, coastal waters, groundwater, drinking water and the management of flood risks and these provisions have a beneficial impact on the soil-sediment-water system. For example, in addressing water quality and quantity objectives the **Water Framework Directive**[43] addresses agricultural pressures which are associated with soil threats but no direct soil protection objectives are explicitly present within the Directive (nor Daughter Directives). The **Groundwater Directive**[44] requires a monitoring of the impacts from contaminated lands while the **Nitrates Directive**[45] aims at reducing the use of N based fertilizers on agricultural land associated with vulnerable water bodies.

In the **air** sector, the **Ambient Air Quality Directives**[46] set limit values for certain pollutants (e.g. NO2, PM10, benzene, sulphur dioxide) and the **National Emission reduction Commitments (NEC)**[47] requires Member States to limit emissions of five key air pollutants, with the objective to reduce harmful effects on the human health and the environment. The NEC Directive also requires Member States to monitor the impacts of air pollution on ecosystems, and soil parameters are proposed, as regards acidification and eutrophication impacts. However, even if the emissions and concentrations are reduced below the maximum levels allowed, the acidification in soils may perdure. Lastly, the NEC Directive does not address the question of the remediation of damage already caused.

Regarding **nature protection** related EU legislation, the designation of sites of Community importance (SCIs) and Special Areas of Conservation (SACs) and carrying out of conservation measures (such as extensive farming or foresting) as required by the **Habitats Directive**[48] might contribute to reduce loss of soil biodiversity and soil organic matter.

[43] Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy

[44] Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration

[45] Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources

[46] Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe and Directive 2004/107/EC relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air

[47] Directive (EU) 2016/2284 of the European Parliament and of the Council of 14 December 2016 on the reduction of national emissions of certain atmospheric pollutants, amending Directive 2003/35/EC and repealing Directive 2001/81/EC

[48] Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora

As far as the EU legislation on **waste and circular economy** is concerned, the **Waste Framework Directive**[49] and **Landfill Directive**[50] aim to reduce the amount of waste that is landfilled and to control landfilling contamination. The rules apply to specific sites and operations with waste and do not cover for instance contaminated sites where no waste is present and the soil has not been moved. The **Sewage Sludge Directive**[51] aims to protect the environment, including soil, from contamination with heavy metals when sludge is used in agriculture.

EU legislation on specific substances such as the **Fertilising Products Regulation**,[52] the **Sustainable Use of Pesticides Directive,**[53] the **Plant Protection Products Regulation**,[54] the **Mercury Regulation**[55] or the **Persistent Organic Pollutants Regulation**[56] contribute to the prevention of soil pollution and the improvement of soil quality. For example, under the **Mercury Regulation**,[57] an inventory of sites in the EU contaminated with mercury or mercury compounds together with information on national measures on the identification, assessment and remediation of such sites has been established and made publicly available. However, these provisions concern only some substances and pollutants. Prevention of soil contamination by other harmful substances are not addressed.

Regarding industrial pollution prevention, the **Industrial Emissions Directive (IED)**[58] prevents emissions from entering the soil. However, the scope of the IED is limited to some risk activities and does not address soil contamination caused before the entry into force of the IED. The **European Pollutant Release and Transfer Register (E-PRTR) Regulation**[59] includes an obligation to report emissions to land but is not sufficient in itself to report on the quality of soils.

Provisions in existing **horizonta**l EU environmental legislation are also relevant for soils.

The **Strategic Environmental Assessment Directive**[60] provides that where SEA assessment is required, the environmental report should contain relevant information, identifying, describing and evaluating the likely significant environmental effects, *inter alia*, on soil, stemming from implementation of a plan or programme, falling under the scope of the SEA Directive. The **Environmental Impact Assessment Directive**[61] explicitly requires that the effects of a project on soil need to be identified, described and assessed. While this is a critical aspect, similarly to the SEA Directive, the EIA Directive does not include substantial obligations relating to the protection of soils.

[49] Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives

[50] Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste

[51] Council Directive 86/278/EEC of 12 June 1986 on the protection of the environment, and in particular of the soil, when sewage sludge is used in agriculture

[52] Regulation (EU) 2019/1009 of the European Parliament and of the Council of 5 June 2019 laying down rules on the making available on the market of EU fertilising products and amending Regulations (EC) No 1069/2009 and (EC) No 1107/2009 and repealing Regulation (EC) No 2003/2003

[53] Directive 2009/128/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for Community action to achieve the sustainable use of pesticides

[54] Regulation (EC) No 1107/2009 of the European Parliament and of the Council of 21 October 2009 concerning the placing of plant protection products on the market and repealing Council Directives 79/117/EEC and 91/414/EEC

[55] Regulation (EU) 2017/852 of the European Parliament and of the Council of 17 May 2017 on mercury, and repealing Regulation (EC) No 1102/2008

[56] Regulation (EU) 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants

[57] Regulation (EU) 2017/852 of the European Parliament and of the Council of 17 May 2017 on mercury, and repealing Regulation (EC) No 1102/2008 (OJ L 137, 24.5.2017, p. 1).

[58] Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control)

[59] Regulation (EC) No 166/2006 of the European Parliament and of the Council of 18 January 2006 concerning the establishment of a European Pollutant Release and Transfer Register and amending Council Directives 91/689/EEC and 96/61/EC

[60] Directive 2001/42/EC of the European Parliament and the Council on the assessment of the effects of certain plans and programmes on the environment,

[61] Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment

The **Environmental Liability Directive**[62] addresses land contamination that poses significant risks for human health (significant risks for the environment are not covered by the directive) and establishes a framework based on the polluter pays principle to prevent and remedy environmental damage. The **Environmental Crime Directive**[63] aims at strengthening environmental protection and compliance with EU environmental legislation through harmonisation of definitions of criminal offences and introduction of criminal sanctions. It covers offences relevant for soil protection, inter alia, illegal discharge of substances into soil and the illegal dumping of waste.

As regards the legislative initiatives recently proposed by the Commission, as part of the **Zero Pollution Action Plan**,[64] the Commission has recently proposed a revision of the **Industrial Emissions Directive (IED)**[65] which aims to further contribute to reducing emissions from entering the soils. The Commission also proposed a new **Environmental Crime Directive.**[66] In relation to soil, the proposal includes reference to damage to soil in the definition of several criminal offences and includes elements to be considered when assessing whether a damage (including to soil) is substantial and whether an activity is likely to cause damage (including to soil).

1.2 Existing EU legislation in other policy areas

Provisions on good agricultural and environmental conditions of land (GAEC standards) under the rules on support for strategic plans (SPs) under the common agricultural policy (**CAP Regulation**)[67] aim to contribute to the protection and quality of soil. GAECs are expected to cover close to 90% of the EU's agricultural land[68], which accounts for a good 40% of the total land area of the EU[69] but leaving the agricultural land not covered under the CAP and all non-agricultural land with fewer protections.

The revised **Land Use Land Use Change and Forestry (LULUCF) Regulation** aims to strengthen the contribution of the LULUCF sector to the increased overall climate ambition for 2030. It sets a 2030 Union target for net greenhouse gas removals in the LULUCF sector) and aims to ensure that the LULUCF sector does not generate net emissions and contributes to the enhancement of sinks in forests and soils.

[62] Directive 2004/35/CE of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage

[63] Directive 2008/99/EC of the European Parliament and of the Council of 19 November 2008 on the protection of the environment through criminal law

[64] Communication COM(2021) 400 final Pathway to a Healthy Planet for All EU Action Plan: 'Towards Zero Pollution for Air, Water and Soil'

[65] Proposal for a Directive of the European Parliament and of the Council amending Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control) and Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste COM/2022/156 final

[66] Proposal for a Directive of the European Parliament and of the Council on the protection of the environment through criminal law and replacing Directive 2008/99/EC COM/2021/851 final

[67] Regulation (EU) 2021/2115 of the European Parliament and of the Council of 2 December 2021 establishing rules on support for strategic plans to be drawn up by Member States under the common agricultural policy (CAP Strategic Plans) and financed by the European Agricultural Guarantee Fund (EAGF) and by the European Agricultural Fund for Rural Development (EAFRD) and repealing Regulations (EU) No 1305/2013 and (EU) No 1307/2013

[68] EC Communication (2022): Common agricultural policy for 2023-2027. 28 CAP Strategic Plans at a glance. https://agriculture.ec.europa.eu/system/files/2022-12/csp-at-a-glance-eu-countries_en.pdf

[69] Eurostat (2022): Farms and farmland in the European Union – statistics. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Farms_and_farmland_in_the_European_Union_-_statistics#Farms_in_2020

Table 1-1: overview of existing EU legislation

	EU Instrument	Objectives	Relevance to soils
Horizontal environmental legislation	Environmental Impact Assessment (EIA) Directive	The Environmental Impact Assessment Directive (2011/92/EU) requires the assessment of the environmental effects of certain public and private projects that are likely to have significant effects on the environment. It is intended to provide a check on projects before they go forward in order to minimise their negative impact on the environment.	This is relevant to soil protection since projects (e.g. infrastructure development) could have negative impacts on soil quality through various threats. Identifying these impacts and potentially less harmful alternatives could result in the developer choosing a method that reduces the impact on soil. The EIA directive mentions explicitly some soil degradations such as erosion or sealing. However, the EIA directive does not provide qualitative indicators for assessing the impacts on soil quality and the environmental impacts of land take.
	Strategic Environmental Assessment (SEA) Directive	The Strategic Environmental Assessment Directive (2001/42/EC) aims to reduce environmental impacts from plans and programmes, including negative impacts on soil, by requiring an assessment of the likely significant effects prior to adoption of the plans and programmes. The directive particularly targets the following sectors: agriculture, forestry, fisheries, energy, industry, transport, waste and water management, telecommunications, tourism, town and country planning as well as land use. For plans and programmes that fall under the scope of the SEA Directive,, an environmental report has to be prepared describing these effects and including reasonable alternatives. All of the information contained in the report and public consultations have to be considered before adopting the respective plan or	The environmental report must contain information about the likely significant effects on soil, which could touch upon multiple different soil threats – such as erosion, contamination, salinisation, loss of biodiversity, loss of soil organic matter and soil sealing. However, the SEA directive does not provide qualitative indicators for assessing the impacts on soil quality and the environmental impacts of land take.

	EU Instrument	Objectives	Relevance to soils
		programme.	
	Environmental Liability Directive (ELD)	The Environmental Liability Directive (2004/35/EC) establishes a framework based on the polluter pays principle to prevent and remedy environmental damage.	According to the directive, environmental damage includes damage to soil. The directive directly addresses contamination of soils if it reaches a certain threshold (i.e. it poses a significant risk to human health). Indirectly, reduced land or site contamination contributes to improved soil health and quality, and thus might improve soil biodiversity. Furthermore, soils may indirectly benefit from the prevention and remedy of damage to protected species and natural habitats: as soil is one of the physical components of a terrestrial habitat, achieving a favourable conservation status of terrestrial habitats could also contribute towards soils protection. The word "soil" is not used, but "land contamination" is (land = any land contamination that creates a significant risk to human health) Land damage is restricted to 'significant risk to human health being adversely affected', which means that significant risks for the environment are not covered. The directive only addresses new contamination of soils, if it reaches a certain significance threshold (i.e. contamination should pose a significant risk to human health, risk to the environment is not considered). Historical contamination as a consequence of activities carried out and finished before 30 April 2007, is not covered, as well as contamination caused by risk activities that are not listed in annex III and hence do not fall under its scope. The ELD only regulates the liability for land damage and does not address issues like the identification, registration or risk assessment of contaminated sites.

	EU Instrument	Objectives	Relevance to soils
	Environmental Crime Directive	The Environmental Crime Directive (2008/99/EC) aims to enhance compliance with the EU environment protection legislation by supplementing administrative sanctions regime with criminal law penalties. Following the evaluation of the 2008 Environmental Crime Directive, the Commission adopted in December 2021 a proposal for a new Environmental Crime Directive. It includes detailed provisions on sanctions for natural and legal persons as well as on strengthening the enforcement chain to ensure more effective detection, prosecution and adjudication on environmental crime.	Under the Directive, environmental crime comprises a broad range of illicit activities, including the illegal discharge of substances into soil and the illegal dumping of waste, amongst other activities. The recent evaluation of this Directive concluded that it has not fully met its objectives and that – despite some progress – significant divergence remains between Member States. The evaluation shows the number of convictions for environmental crimes in each MS, however the data are not granular enough to identify convictions specifically related to so. Moreover, the conclusion on effectiveness is that shortcomings in enforcement remain an obstacle.[70] In relation to soil, this proposed Directive includes reference to damage to soil in the definition of several criminal offences. The proposal includes also elements to be considered when assessing whether a damage (including to soil) is substantial and whether an activity is likely to cause damage (including to soil).
EU air legislation	National Emissions reduction Commitment (NEC) Directive	The NEC directive (Directive (EU) 2016/2284) establishes national emission reduction commitments for each MS for PM2.5, SO2, NOx, NH3 and NMVOC, for the period 2020-29 and more stringent reductions for 2030 onward.	This directive is especially relevant to the diffuse contamination of agricultural soils and loss of soil quality associated in particular with acidification but also wider contamination. Some of the measures required by the Directive relate to controlling ammonia emissions and aim at promoting the replacement of inorganic fertilizers by organic ones or less polluting spreading manures techniques. Other measures relate to controlling emissions of fine particulate matter and black carbon specifically from agriculture and

[70] https://ec.europa.eu/info/sites/default/files/evaluation_-_swd2020259_-_part_1_0.pdf

	EU Instrument	Objectives	Relevance to soils
			can contribute to improving soil structure through incorporating harvest residue or improve the nutrient status and soil structure through the incorporation of manure. The directive fixes national reduction commitments for each of 5 pollutants. The directive makes a contribution to address the excess of nutrients and soil acidification. However, even if the emissions are reduced below the maximum level allowed by the directive, the acidification in soils may perdure and the Directive does not address the remediation of damage caused. Furthermore, there are no provisions on emissions due to soil erosion.
	Ambient Air Quality (AAQ) Directives	The AAQ Directives (2008/50/EC and 2004/107/EC) define objectives for air quality in order to reduce harmful effects on the human health and the environment by setting limit values for certain pollutants (e.g. NO2, PM10, benzene, sulphur dioxide, arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons)	The directives do not specifically target effects on soil and are limited to some pollutants. Even when the limit values of the directive are met, the acidification in soils may perdure.
EU water legislation	Water Framework Directive (WFD)	The Water Framework Directive (2000/60/EC) establishes a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater.	In addressing water quality and quantity objectives, the Directive addresses various pressures (including from agriculture)which are associated with soil threats. Achieving the WFD objectives requires also the implementation of soil management measures which contribute to soil protection, such as remediation of contaminated sites, measures reducing soil erosion and compaction, restoration of wetlands, or reduced abstraction of groundwater in certain areas. The provisions pertaining to hazardous substances, priority hazardous substances and the Environmental Quality Standards (EQS) established at EU level for some chemicals might require acting on the soil to limit or prevent further

	EU Instrument	Objectives	Relevance to soils
			releases to water. The prevention of diffuse water pollution may also contribute to prevent diffuse soil contamination and excess nutrients in soil Soil is mentioned throughout the Directive, with indirect consequences for soil protection.
	Groundwater Directive	The Groundwater Directive (2006/118/EC) sets groundwater quality standards and introduces measures to prevent or limit inputs of pollutants into groundwater. With operational measures to prevent or limit inputs of pollutants into groundwater, it complements the environmental objectives outlined in the WFD.	Agricultural activities, in particular the application of nitrogen and pesticides to fields, contribute to pollutant concentrations in groundwater and need to be addressed to meet the objectives of the Directive. This implies soil management practices that reduce the need for nitrogen and pesticide application. The directive requires to monitor the impacts on groundwater from contaminated land but does not establish soil protection objectives.
	Floods Directive	The Floods Directive (2007/60/EC) aims to reduce and manage the risks that floods pose to human health, the environment, cultural heritage and economic activity. It requires Member States to identify flood risk areas, map them and establish flood risk management plans.	The Floods directive is relevant for soils as flood risks are connected to soil erosion, compaction and the sealing of soils. However, the directive does not explicitly address soil protection. There are no binding or voluntary requirements dedicated to soil protection
	Nitrates Directive	The Nitrates Directive (91/676/EEC) aims to protect surface waters and groundwater against pollution by nitrates from agricultural sources. It requires that Member States identify Nitrate Vulnerable Zones (NVZ) and set up action programmes for these zones. The Directive promotes also a voluntary code of good agricultural practice.	While the directive does not have explicit soil-focused objectives, it makes a contribution to address some of the soil degradation such as the excess of nutrients and acidification. Indeed, the agriculture practices concern mainly the application of fertilisers on soils. Measures to limit run-off of nutrients (such as buffer strips, soil cover, crop rotation, limitations of fertilisation on slopes) are also directly contributing to limiting erosion on agricultural land. The directive has no explicit soil-focused objectives.

	EU Instrument	Objectives	Relevance to soils
		.	
	Urban Wastewater Treatment (UWWT) Directive	The UWWT Directive (Directive 91/271/EEC) aims to protect the environment in the European Union (EU) from the adverse effects (such as eutrophication) of urban wastewater It sets out EU-wide rules for collection, treatment, and wastewater discharge. It also sets requirement regarding the disposal of sludge from urban wastewater treatment plants.	The UWWT directive is relevant for soils since it regulates the treatment of waste water and the disposal of sludge, hence prevents soil contamination.
	Drinking Water Directive	Drinking Water Directives (Directive (UE) 2020/ 2184)[71] seeks to introduce revised rules to protect human health from the contamination of water intended for human consumption by ensuring that it is 'wholesome and clean', It also seeks to introduce hygienic requirements for materials in contact with drinking water, such as pipes, as well as: improve access to water intended for human consumption; introduce a cost-effective risk-based approach to monitoring water quality.	The directive requires from Member States to set up by 12 July 2027 a data set of risk assessment and risk management and monitoring of the catchment areas for water abstraction points. It may relevant for soils since the protection of the catchment areas may require soil management measures that prevents soil contamination by fertilizers or pesticides.
EU waste legislation	Waste Framework Directive	The Waste Directive (2008/98/EC) aims to reduce the negative impact of waste generation and management on the environment and to increase the efficiency of resource use.	The directive directly addresses soil, as it requires Member States to ensure that waste management activities do not contaminate the environment, including soil. It sets requirements for waste treatment that contribute to reducing soil contamination. Through promoting the prevention of

[71] Directive (EU) 2020/2184 of the European Parliament and of the Council of 16 December 2020 on the quality of water intended for human consumption (recast), OJ L 435, 23.12.2020, p. 1.

	EU Instrument	Objectives	Relevance to soils
			waste, the directive contributes to reducing soil contamination. By incentivizing the recycling of waste materials, the directive potentially contributes to reduce the pressure on soils as a resource (e.g. from the construction sector). However, the Waste Framework Directive is limited to the prevention and management of waste, hence does not address other sources of potential soil threats and contamination
	Landfill Directive	The Landfill Directive (99/31/EC) aims to prevent or reduce the negative effects of landfilling of waste on the environment during the whole life-cycle of the landfill.	The Landfill Directive addresses the pollution of surface water, groundwater, soil and air, and effects on the global environment as well as risks to human health. The directive directly addresses soil contamination. It sets operational and technical requirements to prevent leachate infiltration into the soil (e.g. regarding the location and design of the landfill, permeability and thickness requirements for the landfill's base and sides). Furthermore, the directive considers landfilling as the least preferable option which should be limited to the minimum, and sets targets to reduce the total amount of biodegradable municipal waste. Thereby it indirectly contributes to reducing soil contamination and soil sealing (in regard to land covered by landfills). The Landfill directive applies to specific sites and operations with waste and do not cover for instance contaminated sites where no waste is present and the soil has not been moved
	Sewage Sludge Directive	The Sewage Sludge Directive (86/278/EEC) seeks to encourage the use of sewage sludge in agriculture and to regulate its use in such a way as to prevent harmful effects on soil, vegetation, animals	The directive directly addresses soil contamination with heavy metals and pathogenic organisms. It sets maximum values of concentrations of heavy metals and bans the spreading of sewage sludge when the concentration of certain substances in the soil exceeds these values. In

	EU Instrument	Objectives	Relevance to soils
		and man. To this end, it regulates the use of sludge considering different types of agricultural land use as well as soil and sludge quality. The directive prohibits the use of untreated sludge on agricultural land unless it is injected or incorporated into the soil.	addition, the directive sets time restrictions for the sludge application in order to provide protection against potential health risks from residual pathogens. The scope of the directive is limited to the use of sewage sludge in agriculture
EU Nature legislation	Habitats Directive	The Habitats Directive (Directive 92/43/EEC) requires inter alia the designation of sites of Community importance (SCIs) and Special Areas of Conservation (SACs) and carrying out of conservation measures (such as extensive farming).	Measures taken under the Habitats and Birds directive contribute to prevent soil degradation. of. there are many concrete examples, including from LIFE projects,[72] of measures being taken that have sustainably restored the water retention capacity of soils in Natura 2000 sites. These measures are however focused on the protected Natura 2000 sites and protected habitats. Other measures required by the directive concerns the whole EU territory but only concerns habitats.
	Bird Directive	The Birds directive (Directive 2009/147/EC)[73] to conserve all wild birds in the EU by setting out rules for their protection, conservation, management and control. Measures must be set in place to preserve, maintain or re-establish a sufficient diversity and area of habitats* for all bird species. These measures mainly involve the creation of protected areas; the upkeep and management of habitats inside and outside the protected areas; and the re-	

[72] https://webgate.ec.europa.eu/life/publicWebsite/project/details/3073

[73] Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (Codified version), OJ L 20, 26.1.2010.

	EU Instrument	Objectives	Relevance to soils
		establishment of destroyed biotopes, and the creation of new ones.	
EU industrial emissions legislation	Industrial Emissions Directive	The Industrial Emissions Directive (Directive (EU) 2010/75) aims to prevent pollution or at least reduce emissions to air, water, and land and to prevent the generation of waste in order to reduce the environmental impacts from industrial activities.	The directive directly addresses soil protection. It requires that industrial installations operate in accordance with permits, which includes environmental protection obligations. In case an installation's activity involves the use, production or release of a hazardous substance which may lead to contamination of soil or groundwater, a baseline report is required. The report assesses the state of soil contamination prior to operation of the installation. The re-assessment following cessation of activities is expected to identify any changes in the level of soil contamination. Where significant pollution of soil has been caused, the operation must take the necessary measures (taking into account technical feasibility) to return the site to the state it was. Contamination is also indirectly targeted by the requirements for waste incineration and co-incineration plant sites to avoid unauthorised and accidental releases to soil, and to take the necessary precautions in the delivery and reception of waste to prevent or limit the amount of pollution to soil. The Industrial Emissions Directive covers only a limited number of industrial installations and does not address soil contamination caused before its entry into force.
	European Pollutant Release and Transfer Register (E-PRTR) Regulation	The E-PRTR Regulation 166/2006/EC establishes a publicly accessible electronic database of key environmental data from industrial facilities in Europe.	The E-PRTR Regulation includes an obligation to report emissions to land and therefore constitutes a source of information but is not sufficient to assess and monitor quality of soil. The register is limited to releases when they exceed a certain threshold and originate from certain activities.

	EU Instrument	Objectives	Relevance to soils
EU legislation on specific substances	Pesticides Directive[74]	The Pesticides Directive (Directive 2009/128/EC) aims to achieve a sustainable use of pesticides and to reduce risks and impacts of pesticide use on human health and the environment. Member States are required to establish National Action Plans which include quantitative objectives and measures to reduce the risks of pesticides. The Commission adopted recently a Proposal for a Regulation on the sustainable use of plant protection products and amending Regulation (EU) 2021/2115 (COM(2022)305), which would replace the Pesticides Directive. The new proposal does not explicitly address soil protection. The proposal aims to increase the application and enforcement of integrated pest management (IPM) and to increase the use of less hazardous and non-chemical alternatives to chemical pesticides for pest control.	The Directive promotes the use of integrated pest management and alternative approaches or techniques such as non-chemical alternatives to pesticides. The use of less pesticides contributes to preserve soil health, in particular soil biodiversity.
	Fertilising Products Regulation	Fertilising Products Regulation (Regulation (EU) 2019/1009) opens the single market for fertilising products which are not currently covered by harmonisation rules, such as organic and organo-mineral fertilizers or soil improvers.	The regulation lays down common rules on safety, quality and labelling requirements for fertilising products and introduces limits for toxic contaminants and therefore contributes to soil protection.

[74] The Commission adopted a Proposal for a Regulation on the sustainable use of plant protection products and amending Regulation (EU) 2021/2115 (COM(2022) 305), which will replace the Directive. Also the new proposal does not explicitly address soil protection.

	EU Instrument	Objectives	Relevance to soils
	Mercury Regulation	The Mercury Regulation (Regulation (UE) 2017/852) seeks to protect human health and the environment by laying down measures and conditions concerning the use and storage of and trade in mercury and the management of mercury waste.	Under the Mercury Regulation, an inventory of sites in the EU contaminated with mercury or mercury compounds together with information on national measures on the identification, assessment and remediation of such sites has been established and made publicly available. The Regulation does not address any specific threat to soil
	Persistent Organic Pollutants Regulation	The Persistent Organic Pollutants Regulation (Regulation (UE) 2019/1021 aims to protect human health and the environment by eliminating, or restricting the production and use of persistent organic pollutants (POPs). It seeks to minimise, or eliminate where possible, releases of such substances, and regulate waste containing or contaminated by them.	The regulation contributes to prevent soil contamination. Soil is mentioned in an annex (as waste) and in a recital (on the necessity to lay down stricter rules concerning the management of stockpiles POPs which may seriously endanger the environment and human health through, for instance, contamination of soil and ground water)).
	REACH Regulation	The REACH Regulation (Regulation (EC) 1907/2006) requires soil simulation testing to be done for substances with a high potential for adsorption to soil	The Regulation indirectly contributes to prevent soil contamination but does not have soil specific objectives, nor does it address other soil threats.
	Plant Protection Products Regulation	The Plant Protection Products Regulation (Regulation 1107/2009/EC) lays down rules for authorising the sale, use and control of plant protection products in the EU. It recognises the precautionary principle which EU countries may apply if there is scientific uncertainty about the risks a plant protection product might pose to human or animal health or the environment (including soil).	The Regulation contributes to prevent soil contamination but does not address remediation or other soil threats.

	EU Instrument	Objectives	Relevance to soils
	Biocidal Products Regulation	The Biocidal Products Regulation (Regulation (EU) 528/2012) harmonises the rules in the EU concerning the sale and use of biocidal products, while ensuring high levels of protection of human and animal health, and of the environment including soil. Where unacceptable contamination of soil is likely to occur, M shall not authorize the biocidal product if certain conditions are met.	The Regulation contributes to prevent soil contamination. Where unacceptable contamination of soil is likely to occur, Member States shall not authorize the biocidal product if certain conditions are met. The Regulation does not address remediation or other soil threats.
EU Climate legislation	European Climate Law	The European Climate Law (Regulation (EU) 2021/1119) sets a legally binding target of net zero greenhouse gas emissions by 2050, and an at least 55% reduction by 2030 as compared to 1990. It also recognises the need to enhance the EU's carbon sink through a more ambitious LULUCF regulation. Article 5 requires relevant Union institutions and Member State' to ensure continuous progress in enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change. Member States must integrate adaptation to climate change in a consistent manner in all policy areas, and they must adopt and implement national adaptation strategies and plans. These must consider the particular vulnerability of the relevant	This Regulation does not mention soils or specific soil management actions specifically. Yet, the achievement of many of its provisions depend on good soil health and imply action in the field.

	EU Instrument	Objectives	Relevance to soils
		sectors, inter alia, agriculture, and of water and food systems, as well as food security. They also must promote nature-based solutions and ecosystem-based adaptation.	
	LULUCF Regulation and LULUCF decision	The Land Use Land Use Change and Forestry (LULUCF) Regulation ((Regulation (EU) 2023/839) sets out what Member States must do to ensure the land use, land use change and forestry sector helps meet the EU's greenhouse gas emission reduction target for 2021–2030. It lays down rules to account for emissions and removals from land use, land use change and forestry and to check that Member States meet their commitments. The Commission has proposed to revise the regulation to strengthen the contribution of the LULUCF sector to the increased overall climate ambition for 2030. It includes a target that the EU LULUCF sector should remove 310 Mtonnes of CO_2 from the atmosphere to be stored in soils, biomass or harvested wood products.	The regulation fixes binding targets per Member states, which the Member States will achieve through national policies and measures. In order to reach the objectives of the LULUCF regulation, the LULUCF decision (Decision 519/2013/EU)[75] gives a list of indicative measures which are relevant for soils such as cropland management, grazing land management and pasture improvement, management of agricultural organic soils, prevent drainage and to incentivize rewetting of wetlands; restoration of degraded lands and preventing deforestation.
CAP		The CAP Strategic Plan Regulation (Regulation (EU) 2021/2115) shall foster	The new CAP is very relevant for the management of soils.

[75] Decision No 529/2013/EU of the European Parliament and of the Council of 21 May 2013 on accounting rules on greenhouse gas emissions and removals resulting from activities relating to land use, land-use change and forestry and on information concerning actions relating to those activities

	EU Instrument	Objectives	Relevance to soils
	Common Agricultural Policy (CAP) Strategic Plan Regulation	sustainable development and efficient management of natural resources such as water, soil and air. The Regulation requires that Member States shall ensure that all agricultural areas, including land which is no longer used for production purposes, are maintained in good agricultural and environmental condition. Several Good Agricultural and Environmental Conditions (GAEC) 5, 6 and 7 target soil directly by regulating tillage management measures to reduce risks of soil degradation and erosion, minimum soil cover to avoid bare soils in periods that are most sensitive and implementing or maintaining crop rotation in arable land. Additionally, several more GAEC standards are beneficial for soils. In addition, to improve the environmental performance of the CAP, a new feature is the implementation of eco-schemes- to which 25% of direct payments in each MS should be devoted to. The rural development policy is a further tool under the CAP that supports the sustainable development of the EU's rural areas and agriculture, through for example agri-environment and climate measures, such as organic farming, advisory services, or investment measures.	The exact contribution of the new CAP measures to sustainable soil management is not yet established, since new design of each Member States CAP plan has been just approved in 2022. The CAP Regulation does not concern all soils since its scope is limited to agricultural land and beneficiaries of CAP funds. GAECs are expected to cover close to 90% of the EU's agricultural land, which accounts for approximately 40% of the total land area of the EU.

2 GAP REGARDING EXISTING EU ENVIRONMENTAL LEGISLATION

As it appears from the previous section, there is no dedicated EU instrument which protects soils like the ones existing for other media such as air and water.

There is a gap regarding the non-deterioration of soils since there is currently no legal obligation to require soil health does not deteriorate, or to manage soil sustainably. There is also a gap regarding restoration of soils that have deteriorated. Furthermore, in the existing EU legislation there is a lack of definitions, indicators and ranges to define the notion of "healthy soils" and there is currently no obligation to monitor all aspects of the health of soils. In addition, there is a lack of binding policy objectives relating to soil as such, and this is not covered by the objectives put in place for other areas.

Nevertheless, and as mentioned previously there are many provisions enshrined in existing EU environmental legislation which benefit soils. These provisions have been assessed against the various aspects of soil degradations and summarised in table 2-1.

On **soil organic carbon (SOC),** there is no legal provision that aims at stopping the loss of SOC or at increasing SOC. It can be expected that conservation measures in Natura 2000 sites under the Nature directives may have positive impact on SOC. The EIA directive mentions soil organic matter as one of the factors to be considered when assessing the impacts of a project for which an environmental impact assessment is required. It can be concluded that SOC is almost not addressed in existing EU environmental legislation.

On **soil erosion and soil compaction**, measures taken under the EU water legislation (Water Framework Directive and Nitrates directive) addressing pressures from agriculture as well as the non-deterioration obligation under the EU nature legislation in Natura 2000 sites may have a positive impact on (mainly) agriculture soils. However, these measures primarily aim to protect the quality of water and their impacts on soil health are not assessed. Measures under the Floods directive may also contribute to reduce soil erosion and soil compaction. Indirect contributions are also brought by EU nature legislation. Lastly, the EIA directive explicitly mentions soil erosion and soil compaction amongst the factors to be considered when assessing the impacts of a project for which an environmental impact assessment is required. It can be concluded that there is an indirect contribution from existing environmental legislation to address these soil degradations for some soils only. In addition, a large gap exists since the existing legislation does not set soil-specific targets and do not cover all types of soils.

On **excess of nutrients in soils**, the EU water legislation (Water Framework Directive and its 'daughter' directives as well as Nitrates directive) and EU air legislation (NEC Directive) by requiring measures to limit emissions (notably fertilisers - nitrates and ammonia) directly contribute to soil protection. The obligation of non-deterioration in Natura 2000 sites under the EU nature legislation may further prevent excess of nutrients in soils. These contributions concern mainly agriculture soils. However, these pieces of legislation neither require that the excess of nutrients in soils is measured nor that measures are taken to achieve a certain target. It can be concluded that there is no sufficient contribution from existing environmental legislation to address this aspect of soil degradation.

On **soil salinization**, measures to control water abstraction under the EU water legislation and the obligation of non-deterioration in Natura 2000 sites may indirectly contribute to address this soil degradation. However, no further contribution from existing EU legislation has been identified beyond the assessment required under EIA/SEA directives of impacts (including on soil) of projects, plans and programmes. It can be concluded that there is no significant contribution from existing environmental legislation to address soil salinization.

On **water retention capacity**, measures taken under the Floods directives may comprise measures to enhance the soils 's capacity since an increased water retention capacity may decrease the risks of floods. Measures under the Water Framework directive may also indirectly contribute to enhance the soil's capacity to retain water. However, no direct contribution from existing EU legislation has been identified beyond the assessment required under EIA/SEA directives of impacts (including on soil) of projects, plans and programmes. The obligation of non-deterioration in Natura 2000 sites may in certain cases improve the water reception capacity in some soils. It can be concluded that there is no significant contribution from existing environmental legislation to address the water retention capacity of soils.

On **soil acidification**, the EU air legislation, and the EU water legislation (as far as agriculture soils are concerned) directly contribute to address this soil degradation by reducing ammonia emissions, thus deposition on soils. The obligation of non-deterioration in Natura 2000 sites under the EU Nature legislation may further prevent soil acidification. These contributions mainly concern agriculture soils.

On **loss of soil biodiversity**, conservation measures and the obligation of non-deterioration in Natura 2000 sites taken under the EU nature legislation may also contribute to reduce soil biodiversity. No further specific contribution from existing EU legislation has been identified beyond the assessment required under EIA/SEA directives of impacts (including on soil) of projects, plans and programmes.

On **soil sealing and artificialisation**, there is no provision in existing environmental EU legislation directly addressing these soils threats. However, soil sealing is one of the drivers of floods, hence measures taken under the Floods directive may contribute to address this issue. A very large gap exists to address this soil threat.

On **prevention of diffuse soil contamination**, indirect contributions from the existing EU legislation on water (Nitrates directive, Wastewater Treatment directive), air and nature as well as on specific substances have been identified. However, there is no systematic approach that is required under the existing environmental legislation to prevent as such diffuse soil contamination.

On **prevention of anthropogenic contamination**, direct contributions have been identified from the EU legislation on industrial emissions and on waste (Waste directive, Landfills directive and sewage sludge directive) mainly concerning industrial and agriculture soils. These pieces of legislation prevent that emissions are entering into the soil. The environmental crime directive further prevents such contamination by supplementing administrative sanctions regime with criminal law penalties.

Although not explicitly mentioned as such in the EIA/SEA directives, it is expected that impacts on soils contamination are described when an assessment of the environmental impacts of projects, plans and programmes are carried out.

On **remediation of anthropogenic contamination**, the EU legislation on industrial emissions and on waste as well as the environmental liability Directive (ELD) are highly relevant. Indeed, these pieces of legislation contain provisions to remedy contaminated soils under some conditions. However, there are major gaps. First, historical contamination (i.e contamination that occurred before the entry into force of the EU legislation) is not covered. Second, the obligations to remedy under the Industrial Emissions directive is limited to the activities covered by the scope of the directive; third, the obligations to remedy under the EU Waste directive only concern contaminated sites by landfilling. Fourth, the obligations under the ELD are limited to cases where the contamination poses significant risks for human health (significant risks for the environment are not covered by the directive).

Conclusion on the gap in existing EU environmental legislation

Due to their different objectives and scopes, and to the fact that they often aim to safeguard other environmental media, existing provisions of EU environmental legislation, even if fully implemented, yield a fragmented and incomplete protection to soil. These provisions are insufficient to prevent deterioration and to restore soils to healthy status. This gap is confirmed by the data on the deterioration of soils across the EU (see table in section 2.1.2 of the report).

Table 2-1: contribution to soil protection from the existing EU legislation

		EU Waste legislation	EU Water legislation (including nitrates dir)	EU Nature legislation (other than NRL)	EU Air legislation	EU Industrial emissions legislation	EU legislation on specific substances	SEA/EIA (limited to evaluation of impacts)	Environmental liability directive	Environmental crime directive
Nutrient loss/ excess of nutrients in soil	Agricultural		(nitrates)							
	Forestry									
	Urban									
	Industrial									
Loss of/ low soil organic Carbone (SOC)	Agricultural									
	Forestry									
	Urban									
	Industrial									
Soil Erosion (by water or air)	Agricultural									
	Forestry									
	Urban									
	Industrial									
Soil compaction	Agricultural									
	Forestry									
	Urban									
	Industrial									
Soil acidification	Agricultural		By nutrients and pollutants		By air pollution					
	Forestry				By air pollution					
	Urban				By air pollution					
	Industrial									
salinisation	Agricultural		by water abstraction							
	Forestry		by water abstraction							
	Urban		by water abstraction							
	Industrial									
Water retention	Agricultural									
	Forestry									

capacity	Urban									
	Industrial									
Loss of soil biodiversity	Agricultural		By reducing fertilisers				By reducing pesticides			
	Forestry									
	Urban									
	Industrial									
Soil sealing/land take	Agricultural									
	Forestry									
	Urban									
	Industrial									
Prevention of soil contamination	Agricultural	sewage sludge and illegal dumping	Diffuse contamination	Diffuse contamination	Diffuse contamination		Diffuse contamination			
	Forestry	illegal dumping	Diffuse contamination	Diffuse contamination	Diffuse contamination		Diffuse contamination			
	Urban	illegal dumping	Diffuse contamination	Diffuse contamination	Diffuse contamination		Diffuse contamination			
	Industrial	illegal dumping and landfills					Diffuse contamination			
Remediation of soil contamination	Agricultural									
	Forestry									
	Urban									
	Industrial	By landfills				Historical contamination not addressed			Anthropogenic contamination (with strong limitation regarding type of damage)	

	Direct contribution to soil protection
	Indirect contribution to soil protection
	No or very minor contribution to soil protection

3 RECENT INITIATIVES

In 2021 and 2022, the Commission made several legislative proposals that are of relevance for soils namely:

- the nature restoration law[76]
- the revision on the LULUCF Regulation[77]
- the carbon removal initiative[78]

These proposals are described and analysed in annex 8 as they are very relevant for the baseline.

4 MEMBER STATES LEGISLATION

Existing Member State legislation has been analysed in 2017 in the frame of a study carried out by Ecologic study and funded by the Commission through a service contract.[79]

The analysis showed that only a limited number of Member States have in place explicit, overarching policies for soil protection for example Germany and Italy which both have in place Soil Protection Acts. In some Member States, for example Austria, a regional approach to soil management is undertaken. In Austria there is no national soil protection law as this is regulated by soil protection laws of the federal states. While some federal states have very extensive soil protection legislation or non-binding soil-focused instruments, there is no soil protection legislation in some other federal states.

According to the study, in the majority of instances the coverage of the national legal instruments is partial. For example, there may be no policy in place to address the entire picture of soil protection; however, policies may be in place to address specific land uses and their impact on soils, commonly agricultural or forestry soils. For example, this is the case in Lithuania (Law on Land), Hungary (Act on Cultivated Land), Poland (the Act on Protection of Agricultural and Forest Land) and Slovakia (Act No. 220/2004 Coll. Concerning the Protection and Use of Agricultural Soil). These Member States have in place instruments focused on agricultural soils explicitly and coordinating action in an overarching manner.

In contrast, a number of different policies are in place focusing on environmental protection at a high level. Depending on how exactly these are defined and implemented it is possible that these may provide strategic coverage of soil issues. sustainable use of land and water with the goal of developing a long term plan for sustainable land use.

Out of all the Member State legislations, several national instruments have been identified as highly relevant (with a high level of soil protection), namely such as the German Federal Soil Protection Act, the Agricultural Code of Wallonia, the Soil Protection Act of Slovakia, Soil Protection Act and the Soil Quality Decree and Regulation of the Netherlands and the Soil Act of Bulgaria.

The German instrument, however, remains the most ambitious and relevant instrument, given its scope and objectives being the most aligned with those anticipated for the Soil Health Law, also in light of its planned revision (see below).

[76] COM(2022)304.
[77] EU 2023/839.
[78] COM(2022) 672 final.
[79] Inventory and Assessment of Soil Protection Policy Instruments in EU Member States (Ecologic Institute, 2017) (1).pdf and the wiki https://webgate.ec.europa.eu/fpfis/wikis/pages/viewpage.action?spaceKey=SOIL&title=Home

A brief description of these highly relevant acts is presented hereafter

- **German Federal Soil Protection Act**

The Act aims to protect or restore soil functions. Actions include prevention of harmful changes to the soil, rehabilitation of the soil, of contaminated sites and of waters contaminated by such sites; and precautions against negative impacts on soils. Where soils are affected, disruptions of their functions should be avoided as far as possible. The Act focuses on contamination and sealing, and on rehabilitation of contaminated sites. For the protection of soil fertility and functions, the Act sets out principles of good practices for agricultural practices, for example that the soil shall be worked in a manner that is appropriate for the relevant site, taking weather conditions into account, soil structure shall be conserved or improved, and soil compaction avoided as far as possible.

The Act provides a comprehensive and specific legal framework to manage soil contamination issues. The specific soil threats that are explicitly mentioned within the text are, for example, erosion by wind and/or water, compaction or soil sealing. The soil functions that the Act aims to protect and restore are, for example, biodiversity, raw materials, soil as a filter of nutrients or human activity.

With regards to the objectives and projected impacts of the Act, it is an ambitious instrument with relevant objectives. Namely, the aim of the Act is to secure or restore soil functions, in a sustainable manner. Negative effects on soil must be avoided, and such negative effects on soils must be rehabilitated. In addition, precautionary measures must also be taken. The Act is currently ongoing a revision and a number of modifications are being considered, for example mandatory sustainable agricultural practices, strengthening of the precautionary aspect (e.g., on erosion, compaction), soil protection areas, reduction of soil sealing, protection of the soil biodiversity or strengthening of natural soil functions.

- **The Agricultural Code, Belgium (Walloon)**

The Agricultural Code aims to organise a common vision for agriculture and its role in the Walloon society, whereas previously agriculture was scattered within several legal bases. The Code provides bases for orientation of policies, legislation and subsidies to support this vision, and facilitates the understanding of diverse regulations on agriculture by grouping them all in one unique Code.

Soil is directly mentioned as a natural resource to protect and manage, the maintenance of agricultural land and the contribution to decrease the pressure and land speculation are cited as objectives, a specific section dedicated to erosion and flooding mitigation is defined, land consolidation operations include soil classification according to their crop production ability, and a section dedicated to agricultural land policy (management, observatory, expropriation, subsidies) is included.

Despite its relevance for soil protection, the anticipated impacts for the purpose of the Soil Health Law have been assessed as somewhat limited. The scope of the Code is restricted to agricultural soil and as such, the objectives are mainly focused on improve agricultural conditions, agriculture that respects environment and biodiversity and to improve the economic situation of our farmers and ensure their future.

- **Soil Protection Act, Slovakia**

The Soil Protection Act (in its full name Protection and Use of Agricultural Soil) aims to protect the characteristics and functions of the agricultural soil. It also includes provisions for a sustainable use of agricultural soils. The owner/tenant of agricultural soil has an obligation to address various soil threats (e.g., physical-chemical degradation and contamination). The Act also prescribes the rules

for the changing of the land from agricultural to non-agricultural land (i.e., land take). It is of national territorial coverage. It explicitly addresses a number soil threats, namely erosion by water and wind, contamination, compaction, and loss of soil organic matter. It also (implicitly) addresses loss of soil biodiversity and salinisation.

Similarly to the instrument of Wallonia, the anticipated impacts of the Slovak Act for the purpose of the Soil Health Law have been assessed as limited as the scope of the Act remains restricted to agricultural soil only.

- **Soil Protection Act and the Soil Quality Decree and Regulation of the Netherlands**

The Soil Protection Act aims to prevent, limit and/or reverse changes in the soil quality, that diminishes or threatens the functional properties of the soil and groundwater for people, plants and animals. The Act regulates the protection of soil through limitations on the application of waste, contaminated water or sludge on or in the soil and the burial of human remains (including ashes) with a view to leaving them there.

The Soil Quality Decree and Regulation focuses on sustainable use of soil in relation to three topics: environmentally safe use of building materials, management of (slightly) polluted sites and the quality of the actual activities carried out. It aims to strike a balance between protection of soil and its use for economic and social purposes.

Based on the inventory, the contribution of national legislation to address the soil degradations has been assessed in annex 8 (baseline).