PL comments to Annexes

ANNEX I
SOIL DESCRIPTORS,CRITERIA FOR HEALTHY SOIL CONDITION, AND LAND TAKE AND SOIL SEALING INDICATORS

For the purposes of this Annex, the following definitions shall apply

(1) 'reverse land take' means the conversion of artificial land into natural or semi-natural land;

(2) 'net land take' means the result of land take minus reverse land take.

Aspect of soil degradation	**Soil descriptor**	**Criteria for healthy soil condition**	**Land areas that shall be excluded from achieving the related criterion**
Part A: soil descriptors with criteria for healthy soil condition established at Union level			
Salinization	Electrical Conductivity (deci-Siemens per meter)	< 4 dS m^{-1} when using saturated soil paste extract (eEC) measurement method, or equivalent criterion if using another measurement method PL Comment We propose to consider changing the unit for electrical conductivity - from [dS*m-1] to [mS*m-1]	Naturally saline land areas; Land areas directly affected by sea level rise PL Comment A better solution would be to move this indicator to part B. In Poland and many European countries, soil salinity is not a significant problem and affects soil health only locally. Soil salinity levels, especially in countries with wetter climates, can vary greatly throughout the year. There may be a situation where the threshold value is exceeded only temporarily. Therefore, a single eEC measurement may not be representative for a given monitoring point.
Soil erosion	Soil erosion rate (tonnes per hectare per year)	≤ 2 t ha^{-1} y^{-1}	Badlands and other unmanaged natural land areas, except if they represent a significant disaster risk

Loss of soil organic carbon	Soil Organic Carbon (SOC) concentration (g per kg)	- For organic soils: respect targets set for such soils at national level in accordance with Article 4.1, 4.2, 9.4 of Regulation (EU) …/…[+]	No exclusion
		- For mineral soils: SOC/Clay ratio > 1/13; PL Comment For clarity, we propose the following wording: *"- For mineral soils: SOC content to the content of the clay fraction (fraction with a diameter of <0.002 mm);"* Member States may apply a corrective factor where specific soil types or climatic conditions justify it, taking into account the actual SOC content in permanent grasslands.	Non- managed soils in natural land areas

[+] OP : please insert in the text the number of Regulation on nature restoration contained in document COM(2022) 304

<table>
<tr>
<td>Subsoil compaction</td>
<td>Bulk density in subsoil (upper part of B or E horizon[1]); Member States may replace this descriptor with an equivalent parameter (g per cm^3)</td>
<td>
<table>
<tr><td>Soil texture[2]</td><td>range</td></tr>
<tr><td>sand, loamy sand, sandy loam, loam</td><td><1.80</td></tr>
<tr><td>Sandy clay loam, loam, clay loam, silt, silt loam</td><td><1.75</td></tr>
<tr><td>silt loam, silty clay loam</td><td><1.65</td></tr>
<tr><td>Sandy clay, silty clay, clay loam with 35-45% clay</td><td><1.58</td></tr>
<tr><td>Clay</td><td><1.47</td></tr>
</table>

In case a Member State replaces the soil descriptor “bulk density in subsoil” with an equivalent parameter, it shall adopt a criterion for healthy soil condition for the chosen soil descriptor that is equivalent to the criterion set for “bulk density in subsoil”.
</td>
<td>Non-managed soils in natural land areas</td>
</tr>
<tr>
<td colspan="4">Part B: soil descriptors with criteria for healthy soil condition established at Member States level</td>
</tr>
</table>

[1] As defined in the FAO Guidelines for Soil Description, Chapter 5 (https://www.fao.org/3/a0541e/a0541e.pdf)

[2] As defined in Arshad, M.A., B. Lowery, and B. Grossman. 1996. Physical tests for monitoring soil quality. p.123- 142. In: J.W. Doran and A.J. Jones (eds.) Methods for assessing soil quality. Soil Sci. Soc. Am. Spec. Publ. 49. SSSA, Madison, WI.

Excess nutrient content in soil PL Comment We propose the word "biogenic" instead of "nutrient".	Extractable phosphorus (mg per kg)	< “maximum value”; The “maximum value” shall be laid down by the Member State within the range 30-50 mg kg^{-1}	No exclusion

Soil contamination	- concentration of heavy metals in soil: As, Sb, Cd, Co, Cr (total), Cr (VI), Cu, Hg, Pb, Ni, Tl, V, Zn (µg per kg) - concentration of a selection of organic contaminants established by Member States and taking into account existing concentration limits e.g. for water quality and air emissions in Union legislation PL Comment We propose changing the unit for the content of heavy metals - from [µg/kg] to [mg/kg]	Reasonable assurance, obtained from soil point sampling, identification and investigation of contaminated sites and any other relevant information, that no unacceptable risk for human health and the environment from soil contamination exists. Habitats with naturally high concentration of heavy metals that are included in Annex I of Council Directive 92/43/EEC[3] shall remain protected.	No exclusion

[3] Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (OJ L 206, 22.7.1992, p. 7).

Reduction of soil capacity to retain water	Soil water holding capacity of the soil sample (% of volume of water / volume of saturated soil)	The estimated value for the total water holding capacity of a soil district by river basin or subbasin is above the minimal threshold. The minimal threshold shall be set (in tonnes) by the Member State at soil district and river basin or subbasin level at such a value that the impacts of floodings following intense rain events or of periods of low soil moisture due to drought events are mitigated.	No exclusion

Part C: soil descriptors without criteria	
Aspect of soil degradation	**Soil descriptor**
Excess nutrient content in soil	Nitrogen in soil (mg g^{-1}) PL Comment We propose changing the unit for nitrogen in soil from [mg/g] to [g/kg].
Acidification	Soil acidity (pH)
Topsoil compaction	Bulk density in topsoil (A-horizon[4]) (g cm^{-3})
Loss of soil biodiversity	Soil basal respiration ((mm^3 O_2 g^{-1} hr^{-1}) in dry soil Member States may also select other optional soil descriptors for biodiversity such as: - metabarcoding of bacteria, fungi, protists and animals; - abundance and diversity of nematodes; - microbial biomass; - abundance and diversity of earthworms (in cropland); - invasive alien species and plant pests

Part D: land take and soil sealing indicators

[4] As defined in the FAO Guidelines for Soil Description, Chapter 5 (https://www.fao.org/3/a0541e/a0541e.pdf)

Aspect of soil degradation	Land take and soil sealing indicators
Land take and soil sealing	Total artificial land (km² and % of Member State surface) Land take, Reverse land take Net land take (average per year–- in km² and % of Member State surface) Soil sealing (total km² and % of Member State surface) Member States may also measure other related optional indicators such as: - land fragmentation - land recycling rate - land taken for commercial activities, logistic hubs, renewable energies, surfaces such as airports, roads, mines - consequences of land take such as quantification of loss of ecosystem services, change in floods intensity

ANNEX II

METHODOLOGIES

Part A: Methodology for determining sampling points

Activity	**Minimum criteria for methodology**
Determination of soil sampling points (sample survey)	The sample survey shall be designed from a complete sample frame containing the best available information on the soil properties distribution, including but not limited to information resulting from previous national measurements and measurements under the LUCAS programme. The sampling scheme shall be a stratified random sampling optimized on the soil health descriptors. The size of the national sample shall meet the requirement of a maximum percent error (or Coefficient of Variation) of 5% for the estimation of the area having healthy soils. The Commission sample for the survey set under Art 6(4) may contribute to a maximum of 20 % of the size of national samples. The allocation and size of the sample shall be determined by applying the Bethel algorithm (Bethel, 1989)[5] accounting for the required maximum estimation error.

Part B: Methodology for determining or estimating the values of soil descriptors

When a reference methodology is set, either the reference methodology is used or another methodology, provided that it is available in the scientific literature or publicly available and a validated transfer function is available.

Soil descriptor	**Reference methodology**	**Minimum methodological criteria**	**Validated transfer function required (if using a methodology different from the reference methodology[6])?**
Soil texture	Preferred method: ISO		YES

[5] Bethel, J. 1989. "Sample Allocation in Multivariate Surveys." Survey Methodology 15: 47–57.

[6] The methodologies different from the reference methodology shall either be available in the scientific literature or publicly available.

(clay, silt and sand content – needed for the determination of other descriptors and related ranges)	11277:1998 Determination of particle size distribution in mineral soil material – Method by sieving and sedimentation Alternative method: ISO13320:2009 Particle size analysis – Laser diffraction methods PL Comment We propose to indicate the norms without specifying the year. ISO 11277:1998 is withdrawn and replaced by 11277:2020. Moreover, the laser diffraction method is dedicated to agricultural soils. It does not work for forest soils, because it does not devide the dust fraction, which is very important in forest soils for assessing the soil condition (e.g. using the Site Soil Index).		
Electrical Conductivity	Option 1: saturated soil paste extract (eEC) measurement method (FAO SOP: GLOSOLAN-SOP-08[7]) Option 2: ISO 11265:1994 Determination of The Specific Electrical Conductivity;		YES
Soil erosion rate		Soil erosion rate estimation shall take into account all actions taken to mitigate or compensate the erosion risk, including post-fire mitigation measures. Soil erosion rate estimation	N/A

[7] https://www.fao.org/3/cb3355en/cb3355en.pdf

		shall include all relevant erosion processes such as erosion by water, wind, harvest and tillage. Soil erosion by water shall be assessed by considering the following factors: - soil characteristics (e.g. erodibility, soil crusting, soil roughness), - climate (e.g. rainfall erosivity – intensity and duration, considering relevant climate change projections for a given area), - topography (e.g. slope steepness and length), - vegetation cover, crop type, land use and management practices to control or reduce erosion, - management practices (e.g. cover crops, reduced tillage, mulching, etc.), - burned areas. Soil erosion by wind shall be assessed by considering the following factors: - soil characteristics (e.g. erodibility), - climate (e.g. soil moisture, wind speed, evaporation), - vegetation (e.g. crop type), - management practices to control or reduce erosion (e.g. wind breaks).	

Soil Organic Carbon (SOC)	ISO 10694:1995 Determination of organic and total carbon after dry combustion PL Comment We propose to indicate the norms without specifying the year. ISO 10694:1995 is withdrawn and replaced by 10694:2002.		YES
Bulk density in subsoil (B horizon[8]) or equivalent[9] parameter chosen by Member States	ISO 11272:2017 for determination of dry bulk density In case an equivalent parameter is chosen, the methodology shall be either a European or International standard when available; if such standard is not available, the methodology chosen shall either be available in the scientific literature or publicly available.		YES
Extractable phosphorus	ISO 11263:1994 for spectrometric determination of phosphorus soluble in sodium hydrogen carbonate solution (P-Olsen) PL Comment An alternative method may be the Mehlich 3 method, which is also used in other countries. This method is faster and generates lower costs.		YES

[8] As defined in the FAO Guidelines for Soil Description, Chapter 5 (https://www.fao.org/3/a0541e/a0541e.pdf)

[9] Equivalent according to the EEA report: Soil monitoring in Europe – Indicators and thresholds for soil health assessments — European Environment Agency (europa.eu)

- Concentration of heavy metals in soil: As, Sb, Cd, Co, Cr (total), Cr (VI), Cu, Hg, Pb, Ni, Tl, V, Zn - Concentration of a selection of organic contaminants defined by Member States and taking into account existing EU legislation (e.g. on water quality or pesticides)	Potential environmental available content of heavy metals in soils based on ISO 17586:2016 using dilute nitric acid. PL Comment A commonly used methodology for testing the content of heavy metals in soils is extraction in *aqua regia*. This methodology is also used in LUCAS soil tests. In order to maintain the comparability of testing results, we believe it is justified to maintain this methodology. Morover, we propose to indicate the norms without specifying the year. For the content of heavy metals, we propose a methodology consistent with the ISO 11466 and ISO 11885.	Use European or International standards when available; if such standard is not available, the methodology chosen shall either be available in the scientific literature or publicly available	YES N/A
Soil water holding capacity	Methodology to determine the value for one sample point: Option 1: LABORATORY: ISO 11274:2019 for determination of the water-retention characteristic. Option 2: ESTIMATION: apply methodology described in the scientific article "New generation of hydraulic pedotransfer functions for Europe"[10] based on texture (or particle size distribution) and soil organic carbon.	Minimum criteria for estimating the total soil water holding capacity of a soil district on a river basin or sub-basin scale: - for the area of land not taken estimate the total value of soil water holding capacity - for the area of land taken, consider setting the water holding capacity of impervious areas to zero, attributing proportionately intermediate values to semi-impervious and other artificial areas.	YES (for point value)
Nitrogen in soil	ISO 11261:1995 for determination of total		YES

[10]

	soil nitrogen using a modified Kjeldahl method		
Soil acidity	ISO 10390:2005 for determination of pH in H_2O and $CaCl_2$ extract (pH-H_2O and pH-$CaCl_2$) PL Comment We propose adding the possibility of determining pH in KCl, and also indicating that the methods of determining pH in H2O and CaCl2 end KCL should be an alternative possibility.		YES
Bulk density in "topsoil" (A-horizon[11])	ISO 11272:2017 for determination of dry bulk density		YES
Soil basal respiration Member States may also select optional soil biodiversity descriptors such as: -Metabarcoding [12] of bacteria, fungi, protists and animals; - Abundance and diversity of nematodes; - Microbial biomass; - Abundance and diversity of	Follow indications described in the scientific article "Microbial biomass and activities in soil as affected by frozen and cold storage"[13]	Use European or international standards when available; if such standard is not available, the methodology chosen shall either be available in the scientific literature or publicly available.	YES For other soil biodiversity descriptors: N/A

[11] As defined in the FAO Guidelines for Soil Description, Chapter 5 (https://www.fao.org/3/a0541e/a0541e.pdf)

[12] Sequencing of DNA barcodes for measuring taxonomical and functional diversity of archaea, bacteria, fungi and other eukaryotes as was done for LUCAS Soil Biodiversity based on https://doi.org/10.1111/ejss.13299

[13] https://www.sciencedirect.com/science/article/abs/pii/S0038071797001259

earthworms (in cropland)			

Part C: minimum methodological criteria for determining the values of land take and soil sealing indicators

- For land take, reverse land take and net land take, the methodologies used should comply with the definitions set in Article 3 and Annex I.

- Soil sealing shall be expressed as a percentage of sealed area per total area.

- The methodologies chosen shall either be available in the scientific literature or publicly available.

ANNEX V

INDICATIVE LIST OF RISK REDUCTION MEASURES

PL Comment
Annex V raises serious doubts, because the measures (remediation techniques) described therein are not defined. Therefore, in many cases it is not clear what type of method it is. It seems necessary to describe the indicated techniques. At the stage of translating the draft directive in Poland problems emerged with a clear understanding of these techniques by experts.

(1) Remediation techniques for in- or ex-situ remediation:

(a) Physical remediation techniques:

(a) Vapor extraction, air sparging;

(b) Heat treatment, steam injection, thermal desorption, vitrification;

(c) Soil washing and flushing;

(d) Electrokinetic extraction;

(e) Liquid layer removal;

(f) Dig and dump.

(b) Biological remediation techniques:

(a) Stimulation of aerobic or anaerobic degradation: bioremediation, biostimulation, bioaugmentation, bioventing, biosparging;

(b) Phytoextraction, phytovolatilization, phytodegradation;

(c) Composting, soil amendments, landfarming, and bioreactor systems;

(d) Biofiltration, biotreatment wetlands, and biobeds;

(e) Natural attenuation.

(c) Chemical remediation techniques:

(a) Chemical oxidation;

(b) Chemical reduction and reduction-oxidation (redox) reactions;

(c) Pump and treat of groundwater.

(d) Remediation techniques for isolation, containment and monitoring:

(a) Surface capping, reactive barriers, encapsulation;

(b) Chemical stabilization, solidification and immobilization;

(c) Geo-hydrological isolation and containment;

(d) Phyto-stabilisation;

(e) Control and aftercare through monitoring wells.

(2) Risk reduction measures other than remediation:

(a) Restriction on the cultivation and consumption of crops and vegetables;

(b) Restriction on the consumption of eggs;

(c) Restriction on the access of pets or husbandry;

(d) Restriction on the extraction or use of groundwater for drinking, personal hygiene or industrial purposes;

(e) Restriction on the demolition, de-sealing, or construction on the site;

(f) Restriction on the access on or in the neighbourhood of the site (e.g. through fencing);

(g) Restriction on land use or land use changes;

(h) Restriction on digging, drilling or excavation;

(i) Restriction to avoid contact with soil, dust or indoor air and apply precautions to protect human health (e.g. respirators, gloves, wet cleaning, etc.).

(3) Best available techniques referred to in Directive 2010/75/EU.

(4) Measures taken by competent authorities and industrial operators following a major accident, in accordance with Directive 2012/18/EU.

ANNEX VI

PHASES AND REQUIREMENTS FOR SITE-SPECIFIC RISK ASSESSMENT

1. Characterization of the contamination requires identifying the contaminants present at the site and determining their source, concentration, chemical form, and distribution in the soil and groundwater. The presence and concentration of contaminants is determined through soil sampling and investigation.

PL Comment

PL proposes the following wording:

"1. Characterization of the contamination requires identifying the contaminants present at the site and determining their source, concentration, chemical form, and distribution in the soil and groundwater. ***Member States may also investigate distribution of the contamination in the earth.*** *The presence and concentration of contaminants is determined through* ~~***soil***~~ *sampling and investigation."*

2. Exposure assessment identifies the path by which soil contaminants may reach receptors. Exposure pathways may include inhalation, ingestion, dermal contact, plant uptake, migration to groundwater or others. This information is combined with the frequency and duration of exposure and receptor characteristics such as age, gender, and health status to estimate the contaminant uptake. The source-pathway-receptor linkages are summarized in a graphic, schematic and simplified representation: the conceptual site model.

3. Toxicity or hazard assessment involves the evaluation of the potential health and environmental effects of the contaminants, based on the dose and duration of exposure. The toxicology or hazard assessment takes into account the inherent toxicity of the contaminants and the susceptibility of different populations, such as animals, micro-organisms, plants, children, pregnant women, elderly, etc. The toxicological information is used to estimate reference doses or concentrations, which are used for the risk characterization.

4. Risk characterization requires integrating the information from the previous steps to estimate the magnitude and probability of adverse effects of the contaminated site for human health and the environment, including from migration of the contamination to other environmental media. The risk characterization helps to prioritize the need for risk reduction and remediation measures. It can also help to define remediation or management objectives for a site, e.g. to achieve maximum acceptable limits or site-specific risk-based screening values.

ANNEX VII

CONTENT OF REGISTER OF POTENTIALLY CONTAMINATED SITES AND CONTAMINATED SITES

The design and presentation of the data in the register shall enable the public to track progress in the management of potentially contaminated sites and contaminated sites. The register shall contain and present the following information at site level for the known potentially contaminated sites, contaminated sites, contaminated sites requiring further action, and contaminated sites where action was taken or is being taken:

(a) coordinates, address or cadastral parcel(s) of the site in accordance with Directives (EU) 2019/1024 and 2007/2/EC;

(b) year of inclusion in the register;

(c) contaminating or potentially contaminating risk activities that have taken or are taking place on the site;

(d) management status of the site;

(e) conclusion on the presence or absence, concentration, type and risk of the contamination (or residual contamination after remediation) where information on those elements is already available from the soil investigations and risk assessment referred to in Articles 14 and 15;

(f) next actions and management steps required and referred to in Articles 14 and 15, including their timeline.

The register may also contain the following information at site level for the known potentially contaminated sites, contaminated sites, contaminated sites requiring further action, and contaminated sites where action was taken or is being taken, where available:

(a) information on environmental permits issued for the site, including the start and end year of the activity;

(b) current and planned land use;

(c) results of soil investigation and remediation reports such as concentrations and contours of the contamination, conceptual site model, risk assessment methodology, techniques used or planned, effectiveness and cost estimates of risk reduction measures.

Poland's comments
to the draft directive of the European Parliament and of the Council on soil monitoring and resilience (soil monitoring law) COM(2023) 416

CLUSTER 1
(Chapter I) art. 1, art. 2, art. 3 (1) (2) (3) (4) (5) (8) (10) (12) (13) (20), art. 4 i art. 5

- **Objective and subject matter**

- PL proposes the following wording of **Art. 1 (1)**:

"1.The objective of the Directive is to put in place a solid and coherent soil monitoring framework for all soils across the EU and to continuously improve soil health in the Union with the view ***to striving*** *to achieve healthy soils by 2050 and maintain soils in healthy condition, so that they can supply multiple ecosystem services at a scale sufficient to meet environmental, societal and economic needs, prevent and mitigate the impacts of climate change and biodiversity loss, increase the resilience against natural disasters and for food security and that soil contamination is reduced to levels no longer considered harmful to human health and the environment."*

Justification: The directive's target of achieving healthy soils across the EU by 2050 at the latest should be considered very ambitious. Achieving the indicated goal will require the implementation of a number of tasks that may be difficult to implement, especially within the deadlines specified in the draft directive.

- **Scope**

- PL proposes the following wording of **Art. 2**:

"Art. 2. This Directive applies to all soils in the territory of Member States, ***whereas the measures to monitor and protect soil may be differentiated according to land use."***

Justification: Used in Art. 2, the wording "this Directive applies to all soils" is very general and insufficiently specified, which may raise interpretation doubts regarding the scope of the obligations imposed by the directive.

- Moreover, PL sees the need to consider introducing a new provision indicating an exclusion from the scope of this Directive. Exclusion should include soil located in areas of activity which main purpose is national defense and international security.

Justification: In the case of these areas, may be a problem of the possibility of entering the area to collect samples and conduct tests or measurements, as well as the publication and sharing of data in this regard. It is worth to point out that a similar exclusion is included in Directive 2004/35/EC (Environmental Liability Directive - ELD).

- **Definitions**

- PL proposes the following wording of Art. 3 (1):

To eliminate doubts, it is necessary to consider whether to clarify the water and air requirements as follows:

„1.'soil' means the top layer of the Earth's crust situated between the bedrock and the land surface, which is composed of mineral particles, organic matter, ***soil*** *water,* ***soil*** *air and living organisms;"*

- In addition, the following new definition should be added:

„earth - means the upper layer of the lithosphere, located below the soil, to the depth of human impact."

Consistently, Art. 3 (10) PL proposes to change wording as follows:

(10) 'contaminated site' means a delineated area of one or several plots with confirmed presence of soil contamination or ***earth contamination*** *caused by point-source anthropogenic activities;*
Moreover, in case of acceptance of the above described proposition, consistent changes should be made to the wording of Annex VI. Comments on Annex VI are attached.
Justification: In the case of contaminated sites, protection against pollution should be established for deeper layers, below the soil, up to the depth of contamination. However, PL agrees with the EC that testing conducted as part of soil monitoring should only concern soil as defined in Art. 3 (1) of the draft directive. However, it is also necessary to cover the entire depth of the soil and layers below the soil, including both soil and the underlying earth and groundwater, in order to properly formulate regulations on point source pollution. It should be explained that in the case of contaminated sites, it is often necessary to test and remediate both the soil and the underlying earth to the depth of impact.

- PL proposes to change wording of Art. 3 (3) as follows:

,,3. 'ecosystem services' means indirect contributions of ecosystems to the ***environmental,*** *economic, social, cultural and other benefits that people derive from those ecosystems;"*
Justification: Soil, in addition to economic, social and cultural functions, performs environmental functions, i.e. it is the basis for the development of life and biological diversity.

- PL proposes to change wording of Art. 3 (5) as follows:

,,5.'sustainable soil management' means soil management practices that maintain or enhance the ecosystem services provided by the soil without impairing the functions enabling those services, ***~~or being detrimental to other properties of the environment~~****;"*
Justification: Consequence of the proposal to amend Art. 3 (3), i.e. taking into account the environmental function of soils.

- PL proposes to change wording of Art. 3 (20) as follows:

,,20. 'soil contamination' means the presence of a ***~~chemical or~~ hazardous*** *substance in the soil in a concentration that may be harmful to human health or the environment;"*
Justification: Consideration should be given to removing the word "chemicals" from this definition, as it coincides with the meaning of the word "substance". Moreover, contaminated soils often contain a mixture of hazardous substances. The provisions should be clarified by using the commonly used term "hazardous substance" to avoid any doubts. Such a change will ensure compatibility with the definition of a hazardous substance contained in the 2010/75/EU directive (Industrial Emissions Directive- IED).

- **Soil districts**

- PL proposes to change wording of Art. 4 (2) as follows:

,,2. When establishing the geographic extent of soil districts, Member States may take int account existing administrative units and ***if possible and justified*** *shall seek homogeneity within each soil district regarding the following parameters:*

(a) soil type as defined in the World Reference Base for Soil Resources[1];
(b) climatic conditions;
(c) environmental zone as described in Alterra Report 2281[2];
(d) land use or land cover as used in the Land Use/Cover Area frame statistical Survey (LUCAS) programme."

Justification: Due to the geological and climatic conditions of our country, striving for uniformity within each soil district when determining them on the territory of the country may cause a lot of problems, because such a feature as soil type is not uniform over large areas in Poland. This situation is the result

[1] https://www.fao.org/soils-portal/data-hub/soil-classification/world-reference-base/en/
[2] M.J. Metzger, A.D. Shkaruba, R.H.G. Jongman and R.G.H. Bunce, Descriptions of the European Environmental Zones and Strata, Alterra Report 2281 ISSN 1566-7197.

of the activity of glaciers in our areas in the past. The draft directive assumes that establishing of soil districts should be based on the map of soil types compliant with the World Reference Base for Soil Resources. Within each soil type, the heterogeneity of the factors listed in the directive should be assessed.
Maximum flexibility in the method of determining soil districts should be sought to take into account regional and local specificities. Experts in Poland indicate that this task can be approached in different ways, taking into account, to a greater or lesser extent: the geographical and natural conditions or the administrative territorial division of the country. The question arises what is the sufficient level of homogeneity of the designated soil district, taking into account soil type, climatic conditions, environmental zone and land use or land cover. Soils in Poland are characterized by a high diversity of types per unit area.
In Poland's opinion it would be extremely helpful to Member States if the European Commission, with the participation of experts from the scientific community, present the correct way to establish soil districts throughout territory of a given Member State [Article 4(1)], taking into account the indicated parameters [Article 4(2)]. It would be beneficial to present several variants of dividing territory to soil districts, using examples of at least two countries differing in terms of area, population and the indicated parameters. The presentation could be showed on an online working meeting.

- **Competent authorities**

- Proposed change to Art. 5:

"Art. 5. Member States shall designate the competent authorities responsible at an appropriate level for implementing the obligations set out in the Directive.
Member States shall designate one competent authority for each soil district established in accordance with Article 4. ***The one authority may be competent for more than one district.***

Justification: Article 5 should guarantee maximum flexibility on establishing competent authorities. It should be possible to establish for example one central authority responsible for monitoring and assessing the condition of soil in all soil districts for all types of land use or for each type of land use separately.
In some cases, monitoring by one central authority can guarantee better quality of the results obtained and a reliable assessment of soil health throughout the country, in all soil districts. The dispersion of competences regarding the implementation of monitoring (one competent authority for each soil district), requires very detailed regulation on the rules for determining sampling points, the method of sampling and analytical methods.
Moreover, sometimes it could be practical to establish, separate from monitoring authority, an authority for each soil district responsible for implementing the principles of sustainable management of soils. In some cases even establishing separate competent authorities responsible for contaminated sites identification and remediation may be a useful solution.

CLUSTER 2 (Chapter II) art. 3 (9) (11) (14) (15) (16) (17) (18) (20) (21) (24) art. 6 art. 7 art. 8 i art. 9

- **Definitions**

- PL proposes to replace the definition - Article 3 (21) of "contaminant" with the definition of "hazardous substance" in the following wording:

„hazardous substance' *means a substance or mixture as defined in Article 2 points 7 and 8 of Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labeling and packaging of substances and mixtures."*
Justification: The need to ensure consistency with the provisions of the IED.

- PL proposes the following wording of Art. 3 (24):

*,,24. 'soil **contamination** investigation' means **~~a process to assess the presence and concentration of contaminants in the soil which is usually performed in different stages~~ measurements of the content of hazardous substances in the soil, including sampling and tests of soil properties related to these measurements**;"*

Justification: The phrase "soil investigation" suggests that the definition covers the testing of all parameters (indicators, descriptors). Meanwhile, the wording of the definition shows that the investigation only concerns soil contamination. Moreover, the definition proposed in the draft directive is not enough precise.

- **Soil descriptors, criteria for healthy soil condition, and land take and soil sealing indicators**

- Comments on Annex I are attached.

- **Measurements and methodologies**

- Comments on Annex II are attached.
- PL proposes the following wording of Art. 8 (2) as follows:

,,2. Member States shall carry out soil measurements by taking soil samples at the sampling points referred to in paragraph 1 and collect, process and analyse data in order to determine the following:
*(a) the values of the soil descriptors as set in **part A and B of** Annex I;*
*(b) where relevant, the values of the additional soil descriptors **set out in part C of Annex I**;*
*(c) **where relevant**, the values of the land take and soil sealing indicators listed in part D of Annex I."*

Justification: PL proposes changing the wording of Art. 8 section 2 in order to eliminate any confusion as to whether the indicators in Annex I, Parts C and D, must be tested obligatory. In art. 7 section 5 it is indicated that the values of indicators in parts C and D of Annex I may be established as optional, while in Art. 8 para. 2(c) indicates that the values of the indicators in Annex I, part D, must be tested obligatorily.

- Proposed change to Art. 8 (4):

*,,4. Member States shall ensure that the first soil measurements are performed at the latest by… (OP: please insert the date = **~~4~~ 6** years after date of entry into force of the Directive)."*

Justification: PL proposes extending the time for carrying out the first soil measurements from 4 to 6 years from the date of entry into force of the directive. Our proposal results from the need to introduce the required methodologies at the level of regulations and to launch the activities of bodies responsible for soil health, including the employment of employees.

- **Assessment of the soil health**

- Proposed change to Art. 9 (1):

*,,1.(…) Member States shall ensure that soil health assessments are performed at least every 5 years and that the first soil health assessment is performed by … (OP: please insert the date = **~~5~~ 7** years after date of entry into force of the Directive)*.]

Justification: PL proposes to extend period of time indicated in Art. 9 section 1, at least 7 years from the date of entry into force of the Directive, similarly to the changes in Art. 8 section 4. The extension should be made taking into account the time needed to analyze monitoring data.

- PL proposes the following changes in Art. 9 (2):

*" 2. (...) Soil is unhealthy where at least one of the criteria referred to in subparagraph 1 is not met ('unhealthy soil'). **Member States may also define soil health categories, taking into account the number of indicators that meet the required criteria."***

Justification: The directive should explicitly indicate the possibility of using weighted criteria, allowing in the assessment of soil health the division of soils into for example: healthy, moderately healthy, poorly healthy, slightly unhealthy, unhealthy and critically unhealthy.

- Proposed change to Art. 9 (3):

*,,3. Member States **~~shall~~ may** analyse the values for the soil descriptors listed in part C of Annex I and assess whether there is a critical loss of ecosystem services, taking into account the relevant data and available scientific knowledge.*
*Member States **~~shall~~ may** analyse the values of land take and soil sealing indicators listed in part D of Annex I and assess their impact on the loss of ecosystem services and on the objectives and targets established under Regulation (EU) 2018/841."*
See justification to Art. 8 (2).

- Proposed amendment to Article 9 (5):

*"Art. 9(5): Member States ~~shall~~ **may** set up a mechanism for a voluntary soil health certification for land owners and managers pursuant to the conditions in paragraph 2 of this Article.*

The Commission may adopt implementing acts to harmonise the format of soil health certification. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 21."

Justification: We believe that establishing a healthy soil certificate should be voluntary for the Member States. We should also remember about the quite wide range of certification systems already available, e.g. for farmers, which assume the use of sustainable agricultural practices that are beneficial for the soil, including: certification under organic farming, certification under integrated plant production (national system), and in the future, certification CO_2 removal. Therefore, it should be left to the competence of Member State to decide whether to implement a soil health certification system depending on the analysis of its internal needs.

CLUSTER 3 (Chapter IV) art. 3 (9) (10) (19) (21) (23) (24) (26), art. 12, art. 13, art. 14, art. 15 and art. 16

- **Definitions**

- PL proposes the following wording of Art. 3 (21):

*,,**hazardous substance' means substance or mixture as defined in** Article 3 of **Regulation** (EC) No **1272/2008** of the European Parliament and of the Council of 16 December 2008 on* classification*, labelling and packaging of substances and mixtures (OJ L 353, 31.12.2008, p. 1)".*

Justification: The need to ensure consistency with the provisions of the IED. In art. 3 (21), we propose to replace the definition of "contaminant" with the definition of "hazardous substance".

- PL proposes new wording of Art. 3 (24) – see above in cluster 2.

- PL proposes the following wording of Art. 3 (26):

,,26. ,,remediation ***- means the removal, control, containment or reduction of relevant hazardous substances, so that the site, taking into account its current or approved future use, ceases to pose a risk to human health or the environment."***

Justification: We propose that the definition should be consistent with the provisions contained in Art. 22(3) of the IED directive obliging the operator of the installation to remediate contaminated soil.

- **Identification of potentially contaminated sites**

- Regulations on the identification, investigation and management of contaminated sites do not include a division into historical contamination and land damage. Consistency of the proposed provisions with Directive 2004/35/EC ("damage") should be ensured. If soil contamination constitutes land damage, PL propose adding an exemption in Art. 13, as follows:

"Where soil contamination constitutes land damage covered by Directive 2004/35/EC, the provisions of this directive apply."

Justification: New EU regulations should not duplicate existing regulations. If the proposed regulations on contamination covers both environmental damage to land covered by the ELD directive and historical contamination (contamination that occurred before entry into force of the provisions of ELD directive, i.e. those not covered by this directive), we are dealing with an overlap of the proposed provisions of the directive with the provisions of the ELD directive.

NETHERLANDS

Written Comments WPE Soil Monitoring Law – 24-11-2023

I – GENERAL PROVISIONS

The Netherlands supports the objective of the proposed directive. As a small country where every square meter is utilized, we are very aware that soil needs to be protected without obstructing sustainable development.

Our concern is though that this directive does not fully line up with other EU policies, such as the aim to become climate neutral by 2050. The energy transition requires space; space for wind mills, solar panels and new hydrogen infrastructure. Climate change also demands space, for climate-proof housing and for measures against rising sea-levels.

First, we will share some general remarks on cluster 1 till 3, after this we will go into more detail on the different articles;

<u>The one out all out principle</u>

- We believe the 'one out all out' principle should be removed from the directive.
- Instead, the Netherlands proposes a correction factor for natural, historical circumstances. As well as an approach that links ecosystem services to land use.

<u>The Dutch phosphorus problem</u>

- The Netherlands would prefer not to include set phosphorus values in the directive.
- The proposed measurement method, the range for phosphorus concentrations and the proposed reference method are not suitable for the Dutch soils.
- In the context of the Water Framework Directive and the Nitrate Directive, we are already working on reducing leaching into ground and surface water and lower phosphorus levels in the soil.
- Double regulation at EU level must be avoided.

<u>Combating soil degradation</u>

- It is unclear whether the assessment of soil health should be considered per plot, per soil district or per Member State.
- If this is intended to happen per plot, this is impracticable for the Netherlands.
- Ideally, the assessment is carried out per Member State so that maximum compensation is created and crop rotation remains possible.

<u>Land take and soil sealing</u>

- Land take and soil sealing must be limited, the effects minimized and, if possible, compensated and monitored.
- No net land take – which was a hot topic in the EC proposal for an EU Soil Strategy for 2030 – has been replaced by the ladder above.
- No net land take (Article 11(b)) should be deleted.

<u>Natural background values</u>

- Natural background values should be leading.
- For example, in the Netherlands the organic matter/clay ratio of 1/13 cannot be met in marine clay areas.

Soil Monitoring Districts

- Defining soil monitoring districts does not fit within the administrative division of the Netherlands and the decentralization of soil tasks in the Environmental Act, which could lead to a (large) increase in the administrative burden on decentralized authorities.

Set up of the monitoring

- When setting up monitoring, attention must be paid to protocols and procedures, administrative burdens, different types of soils with land use (agriculture, urban, industry, nature, etc.).

CLUSTER 1

CLUSTER 1 (Chapter I)		
Objective and Subject matter	1	1 to 23, 47, 54
Scope	2	
Definitions *(related to Chapter I)*	3 (1) (2)(3)(4)(5)(8)(10)(12)(13)((20)	
Soil districts	4	24
Competent authorities	5	25

Article 3 – *Definitions related to Cluster 1*

1
On the definition of soil, we feel it would be useful to clarify that the directive is aimed at the top layer, i.e. to a maximum depth of 25 meters.

The definition of soil would then read:
'soil' means the top layer of the Earth's crust situated between the bedrock and the land surface, measuring no deeper than 25 meters and which is composed of mineral particles, organic matter, water, air and living organisms.

4
Not all soil can deliver the same ecosystems, for instance, we build dikes with solid sand as a basis and clay for the outside. We cannot use one blueprint for all type of soil. Soils can only provide the ecosystems for that TYPE of soil.

Furthermore, not every soil should deliver all the functions. Soil beneath infrastructure (or in the core of a dike, as mentioned) should be compacted and cannot be judged on the amount of organic carbon/permeability a.s.

Therefore, the definition of soil health should read:

'Soil health means the physical, chemical and biological condition of the soil determining its capacity to function as a vital living system and to provide the ecosystem services <u>for the type of soil, and fitting the function the soil has</u>.'

12
On the definition of land we feel it would be useful to clarify that also land that is part of the time under water, is not land and therefore does not fall under the directive.

The definition of land would then read:
'land' means the surface of the Earth that is not covered by water, also the surface of the earth that is covered by water part of the time (a minimum of 50% of the time) does not count as land.

Article 4 and 5

The Netherlands agrees that it is vital to take local circumstances, climate conditions, soil type and land-use into account when governments design measures aiming to

improve the health of soils and when designing measures to stimulate or enforce sustainable soil management. In the Netherlands the municipalities are the competent authority on soil. In this they work closely together with the Province, the Waterboard and the national government. There are approximately 342 municipalities in the Netherlands. We therefor do not think that establishing 385 soil districts in the Netherlands would be efficient or effective.

As mentioned, we do agree that for the execution of this directive it is important to take local circumstances, climate conditions, soil type and land-use into account. However, we feel that you could and should give member states the flexibility to organize this in a structure and way that fits their administrative structure. In the yearly and 5-yearly reports, member states can be asked to specify and explain how they have taken the local circumstances, soil type and function into account.

Therefore we propose to reword the articles 4 and 5 as follows:

> *Member states shall take local circumstances, climate conditions, soil type and land use into account when setting up the monitoring framework and determining the monitoring points.*
>
> *In their yearly and 5-yearly report, member states shall testify how local parties have been involved in the monitoring and designing measures to improve soil health and achieve sustainable soil management.*
>
> *Soil districts are not depending on the authorities. It is possible to assign one authority to multiple districts. It is possible to have different thresholds for indicators in different districts.*

CLUSTER 2

CLUSTER 2 (Chapter II)		
Definitions *(related to Chapter II)*	3 (9) (11) (14)(15)(16)(17)(18)(21)(24)	
Soil health and land take monitoring framework	6	30, 32, 33, 34, 35
Soil descriptors, criteria for healthy soil condition, and land take and soil sealing indicators (+ Annex I)	7	26, 27,29
Measurements and methodologies (+ Annex II)	8	27, 31
Assessment of the soil health	9	28, 29

Article 3 – *Definitions related to Cluster 2*

14, 15, 16
The comment we would like to make on the definitions related to chapter II, is on the definition of 'semi-natural land' and the definition of 'artificial land'. We feel it would be useful to clarify that the latter means build up areas, where the build has impaired the ecosystem services of the soil to such an extent that they are void. And that semi-natural land includes parks, gardens and any green area in an otherwise urban area. Thus extending the definition of semi-natural land and narrowing the definition of artificial land.

The definition of 'semi-natural land' would then read:

> *an area where ecological assemblages have been substantially modified in their composition, balance or function by human activities, but maintain valuable in terms of biodiversity and the ecosystem services it provides;*

The definition of 'artificial land' would then read:

> *'artificial land' means land used as a platform for building constructions and infrastructure (not dikes) or as a direct source of raw material or as archive for historic patrimony at the expense of the capacity of soils to provide any other ecosystem services.*

Article 6
We support the implemented act proposed in article 6(8). It is practical and efficient to have one format for all member states. However there should be room for national methodology and execution; that is: research protocols, risk-assessment, indicators, analysis and remediation methods.

We'd like to see the following sentence added:

'Member states are free to utilize research protocols, risk-assessment, indicators, analysis and remediation methods fitting the national and local soil situations.'

Article 8

Article 8(2)c)
The Netherlands would like to point out that the suggested method for monitoring land take and soil sealing would not measure whether the principles laid down in article 11(a) are respected or not.

What is the view of the Commission and how will they deal with this disparity?

Article 8(6) empowers the Commission to adopt delegated acts in accordance with Article 20 to amend Annex II in order to adapt the reference methodologies mentioned in it to scientific and technical progress, in particular where values of soil descriptors can be determined by remote sensing referred to in Article 6(5). We do not see the need for this. As you emphasize in your proposal, it is beneficial for all, to share and exchange experiences, methods and scientific developments. This hub for best methods can and shall be used by all member states. There is no need for the Commission to have powers to enforce the use of a specific method.

Therefor we do not support the delegated act in article 8(6). Please delete this directive.

Article 9
The implementing act laid down in article 9(5) ensures that the format of soil health certification can be harmonized by the Commission. Although the Netherlands are not in favor of a voluntary soil health certification system for landowners and managers, it would be practical to have a harmonized format, in case the member states do adopt soil health certification for land owners.

Therefor the Netherlands supports the proposed implementing act in article 9(5). Please delete this directive.

CLUSTER 3

CLUSTER 3 (Chapter IV)		
Definitions *(related to Chapter IV)*	3 (9)(10) (19)(21)(23)(24)(26)	
Risk-based approach	12	43, 46
Identification of potentially contaminated sites	13	43, 44
Investigation of potentially contaminated sites	14	43, 45
Risk assessment and management of contaminated sites (+Annex V & VI)	15	43, 46
Register (+Annex VII)	16	43, 48

Overall reaction to art. 12 t/m 16

In the articles 12 - 16 polluted locations are described and mentioned. We'd like to know: is the goal to remediate all existing pollution? Or is the goal to remediate soil pollution leading to risks for humans or the environment?
The first approach (all pollution) is an unrealistic approach, with little added value and an unproportionate big effort. It can even cause too much disturbance (excavation) of soils that are ecological healthy but have just one parameter 'above the threshold', chemically.
The second approach (risk based) is aligned with our policy on soil, and is a smart approach in our experience for over thirty years with this matter.

On this aspect we have no suggestion for different texts, just a statement on our point of view.

Article 12

We support and encourage the remediation of pollution and have some experience on this issue in the Netherlands. Our main concern is 'rework': extra administration that does not add up to a better environment and soil. We'd like to react to three aspects for now:

1. Existing pollution. When a member state already has a research- and remediation operation running (or halfway finished) this operation is the leading approach. Until this operation is finished, the suggested and used legislation, instrumentation, risk-analysis and sampling can be used.
2. New pollution. For the divide between 'old and new cases' of soil pollution, the decisive date should determined by the member state.
3. Prevention and privacy-issues. We do wonder how the directive handles principles of prevention and privacy issues. What measures are there for preventing soil pollution? How is citizen-privacy protected?

To be totally clear on this issue, we'd like the following sentence added:

'When a member state already has a research- and remediation operation running this operation is the leading approach. Until this operation is finished, the suggested and used legislation, instrumentation, risk-analysis and sampling can be used.'

Art. 14 Research
This also links back to the definitions. In our experience, investigation of a point-source activity can lead to the finding of a bigger diffuse contaminated area. Examples are pollution with PFAS or heavy metals (lead). So, is this regarded inside the scope or outside the scope of the directive?

We'd like clarity on the exclusion of diffuse soil pollution, via an explanation such as:

'This directive focusses on soil health and remediation of point-source pollution. Diffuse pollution is not the focus-area of this directive.'

Art. 16. Register
To monitor and register the progress of remediation, from identification to remediation, you need a spatial geografic based system.

A long list of locations, addresses, does not present any insights. For instance: an old factory location can be registered as two locations. These locations are neighboring another location that has been developed into an urban area for living. This insight is only given if you place these locations on a map. Therefore we need a spatial geographically referenced system, not a list. At this moment, in the Netherlands, the cities/municipalities have their own geo-based registration systems. It would take a lot of effort making a national longlist, and it would not add to the insight, on the contrary.

Please add the following sentence:

'*If member states have a running geo-referenced dynamic database, that is publicly accessible, the requirements of the Soil directive are met. It is not necessary to also create a national or European database.'*

FINLAND

Comments on the proposal for the Soil Monitoring Law

Finland would like to thank the Presidency for the opportunity to provide written comments. We will provide further comments later.

CLUSTER 1 (Chapter I)

Article 1 (Objective and Subject matter) and Article 2 (Scope)

FI comments: At this stage we don't have comments on the articles 1 and 2 but we may come back to these articles later.

Article 3 (Definitions related to Chapter 1)

FI comments: Our experts are still analyzing the definitions and we may come back with additional comments. A couple of comments at this stage:

-definition number 5 (*sustainable soil management*): the end of sentence is unclear "or being detrimental to other properties of the environment".

-definition number 13 *(land cover):* the definition for "land cover" in the proposal is different than FAO definition. It would be good to use the same definition for consistency.

Article 4 (Soil districts) and Article 5 (Competent authorities)

FI comments: The concept of soil district and its implementation is still quite unclear to us and we are still analyzing the proposal. We would like to ask the Commission to clarify the use of NUTS 1 territorial units and the wording "at the minimum" in para 1. Is it possible for the Member States to use soil districts that are smaller than NUTS 1 territorial units? For example, in situations where existing administrative units as mentioned in para 2 are smaller than NUTS 1 territorial units? It is important, that existing administrative structures could be utilized as much as possible.

The requirement "shall seek homogeneity" on the parameters listed in the article (para 2) is quite strict and in our view there should be more flexibility for the Member States to take into account national circumstances. In our view this could be done for example by adding word "at least" before "the following parameters".

[When establishing the geographic extent of soil districts, Member States may take into account existing administrative units and shall seek homogeneity within each soil district regarding at least one the following parameters:

(a) soil type as defined in the World Reference Base for Soil Resources ;

(b) climatic conditions;

(c) environmental zone as described in Alterra Report 2281 ;

(d) land use or land cover as used in the Land Use/Cover Area frame statistical Survey (LUCAS) programme.]

Are contaminated sites included in the soil health assessment of the soil districts or are the excluded from it? The approach is different; soil health assessment is based on concentrations / threshold values when the approach to soil contamination is risk based.

CLUSTER 2 (Chapter II)

Article 3 (Definitions related to Chapter 2)

FI comments: We would like to have clarification on the definitions of natural land (14), semi-natural land (15) and artificial land (16) and examples on what kind of areas would be included under each definition. It seems that these definitions are difficult to implement in practice, since it might not be clear which types of areas fall under which definition.

- ✓ We have also a question on the definition "*natural land*" (number 14): are protected areas where management practices are made included under this definition?
- ✓ Regarding "*artificial land*" (number 16) there is a need to clarify what is meant with raw materials in this context. There is also a need to clarify what is meant with "archive for historic patrimony". It would also be good to clarify what land use classes of LUCAS Soil Sampling this refers to.

Article 6 (Soil health and land take monitoring framework)

FI comments: We will come back with more comments on the details of the monitoring framework. At this stage a couple of comments. In general there is a need to ensure enough flexibility for the Member States in implementing the monitoring system. It is important that already existing monitoring systems in the Member States as well as already collected time series can be taken into account.

Article 6 (3): We have concern regarding proposed sampling methodology. The proposed methodology would not be in line with national existing monitoring in Finland. It would be important to be able to use also other sampling methods to ensure the use of existing monitoring systems.

Article 6(4): It would be important that Member States could contribute to the design of LUCAS Soil sampling at the expert level. Member State´s experts could for example participate in the regional steering group when regional sampling is designed and practicalities are planned. We don't have specific text proposal at the moment but we´d like to put forward this idea and are open to work on the text. The purpose of the proposal is to take as much as possible into account Member State´s national circumstances in the implementation of LUCAS Soil sampling and take advantage of the local knowledge. It would also be important to coordinate allocation of sampling points with other existing monitoring programmes.

Article 6 (6): It is important to ensure that statistical reliability and confidentiality as well as protection of personal data is guaranteed when georeferenced spatial format is referred to. Could the Commission clarify how this would be taken into account in the digital soil health data portal under article 6.6 (and also in the register under article 16)? We think that the relationship of the proposal with the Regulation on European statistics ((EC) No 223/2009), Directive on public access to environmental information (2003/4/EC) as well as General Data Protection

Regulation ((EU) 2016/679) should be clarified. This clarification is needed both in the article 6.6 concerning the digital soil health data portal and in the article 16 concerning register on contaminated sites and potentially contaminated sites.

Article 7 (Soil descriptors, criteria for healthy soil condition, and land take and soil sealing indicators (+ Annex I)

FI comments: We continue to examine the proposed soil monitoring framework and the indicators. Couple of comments on the indicators, we will send more detailed comments later.

Some of the proposed indicators seem not to be very relevant for the Finnish circumstances (for example in boreal continental forests salinization is not an issue and limited resources should be focused on measurements that help to detect unhealthy soil).

- Although we see monitoring soil organic carbon really important issue, we see challenges in the proposed indicators. The proposed indicator for *mineral soils* in our view does not serve its intended purpose. For example, the proposed soil organic carbon: clay ratio does not well reflect all the Finnish mineral soils on agricultural land. The relevance of SOC/Clay -ratio of 1/13 has not been shown in forest soils. Overall SOC/clay content does not seem to be an appropriate criterium for 'Loss of soil organic carbon', but it is rather an indicator for soil structure.
- Furthermore, there would need to be differentiations between land uses, since forest land use is much different compared to agricultural use. For example subsoil compaction makes sense to monitor only in managed forests where interval of forest operations with vehicles is <20 yr.
- Regarding proposed indicator for soil organic carbon in the *organic soils*, we would like to ask clarification on its implementation?
- Related to concentration of heavy metals, we would like to ask for reasoning to measure Chromium VI on all soils, without exception. In our understanding, the risk is limited to certain areas and measurements are expensive.

Article 8 (Measurements and methodologies (+ Annex II))

FI comments: There is a need to include flexibility in the sampling, in order to take into account national circumstances and Member States already existing monitoring systems. We will provide more specific comments on the sampling later.

For example chosen approaches of stratified random sampling and use of bethel algorithm should be broadened to facilitate the use of existing monitoring programs and cost efficiency.

For some of the indicators different method is used at least in Finland. We would like to especially point out phosphorus at this point. Proposed thresholds and methods do not produce accurate results in Nordic soils, that in general, have lower pH than in Central and Southern Europe.

Member States should be allowed to leave outside monitoring a specific indicator that is not relevant in that particular Member State or in some land use class when this is well justified base on analysis, for example if the costs would be disproportionate and/or information gathered is not relevant.

We support the idea that the Member States would use harmonised methods for soil monitoring taking into account differences in natural conditions and land uses. MS should be allowed some flexibility in situations where another method has been proven to be scientifically superior. For example in Finland this concerns measurement of phosphorus where we use different methodology than proposed. Research has shown that there is a risk that proposed Olsen method overestimates the easily soluble amount of P in slightly acidic soils and therefore the results would not be comparable to areas where the soil is not acidic.

We are still discussing what could be suitable timeframe for the measurements and their relation to reporting of soil health every five years. Every 5 years is challenging and for some indicators and/or land use classes may not be rational or cost efficient. Most experts have suggested even 10 yr timeframe and also longer time frame than now proposed 1 year for monitoring land take, for example every three years. Longer time frame could, on the other hand, mean that the data used for the soil health assessment would be outdated and thus it could be considered whether there could be assessment every five years of some aspects or parts of the monitoring to ease the administrative burden and improve cost efficiency. The timeframe for soil health assessment needs further discussion together with the monitoring framework and indicators.

Article 9 (Assessment of the soil health)

FI comments: We have reservation towards the proposed one out, all out approach, where one indicator would define if soil is healthy or not. Considering the variability and complexity of soil descriptors across the whole Europe and the challenges in their unequivocal interpretation, it is likely that "one out, all out" approach would too easily result in defining soils as unhealthy ignoring the overall soil state and its potential improvement concerning other soil descriptions. This conclusion is supported by the experiences gained from the use of the approach in the context of the EU's water policy.

-soil health certificate needs to be voluntary for the Member States

Article 9(3) suggests that descriptors in part C should be analysed to see if there is a critical loss of ecosystem services based on scientific knowledge. We would like to have more information on how this could be done in practice?

Article 9(4) requires the member states to identify the areas where unhealthy soils are present. It is however unclear what is the scope or area that would be considered unhealthy based on measurements. Could we have some more information on how the Commission intended this to be done?

CLUSTER 3 (Chapter IV)

Definitions (related to Chapter IV)

FI comments: Some of the definitions are somewhat unclear and/or confusing. The definition of soil contamination, for example, indicates that contamination rests upon specific soil concentrations, not unacceptable risks to human health or the environment as in the current Finnish legislation. It is also unclear whether the definition of soil contamination refers to both

diffuse and local contamination, given that Chapter IV requires the application of a risk-based approach for managing contaminated sites (i.e., local contamination) based on the level of (un)acceptable risks, not concentrations. Should soil contamination be defined based on risks rather than concentrations, the current definition needs to be modified, e.g.

20) 'soil contamination' means the presence of a chemical or substance in the soil in ~~a concentration~~ such a way that it may be harmful to human health or the environment

Soil monitoring law uses terms "contamination" and "contaminants" when IED and WFD uses terms "pollution" and pollutant". Is there reason for not using harmonious terms?

Article 12 (Risk-based approach)

FI comments: We fully support the concept of risk-based approach in contaminated sites' management and would even integrate it further into the other sections of the proposal, including the assessment of soil health. Instead of predefined soil criteria and the "one out, all out" principle, the risk-based approach would enable a more comprehensive, practical, and scientifically sound foundation for the assessment of soil health and hence provide better opportunities for truly sustainable soil management.

Article 13 (Identification of potentially contaminated sites)

FI comments: The identification of potentially contaminated sites should be based on available information on known or potential risk activities, including spills, accidents and other (potentially) polluting events, existing environmental data (e.g., based on previous soil or groundwater investigations), or other field observations (e.g., visible contamination or disposed wastes in soil). This information and data are not restricted to specific regulated activities, and thus referring to a few directives in Article 13 is not informative but rather confusing. Therefore, points b-d in the list of "criteria" should be removed. Moreover, the directives mentioned in the list alongside their associated obligatory permit procedures already include specific requirements for soil protection and restoration, in which case the potential soil contamination resulting from those activities should be managed regardless of the proposed soil directive.

The meaning of the section below the same list ("For the purpose…") is unclear to us and should be removed or specified. In case it refers to risk prioritization of the sites (activities), why does it only cover point a) of the list? Should risk-based approach be applied for all the steps of contaminated site management (i.e., Articles 13, 14 and 15) as stated in Article 12, the prioritization of potentially contaminated sites, based on the risks they pose to the soil, should surely include all the polluting/potentially polluting activities mentioned in the list (i.e., including accidents etc.). On the other hand, the concept of risk-prioritization could better fit in Article 14 so that based on a rather comprehensive list of potentially contaminated sites (identified according to Article 13) only those sites that are most likely to cause soil contamination (or unacceptable risks) could be investigated.

Article 14 (Investigation of potentially contaminated sites)

FI comments: Referring to our comments on Article 13, it is unclear to us, if soil investigations should be carried out at all the identified potentially contaminated sites or only those sites that

are most likely to cause soil contamination (or unacceptable risks) according to Article 13 (i.e., the risk-prioritized sites). This should be clarified. Following the risk-based approach defined in Article 12 and given that many MSs have all kinds of sites in their national soil databases/registers (including very small sites with low potential for significant risks), the compulsory soil investigation should only apply to the risk-prioritized sites.

Article 15 (Risk assessment and management of contaminated sites) ´+ Annex V & VI

FI comments: Referring to our comments on the definition on soil contamination, it is unclear to us, if the proposal considers contamination (including contaminated site) as an exceedance of a specific soil concentration threshold or as soil/site in which the risks are unacceptable. So, if the risks on a site are acceptable based on risk assessment (carried out according to Article 15), can the site still be regarded as contaminated? In the Finnish case, for example, such site is regarded as uncontaminated independent of the concentration levels.

Describing the elements of risk assessment (or unacceptable risks), paragraph 2 of Article 15 mentions the precautionary principle. The precautionary principle, however, means that decisions on risk management can be made without absolute certainty of adverse consequences/harms, especially if the potential consequences/harms are severe enough. Therefore, the precautionary principle should only be applied, if needed, after the scientific evaluation (i.e., risk assessment) when the uncertainties of risk assessment remain too high. Hence, the precautionary principle should not be seen as a tool in risk assessment, but instead, the assessment should always include a proper analysis of uncertainties. So, in Article 15, the precautionary principle should be replaced with a reference to uncertainties or uncertainty assessment/analysis.

Paragraphs 3 and 4 of Article 15 state that competent authority shall carry out risk assessment and risk reduction measures. Given that in most cases, these actions, in practice, will be done by other experts (e.g., environmental consultants), it would be better to reformulate the text so that the MSs (or competent authorities) are required to ensure that the necessary measures for risk assessment and reduction will be carried out. This would also be in line with the other obligations set in the proposal.

Moreover, we consider it desirable that Article 15 (and potentially Article 14) would clearly refer to the “polluter pays” -principle, which should be the first option to address any obligations for site management. If needed or found useful, references could also be made to other potential liabilities defined on the national or EU level.

Article 16 (Register) + Annex VII

FI comments: It is important that already existing registers in the Member States are taken into account and MS are able to use them. We also reiterate our comment concerning Articles 6.6 and 16, that it is important to ensure that statistical reliability and confidentiality as well as protection of personal data is guaranteed when georeferenced spatial format is referred to. Could the Commission clarify how this would be taken into account in the digital soil health data portal under article 6.6 and in the register under article 16.

PORTUGAL

"Soil Monitoring Law " (WK 15564/2023)

Chapter II

The remediation process could change other parameters in soil (namely descriptors from Annex I). Regarding healthy monitoring, Potential Contaminated Sites and Contaminated Sites should be treated separately. Only after the remediation for use propose is achieved (to an acceptable risk to human health and to environment), the other descriptors should be measured. So, the monitoring frequency asked for could not be possible to accomplish in these cases.

Chapter IV

1 – Regarding the activities mentioned on article 13, paragraph 2, (b), (c) e (d), and after an investigation of a potentially contaminated site, which results in a non-contaminated site, the risk assessment, which has the potential of contamination evaluation, should be repeated 5 years after and in the following situations: i) before starting the operation (to establish a baseline of soil and groundwater evaluation); ii) substantial change occur in the installation; and iii) at site closure;

2 – The Polluter Pays Principle is enshrined in the EU Treaty. Regarding article 14, we consider useful to have a guidance on the application of the Polluter Pays Principle with a decision chain to harmonized procedures and support consistent decision making among Member States. This gap can leave the MS with unresolved legal proceedings and consequently increased costs. These situations are not conducive to the potentially contaminated sites identification or even for contaminated sites management.

3 – Regarding Article 15 paragraphs 1 and 2 we propose that "The responsible competent authority shall ensure, validate and supervise site-specific assessment, and take appropriate measures to bring the risks to an acceptable level for human health and/or the environment", since the obligation to achieve these goals should be taken by the liable party under MS supervision.

4 – We propose that the remediation of a contaminated site, resulting of an activity mentioned on article 13, paragraph 2, (b), (c) and (d), should take into account firstly the baseline evaluation of soil and groundwater before starting operating and, if the baseline evaluation is not stablished, then ensure risk reduction measures to an acceptable risk.

5 – For public consultation on the register and information of potentially contaminated sites, we believe that for the activities mentioned on the article 12, paragraph 2, and for historical contamination with a liable party identified, these installations should have a limited time (e.g., 1 year) to perform the investigation before public disclosure. This way the operator/liable party for the investigation shall have some time and also an incentive to conclude soil evaluation.

6 – Regarding the identification of contaminants present at the site, in Annex VI, we suggest including at least the soil descriptor – concentration of heavy metals and organic contaminants, present in Annex II Part B.

Council of the European Union
General Secretariat

Interinstitutional files:
2023/0232 (COD)

Brussels, 28 November 2023

WK 15890/2023 INIT

LIMITE

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CLIMA
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CONTRIBUTION

From: To:	General Secretariat of the Council Working Party on the Environment
N° Cion doc.:	ST 11566/23 + ADD 1
Subject:	Soil Monitoring Law Directive: Follow up to the WPE on 20 and 21 November 2023 – comments from delegations

Following the above WPE meeting and the call for comments (WK 15564/23 INIT), delegations will find attached comments from CZ, DK, EE. IT, CY, LT, LU, NL, AT, PL, PT, SI, SK, FI and SE.

ITALY

Remarks and suggestions for amendments to the Commission proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on Soil Monitoring and Resilience (Soil Monitoring Law)

Written comments by 24 November 2023

- As for **Article 2 (Scope)**, we would appreciate more explicit clarifications about the application of the provisions of the directive to contaminated sites; we deem it should be specified that it applies to all environmental sectors involved in the contamination of the soil (filling materials, alien materials, soil gases, groundwater, etc.).

- Italy proposes to amend **Article 3** (Definitions) as follows:

  - **point 16** – 'artificial land' means land used as a platform for constructions, infrastructure***, buildings, other paved areas and construction sites***, as a direct source of raw materials or as an archive for historical patrimony at the expense of the capacity of soils to provide other ecosystem services.

  and to add a

  - **point 24 bis** – '***site characterization' means a process aimed at evaluating the presence and concentration of contaminants in the site soil and their possibility of determining risks for human health and the environment, which is usually performed in several phases***;

  Reasoning: this definition is missing from the list of art. 3 while the notion of "characterization" is present in Annex VI of the proposal. The environmental characterization of a site can be identified with the set of activities that allow the reconstruction of the contamination phenomena affecting the environmental matrices, in order to obtain basic information on which decisions can be achievable and sustainable for the safety and/or site remediation.

- Italy proposes to add a **letter e)** to **art. 4.2**, as a further parameter relating to the achievement of homogeneity within each soil district:
  - **letter e)** ***"soil management" (planned activity as provided for in article 10).***

- As for **Article 6** (Soil health and land take monitoring framework)
  We strongly support the text on land take and soil sealing monitoring system. The Italian law is consistent with the provisions of the Proposed Directive.

- As for **Article 7** (Soil descriptors) **and Annex I**, criteria for healthy soil condition, and land take and soil sealing indicators", Italy presents the following remarks with reference to Annex I (to be further discussed in following WPE and expert group meetings):
  - the identified *erosion threshold* is too low if compared to average values as estimated by the JRC and other literature sources (see list below). Reaching the target would be extremely challenging (if not unfeasible at all) for Italy.
  - We suggest to add to **Annex 1 Part A, Soil erosion rate, third**, the following sentence:

- "***Different targets can be established for each district on the base of geomorphology, deepness of soils, climatic conditions and bedrock typology that have influence on the soil loss risk and the effective soil formation rate***".
  (Please consider the detailed description at the end of this document).

- As for the **part C** of **Annex I** we invite to also:
  - consider the ***lack of nutrients*** together with the *nutrient tenor* to be monitored;
  - include the ***OBS methodology for biodiversity monitoring*** (as suggested also by EJP SOIL);
  - consider the ***evaluation of the indicators over time, once a historical series is available***.

- As for **Article 8** (Measurements and methodologies) **and Annex II part B,** we propose in **descriptor "concentration of heavy metals in soil", second column**:
  - to include other analytical methods used for risk assessment, e.g. ***total content (aqua regia extraction) or bioavailable forms for human exposure (ISO 17924:2018 standard) or bioavailability for plant uptake (EDTA and/or DTPA extractions)***.

  Remarks: The analyses of heavy metals in contaminated sites are carried out by extraction in aqua regia and therefore this data, currently available, could not be used for the monitoring of soils required by the Directive nor for subsequent assessments. In some cases, diluted nitric acid extraction may not be representative of the true mobility, bioaccessibility, and bioavailability of the chemicals.

- With reference to **Article 9** (Assessment of the soil health), for the possible application of a "traffic light system", even in a second phase, Italy requests an in-depth analysis to clarify the connection between the definition of unhealthy soil, the identification and calibration of the measures.
  A potential text introducing the traffic light system might be along the following lines:
  - "***Health of soil is evaluated with respect to each aspect of soil degradation using the related criterion in Annex I. When a criterion is not satisfied, this indicates the need for evaluation and to take measures so that that criterion can be satisfied if appropriate and possible at the given area.***
    In a given area:
    - ***soil is in" good health" when all the criteria are satisfied in that area;***
    - ***soil is in "moderate health" when a maximum of two of the set of criteria in Part A and B, excluding contamination and water retention, are not fulfilled;***
    - ***soil is in "poor health" when the criteria on soil contamination or on water retention or more than two of the other criteria are not fulfilled***.

  At the end of **paragraph n.3**, it would be appropriate to add:

  - "***In the assessments following the first one, Member States shall identify improvements for each soil descriptors in each soil district***".

  We propose to amend **paragraph n.4** as follows:

  - " Based on the assessment of soil health carried out in accordance with this Article, the competent authority shall, where relevant in coordination with local, regional, national authorities, identify, in each soil district, the areas which ~~present unhealthy soil~~ ***require action***

to reach a healthy condition/good health" (and/or to address the mentioned critical loss) and inform the public in accordance with Article 19".

Reasoning: the proposals would allow to define health of soils, that is certainly more acceptable, rather than unhealthy soil, for they who are subject to the provision (owners, managers). Italy supports the definition of a level of intervention on a single descriptor, even with traffic light system to be used for the general evaluation and communication about soil health. Italy supports to consider areas that do not fulfill contamination or water retention descriptors directly as "in poor health".

In this formulation, "given area" refers to areas within the districts, therefore the traffic light does not apply to the whole district, but to the individual homogeneous sub-areas used for monitoring and for which the points are representative. In addition, this mechanism would make it possible to calibrate the parameters according to the geographical area (as requested by many countries).

To clarify the reference to the "critical loss" of ecosystem services, we ask that this be clearly linked to all parameters A, B as well as C (as per art.9 paragraph 3). We point out that, pursuant to article 9, paragraph 3, second subparagraph, the assessment of the impact of land take on ecosystem services is mandatory (while in Annex I part D it is suggested as potential optional monitoring).

- As for **Article 10** (Sustainable soil management), Italy proposes the following amendment:
  - 1. "From (OP: please insert the date corresponding to 4 years after the date of entry into force of the Directive), ***taking into account the type, use and state of land, Member States shall define clear and achievable intermediate objectives and adopt at least measures for***:"

This modification would allow alignment with the Air and Water Directives.

- As for **Article 11** (Land take mitigation principles) Italy proposes the following amendment:
  - "Member States shall ***adopt the land use hierarchy contained in the 2030 Soil Strategy and*** ensure that land use respects the following principles:

    ***a) avoid new land use and reuse available artificial areas (for example brownfield sites or unused buildings) before authorizing new land use*;**

    b) avoid or reduce as much as ***possible, within the limits of technical and economic feasibility***, the loss of the capacity of the soil to provide multiple ecosystem services, including food production, ***through actions aimed at:***

    i) ***reduce*** the area affected by land take to the extent possible;

    ii***) select*** areas where the loss of ecosystem services would be minimized and

    iii) ***perform*** the land take in such a way that minimizes negative effects on soil;

    c) compensate as much as possible for the loss of the soil capacity to provide multiple ecosystem services ***with the return of services from renaturalized artificial areas***."

- As for **Article 12** (Risk-based approach), Italy proposes to modify **paragraph 2.b** as follows:
  - "***b) site characterization based on soil analyses***".

Reasoning: this would be needed, in accordance with amendments proposed for art.14, because the site characterization is a necessary phase of risk assessment. It is also in accordance with the proposal made for article 3 where a definition of "site characterization" should be included.

- As for **article 14** (Investigation of potentially contaminated sites), Italy proposes the following amendment to **paragraph 1**:
  - "Member States shall ensure that ***site characterization based on soil analyses is conducted in*** all potentially contaminated sites identified in accordance with Article 13".

- As for **Article 15** (Risk assessment and management of contaminated sites), Italy proposes the following amendment to **paragraph 5**:
  - "The risk reduction measures may consist of the measures referred to in Annex V. ***The competent authority decides*** on the appropriate risk reduction measures ***taking into account*** the costs, benefits, effectiveness, durability, and technical feasibility, ***environmental sustainability and improvement of soil functions*** of available measures."

- As for **Art. 17** (Union financing**)**, Itay requires **specific funds** to be included in the financial framework in order to guarantee the planned activities.

- As for **Annex III,** Italy proposes to include a ***reference to the list of agricultural soil management techniques and practices*** indicated in the ***CAP National Strategic Plan 2023-2027*** and to specify that the list of practices is illustrative.

Explanation on erosion.

The proposal of Directive refers to the rates of new soil formation from the substrate. The considered reference values are: Montgomery (2007) of 2.2 Mg*ha-1year-1 and Verheijen et al. (2009) of 1.4 Mg*ha-1year-1.

Soil formation values are complex and uncertain, different values are estimated for soils in different conditions (e.g. in addition to those already mentioned, by Stefano and Ferro, 2016. DOI: 10.4081/jae.2016.560 and Evans, 2021. https://doi.org/10.1016/j.geoderma.2021.115337), highlighting the need for an even more rigorous approach that takes into account the type of substrate of soil formation, soil depth and climatic conditions, which are the determining factors of the rate of soil formation (rate of pedogenesis). The limit must be established with reference to an objective of sustainable use achievable in the different territories, to ensure the protection of soil functions and a sustainable soil use.

Given that the aim of the directive is to intervene in critical areas, flexibility is requested and the possibility of setting different limits for different districts, both in agricultural and non-agricultural areas, based on further analysis.

The "Europe's environment assessment (European Environment Agency, 1998)" considered that tolerable soil loss varies between different soil depths, types and agro-climatic conditions, but typically ranges from 1 t ha–1 year–1 on shallow sandy soils to 5 t ha–1 year–1 on deeper well-developed soil. With a very slow rate of soil formation, any soil loss of more than 1 t ha–1 year–1 can be considered to cause irreversible damage to soil quality within a time span of 50-100 years.

Other aspects to be considered in the erosion risk assessment concern the separation of areas at risk of erosion due to soil loss, i.e. the areas from which sediments that are eroded are generated (in-site risk areas) *from areas at risk for sediment accumulation (*off-site risk areas) and the dynamics of the process, in order to be able to estimate the years "necessary" to have the complete erosion of the soil available (e.g. publication relating to Sicily http://dx.doi.org/10.1080/17445647.2014.956349 and related map https://www.tandfonline.com/doi/suppl/10.1080/17445647.2014.956349?scroll=top)

With regard to the sustainability of a certain level of soil erosion, it is emphasized that other considerations emerge both from the contributions of international organizations and from the literature. For example, FAO (FAO 2019 Soil erosion: the greatest challenge to sustainable soil management. Rome) also recalls the concept of erosion rates within which the capacity to produce biomass is guaranteed, a concept that is used by the USDA and the EEA which indicate losses of 11.2 and 5 Mg*ha-1year-1 respectively as the maximum tolerable limit. In the CAP, the indicators for monitoring the effectiveness of EU agricultural and environmental policies are indicator C.40-Reduction of soil erosion (I.13) with erosion rates considered unsustainable, indicating as **tolerability limits** an erosion of **5 Mg*ha-1year-1**. The OECD, in its 2001 "Environmental Indicators for Agriculture Methods and Results Volume 3", indicates that an erosion rate of less than 6 t ha-1-1 is tolerable.

In addition, some studies on the sustainability of the erosion rate highlight the importance of considering factors such as the depth of the soil layer, the difference between loss and deposition areas, as well as other factors such as climate, land cover and management practices.

The state of erosion highlighted by recent studies shows a level of erosion significantly higher than 2 t/ha/year in all countries: 1) In the JRC study (2015 - Panagos, P., Borrelli, P., Poesen, J., Ballabio, C., Lugato, E., Meusburger, K., Montanarella, L., Alewell, .C. 2015. The new assessment of soil loss by water erosion in Europe. Environmental Science & Policy. 54: 438-447. DOI: 10.1016/j.envsci.2015.08.012) the final result, represented by a 100-metre grid soil erosion map, shows average soil loss values in the Member States (agricultural, forestry, etc.) of 2.46 tonnes/hectare * per year, equal to 970 million tonnes lost annually. Italy has the highest values with an average of 8.77 tons/hectare* year; 2) A scenario study to 2050 also produced by JRC (Panagos, P., Ballabio, C., Himics, M., Scarpa, S., Matthews, F., Bogonos, M., Poesen, J., Borrelli, P., 2021. Projections of soil loss by water erosion in Europe by 2050. Environmental Science & Policy, 124: 380-392.) shows a loss on agricultural soils of 3.07 t ha-1 y-1 (2016)

Two studies for the Italian regions of Veneto and Emilia Romagna that treat erosion values on the basis of local data also report these values significantly above 2 for almost half of the regional territory. These studies applied aRusle modelling using their regional DBs. The updates are from 2019 and 2017 (therefore slightly more recent than the 2015 Rusle/JRC): in the first case, about 26% of the regional territory would be above 2 t/ha/year, while in the second document the threshold of 6 for agricultural soils is proposed (as defined by the OECD).

https://ambiente.regione.emilia-romagna.it/it/geologia/suoli/uso-e-gestione-dei-suoli/erosione

www.arpa.veneto.it/temi-ambientali/suolo/file-e-allegati/documenti/minacce-di-degradazione/2017_relazione_erosione.pdf/@@display-file/file

The EJP SOIL project also concludes in a recent report, with regard to erosion, that the limit of 2 t/ha can be used but also specifies that the relevant erosion processes and local conditions must be taken into account (deliverable 6.5 soon available), so much so that the Italian project group indicated in its comments sent to the Commission *We suggest a threshold of 10 t ha-1 yr-1 for agricultural areas, with the freedom for each Soil District, Member States to determine more restrictive limits. We recommend establishing a monitoring network of erosion by water by measuring the sediment concentrations in the waterflows at the outlet of river basins, considered in relation to rainfall intensity and in relation to river basin surface (https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13350-Salute-del-suolo-protezione-gestione-e-ripristino-sostenibili-dei-suoli-dellUE/F3442196_it).*

24.11.2023

Follow up to the WPE on 20 and 21 November 2023 – Comments by SLOVENIA

Recital	Proposal of Corrections (bold)	Rational/ Comment
Recital (23) The long-term objective of the Directive is to achieve healthy soils by 2050. As an intermediate step, in light of the limited knowledge about the condition of soils and about the effectiveness and costs of the measures to regenerate their health, the directive takes a staged approach. In the first stage the focus will be on setting up the soil monitoring framework and assessing the situation of soils throughout the EU. It also includes requirements to lay down measures to manage soils sustainably and regenerate unhealthy soils once their condition is established, but without imposing an obligation to achieve healthy soils by 2050 neither intermediate targets. This proportionate approach will allow sustainable soil management and regeneration of unhealthy soils to be well prepared, incentivised and set in	Recital (23 The long-term objective of the Directive is to achieve healthy soils by 2050. As an intermediate step, in light of the limited knowledge about the condition of soils and about the effectiveness and costs of the measures to regenerate their health, the directive takes a staged approach. In the first stage the focus will be on setting up the soil monitoring framework and assessing the situation of soils throughout the EU. It also includes requirements to lay down measures to manage soils sustainably and regenerate unhealthy soils once their condition is established, but without imposing an obligation to achieve healthy soils by 2050 neither intermediate targets. This proportionate approach will allow sustainable soil management and regeneration of unhealthy soils to be well prepared, incentivised and set in motion. In a second stage, as soon as the results of the first assessment of soils and trends analysis are available, the Commission will take stock of the progress towards the 2050	In order to increase the ambition regarding the land take and soil sealing we propose to add that the Commission will propose a review of the directive by setting a quantitative targets to improve soil health, limit soil degradation, land take and soil sealing

motion. In a second stage, as soon as the results of the first assessment of soils and trends analysis are available, the Commission will take stock of the progress towards the 2050 objective and the experience thereof, and will propose a review of the directive if necessary to accelerate progress towards 2050.	objective and the experience thereof and will propose a review of the directive **by setting a quantitative targets to improve soil health, limit soil degradation, land take and soil sealing** if necessary to accelerate progress towards 2050.	
Article/Paragraph	**Proposal of Corrections (bold)**	**Rational/ Comment**
Article 1 – paragraph 2 This Directive lays down measures on: (a) monitoring and assessment of soil health; (b) sustainable soil management; (c) contaminated sites.	Article 1 – paragraph 2 This Directive lays down measures on: (a) monitoring and assessment of soil health; **(b) resilience of soil;** (**c**) sustainable soil management; (**d**) contaminated sites.	As the Proposal is titled as "Directive on Soil Monitoring and **Resilience"**, therefore we propose to add, that Directive lays down measures also on resilience.
Article 3 – paragraph 3 'ecosystem services' means indirect contributions of ecosystems to the economic, social, cultural and other benefits that people derive from those ecosystems;	Article 3 – paragraph 3 'ecosystem services' means **direct or** indirect contributions of ~~ecosystems~~ **soil** to the economic, social, cultural, **environmental** and other benefits that people derive from those ecosystems; **namely safe, nutritious and sufficient food, biomass, clean water, nutrients cycling, regulation of contaminants, carbon storage, and a habitat for biodiversity.**	Ecosystem services are direct (e.g. habitat for biodiversity) and indirect, thus we propose to add the word "direct". We propose that definition of ecosystem services is more tailored made for soil. At the moment it is very general. In order to increase clarity what the term "ecosystem services" applies to in respect to the provisions of the proposal we suggest to add in the definition concrete contributions and benefits of soil.

Article 3 – paragraph 4 'soil health' means the physical, chemical and biological condition of the soil determining its capacity to function as a vital living system and to provide ecosystem services;	A COMMENT	We believe that the definition of soil health is too general. The term "soil health" is the crucial part of the proposal. It plays major role in e.g. determining the soil health, risk assessment, soil management and determining the measures for unhealthy soils. Therefore, we believe it should be defined clearly. Concrete proposal
Article 3 – paragraph 16 'artificial land' means land used as a platform for constructions and infrastructure or as a direct source of raw material or as archive for historic patrimony at the expense of the capacity of soils to provide other ecosystem services;	Article 3 – paragraph 16 'artificial land' means **soil sealing** ~~land used as a platform for constructions and infrastructure~~ or **land used** as a direct source of raw material or as archive for historic patrimony at the expense of the capacity of soils to provide other ecosystem services;	In our view the definition of »artificial land« is to narrow. The artificial land doesn't only comprise the land used a »platform« for construction/infrastructure (buildings) but also includes the land attached to it, i.e. the land that allows the normal functioning/operation of the buildings. Building plot is comprised of a building + associated land necessary to its (building's) operation.
Article 3 - paragraph 16a - NEW	**Article 3 - paragraph 16a - NEW** **"Soil sealing" is a form of a land take and means permanent covering of the soil surface with impermeable artificial materials, leading to non-reversible loss of soil and most of its ecosystem services.**	Soil sealing should be explicitly defined in the directive. The directive addresses soil sealing indirectly through "land take" and "artificial land" definitions. Since the provisions of the directive would apply to sealed soils, we believe that the definition is needed in order to clearly distinguish "land take", "artificial land and "soil sealing". Member States shall analyse the values of land take and soil sealing

		indicators and assess their impact on the loss of ecosystem services and on the objectives and targets. The Food and Agriculture Organization defines soil sealing as "Permanent covering of the soil surface with impermeable artificial materials, leading to non-reversible loss of soil and most of its ecosystem services (https://www.fao.org/3/i6470e/i6470e.pdf)
Article 3 – paragraph 17 'land take' means the conversion of natural and semi-natural land into artificial land;	A COMMENT	Although the Commission explained that no definition of sealed soils is needed because the term is commonly used and understood, we believe that terms artificial soils, land take and soil sealing should be clearly distinguished. It will allow MS to clearly analyse values of land take and soil sealing indicators and assess their impact on the loss of ecosystem services and on the objectives and targets.
Article 4 – paragraph 2 When establishing the geographic extent of soil districts, Member States may take into account existing administrative units and shall seek homogeneity within each soil district regarding the following parameters: (a) soil type as defined in the World Reference Base for Soil Resources74; (b) climatic conditions; (c) environmental zone as described in Alterra Report 228175;	Article 4 – paragraph 2 When establishing the geographic extent of soil districts, Member States may take into account existing administrative units and shall seek homogeneity within each soil district regarding the following parameters: (a) soil type as defined in the World Reference Base for Soil Resources74; (b) climatic conditions; (c) environmental zone as described in Alterra Report 228175;	We propose that national land use or cover data could also be used in creating soil districts as they can provide more accuracy as LUCAS data. Also, soil characteristics depend on bedrock from which soil is developed by pedogenetic processes. Therefore, we propose to add this parameter.

(d) land use or land cover as used in the Land Use/Cover Area frame statistical Survey (LUCAS) programme.	(d) land use or land cover as used in the Land Use/Cover Area frame statistical Survey (LUCAS) programme **or other national comparable information source;** **(e) bedrock.**	
Article 6 – paragraph 1 Member States shall establish a monitoring framework based on the soil districts established in accordance with Article 4(1), to ensure that regular and accurate monitoring of soil health is carried out in accordance with this Article and Annexes I and II.	Article 6 – paragraph 1 Member States shall establish a monitoring framework based on the soil districts established in accordance with Article 4(1), to ensure that regular, **coherent** and accurate monitoring of soil health is carried out in accordance with this Article and Annexes I and II.	The objective of the Directive is "to put in place a solid and coherent soil monitoring framework for all soils across the EU", therefore we propose to add the word **"coherent".**
Article 6 – paragraph 3 The monitoring framework shall be based on the following: (a) the soil descriptors and soil health criteria referred to in Article 7; (b) the soil sampling points and to be determined in accordance with Article 8(2); (c) the soil measurement carried out by the Commission in accordance with paragraph 4 of this Article, if any; (d) the remote sensing data and products referred to in paragraph 5 of this Article, if any;	Article 6 – paragraph 3 The monitoring framework shall be based on the following: (a) the soil descriptors and soil health criteria referred to in Article 7; (b) the soil sampling points **and sampling depth** and to be determined in accordance with Article 8(2); (c) the soil measurement carried out by the Commission in accordance with paragraph 4 of this Article, if any; (d) the remote sensing data and products referred to in paragraph 5 of this Article, if any; (e) the land take and soil sealing indicators referred to in Article 7(1).	Soil data depends on the soil sample. Therefore, it is important where and how the soil sample is taken. In order to ensure comparability of soil data we propose to define the sampling depth at EU level in Annex II as well. Although the transfer functions in same cases can be used, they still include uncertainties. Hence, the monitoring framework should also be based on soil sampling depth.

(e) the land take and soil sealing indicators referred to in Article 7(1).		
Article 6 – paragraph 4 The Commission shall, subject to agreement from Member States concerned, carry out regular soil measurements on soil samples taken in-situ, based on the relevant descriptors and methodologies referred to in Articles 7 and 8, to support Member States' monitoring of soil health. Where a Member State provides agreement in accordance with this paragraph, it shall ensure that the Commission can carry out such in-situ soil sampling.	Article 6 – paragraph 4 The Commission shall, subject to agreement from Member States concerned, carry out **free of charge,** regular soil measurements on soil samples taken in-situ, based on the relevant descriptors and methodologies referred to in Articles 7 and 8, to support Member States' monitoring of soil health. Where a Member State provides agreement in accordance with this paragraph, it shall ensure that the Commission can carry out such in-situ soil sampling.	It is not clear who bears the costs of soil measurements on soil samples taken in-situ in this paragraph. We can also be flexible if this would be clarified in the recycle.
Article 7 – paragraph 6 Member States shall inform the Commission when soil descriptors, land take indicators and soil health criteria are set or adapted in accordance with paragraphs 2 to 5 of this Article.	Article 7 – paragraph 6 Member States shall inform the Commission when soil descriptors, land take indicators and soil health criteria are set or adapted in accordance with paragraphs 2 to 5 of this Article, **the Commission shall give comments, if any, to Member States within one month.**	We propose to add a time frame within the Commission may give comments to Member States. This enables the Member States to continue with the adoption procedures at the national level, after one month of informing the Commission.
Article 8 – paragraph 1	Article 8 – paragraph 1	See comment to the Article 6/3.

Member States shall determine sampling points by applying the methodology set out in part A of Annex II.	Member States shall determine sampling points **and sampling depths** by applying the methodology set out in part A of Annex II.	
Article 8 – paragraph 2 Member States shall carry out soil measurements by taking soil samples at the sampling points referred to in paragraph 1 and collect, process and analyse data in order to determine the following:	Article 8 – paragraph 2 Member States shall carry out soil measurements by taking soil samples at the sampling points **and sampling depths** referred to in paragraph 1 and collect, process and analyse data in order to determine the following:	See comment to the Article 6/3.
Article 8 – paragraph 4 Member States shall ensure that the first soil measurements are performed at the latest by… (OP: please insert the date = 4 years after date of entry into force of the Directive).	Article 8 – paragraph 4 Member States shall ensure that the first soil measurements are performed at the latest by **~~4~~ 6** years after date of entry into force of the Directive.	As establishing Soil Districts and adapting national soil monitoring system, methodologies and analysis to provisions of Proposal is complex and time consuming we propose 6 instead of 4 years. Text of the proposal for other dates should be modified accordingly.
Article 8 – paragraph 5 Member States shall ensure that new soil measurements are performed at least every 5 years.	A COMMENT	Even if sustainable management practices are applied, it is difficult to expect that results would be reflected in 5 years. The proposed frequency of 5 years would also imply disproportionately high cost and administrative burden. We propose that frequency for new measurements is set according to expected changes of each soil descriptor.
Article 9 – paragraph 2	Article 9 – paragraph 2	

A soil is considered healthy in accordance with this Directive where the following cumulative conditions are fulfilled: (a) the values for all soil descriptors listed in part A of Annex I meet the criteria laid down therein and, where applicable, adapted in accordance with Article 7; (b) the values for all soil descriptors listed in part B of Annex I meet the criteria set in accordance with Article 7 ('healthy soil'). By way of derogation from the first subparagraph the assessment of soils within a land area listed in the fourth column of Annex I, shall not take into account the values set out in the third column for that land area. Soil is unhealthy where at least one of the criteria referred to in subparagraph 1 is not met ('unhealthy soil').	A soil is considered healthy in accordance with this Directive where the following cumulative conditions are fulfilled: (a) the values for **at least three** soil descriptors listed in part A of Annex I meet the criteria laid down therein and, where applicable, adapted in accordance with Article 7; (b) the values for all soil descriptors listed in part B of Annex I meet the criteria set in accordance with Article 7 ('healthy soil'). By way of derogation from the first subparagraph the assessment of soils within a land area listed in the fourth column of Annex I, shall not take into account the values set out in the third column for that land area. ~~**Soil is unhealthy where at least one of the criteria referred to in subparagraph 1 is not met ('unhealthy soil').**~~	In our view, soil can function as a vital living system and can provide ecosystem services despite one criterion is not met. Therefor we propose to stick only to the term healthy soil, which is considered as healthy if the listed conditions are cumulatively met, while the condition (a) would refer to the values of at least 3 descriptors to be met…. In this line it is no longer necessary to define when the soil would be unhealthy, so we propose deleting last sentence of this paragraph.
<u>Article 9 – paragraph 3</u> Member States shall analyse the values for the soil descriptors listed in part C of Annex I and assess whether there is a critical loss of ecosystem services, taking into account the	A COMMENT	The proposal should define how to assess if there is a critical loss of ecosystem services and how to assess the impact of land take and soil sealing on the loss of ecosystem services

relevant data and available scientific knowledge. Member States shall analyse the values of land take and soil sealing indicators listed in part D of Annex I and assess their impact on the loss of ecosystem services and on the objectives and targets established under Regulation (EU) 2018/841.		
Article 9 – paragraph 5 Member States shall set up a mechanism for a voluntary soil health certification for land owners and managers pursuant to the conditions in paragraph 2 of this Article.	Article 9 – paragraph 2 Member States **may** set up a mechanism for a voluntary soil health certification for land owners and managers pursuant to the conditions in paragraph 2 of this Article.	Soil health certification is voluntary and it is not known for Slovenia whether the demand among land owners and managers for the soil health certificate will be high. Moreover, setting up mechanism is administrative and financial burden. Therefore, we propose that Member States decides whether she will set up a mechanism for a voluntary soil health certification.
Article 10 – paragraph 1 10/1 When defining the practices and measures referred to in this paragraph, Member States shall take into account the programmes, plans, targets and measures listed in Annex IV as well as the latest existing scientific knowledge including results coming out of the Horizon Europe Mission a Soil Deal for Europe.	Article 10 – paragraph 1 When defining the practices and measures referred to in this paragraph, Member States shall take into account the programmes, plans, targets and measures listed in Annex IV as well as the latest existing scientific knowledge ~~including results coming out of the Horizon Europe Mission a Soil Deal for Europe.~~ **and EU's key funding programmes for research and innovation.**	On research programmes, we propose a general phrase for defining them, instead of naming them specifically. i.e.: "EU's key funding programme for research and innovation such as…. Horizon Europe a Soil Deal for Europe". In this way we would avoid possible inconsistencies between EU legislation and EU research and innovation programmes. Names of the programmes, funded by the EU are changing throughout the years and it may be more appropriate to use generic terms in this regard.

Article 11 Member States shall ensure that the following principles are respected in case of land take: (a) avoid or reduce as much as technically and economically possible the loss of the capacity of the soil to provide multiple ecosystem services, including food production, by: (i) reducing the area affected by the land take to the extent possible and (ii) selecting areas where the loss of ecosystem services would be minimized and (iii) performing the land take in a way that minimizes the negative impact on soil; (b) compensate as much as possible the loss of soil capacity to provide multiple ecosystem services	Article 11 Member States shall ensure that the following principles are respected in case of land take: (a) avoid or reduce as much as technically and economically possible the loss of the capacity of the soil to provide multiple ecosystem services, including food production, by: (i) reducing the area affected by the land take to the extent possible and (ii) selecting areas where the loss of ecosystem services would be minimized and (iii) performing the land take in a way that minimizes the negative impact on soil; (b) compensate as much as possible the loss of soil capacity to provide multiple ecosystem services. **(c) unsealing and restoring ecosystem services of soil** **(d) densification of urbanised areas taking into account the preservation of green spaces and natural terrain** **(e) revitalisation of brownfields**	In addition to the listed mitigation principles, we believe it is also important to restore and increase soil resistance, which can be achieved by unsealing of soil, where is no human activity and restoring ecosystem services, revitalization of brownfields and rebuilding already sealed areas. To limit the effect of urban sprawl to land take it is recommended to increase the compactness of cities, towns and other settlements, focusing on appropriate forms of densification and the preservation of green spaces and natural terrain as important buffers to the effects of climate change, in particular to reduce the effects of heat islands, to manage rainwater runoff, to mitigate noise impacts and to provide fresh air.
Article 12 – paragraph 1 Member States shall manage the risks for human health and the environment of potentially contaminated sites and contaminated sites, and keep them to acceptable levels, taking account of	Article 12 – paragraph 1 Member States shall manage the risks for human health and the environment of potentially contaminated sites, **where vulnerable populations are present,** and contaminated sites, and keep them to	According to criteria set in article 13 hundreds of sites could be identified as potentially contaminated sites. Moreover, the degree of contamination is unknown, so effective measures cannot be determined. Before the soil investigation also uncontaminated sites will be

the environmental, social and economic impacts of the soil contamination and of the risk reduction measures taken pursuant to Article 15 paragraph 4.	acceptable levels, taking account of the environmental, social and economic impacts of the soil contamination and of the risk reduction measures taken pursuant to Article 15 paragraph 4.	considered as potentially contaminated sites. Therefore, this could lead to a disproportionately large administrative and financial burden. However, potentially contaminated sites should be managed where children, pregnant women, elderly and people with impaired immune system may come into contact with contaminated soil. As we understand this paragraph, when managing risk Member States shall take into account also the risk reduction measures taken pursuant to Article 15 paragraph 4. The latter only applies to contaminated sites and not to potentially contaminated site. Hence, we propose to rephrase the last part of this article.
<u>Article 15 – paragraph 1</u> Member States shall lay down the specific methodology for determining the site-specific risks of contaminated sites. Such methodology shall be based on the phases and requirements for site-specific risk assessment listed in Annex VI.	A COMMENT	As regards soil contamination Commission should set requirements for the level at which soil contamination site-specific risk assessment should be conducted. These requirements could be included in Annex VI. This would enable all Member States to carry out risk assessment at the uniform level of soil contamination. This would also enable comparability of risk assessments between Member States.
Annexes	A COMMENT	We have scrutiny reservation on all the Annexes However, we are underlining that in our view the criterion for soil erosion is too strict and severe. It would be a great challenge to fulfilled it for Slovenia and we strongly propose to reconsider the criterion.

		A reconsidering is needed whether the organic contaminants including the contaminants of emerging concern should be listed. At least common dominators (eg. PAH). Otherwise, various soil descriptors for organic contamination may be used, which may lead to incomparability of soil data between Member States.

SWEDEN

Written comments on Cluster 1, 2 and 3 following WPE November 16, 20 and 21 on Soil Monitoring Law

Following the call for delegations to send written comments after WPE 16 November 2023 Sweden would like to put forward the following comments on the Commission proposal for a Directive on Soil Monitoring and Resilience (SML). Sweden is still analysing the proposal and will thus keep a general scrutiny reservation. Sweden is still working on concrete text-proposals for several of the aspects described below.

CLUSTER 1 (CHAPTER I)

Article 1 – objective and Subject matter

Sweden sees a need for more flexibility in the Directive and suggests that article 1 is re-formulated and softened in relation to the target healthy soils by 2050, so that it is oriented towards the efforts made to achieve this goal.

Article 2 – Scope

There is a need for a clarification that the directive does not apply to areas of national security military defence, preferably in article 2. There need to be a full exclusion of this sector and their areas from the scope of the directive, and not only in relation to the publication of data.

Sweden also assesses a need for differentiation in different areas on what should be monitored, measured, sampled and assessed, based on a risk assessment. It is not cost-efficient to have the same requirements for monitoring regarding all different types of soil and land use. This issue may be addressed in Article 2 or elsewhere in the directive.

Connected to the scope of the Directive and to several of its articles, Sweden wishes to receive the view from the Council Legal Service if Article 11 and related monitoring of land take and soil sealing in any way inflict on the national competence for spatial planning and urban development. Spatial planning and the assessment of the need for new housing is of national competence, separated from the legal basis of environmental legislation.

Article 3 – Definitions related to chapter 1 (1, 2, 3, 4, 5, 8, 10, 12, 13, 20)

Sweden proposes to include: 'soil' means the top layer of the Earth's crust situated between the bedrock and the land surface **with a minimum depth of 50 cm**, which is composed of mineral particles, organic matter, water, air and living organisms;

Sweden proposes that definition 4 (soil health) considers natural variability depending on soil type and depending on land use as well as the regional variability caused by differences in climate and in development of soils due to geological processes and time these processes has been going on. In Sweden the soil building processes is still going on due to the relative short time since the last ice age.

Sweden proposes to include the following definition for high natural background levels: "Areas where naturally occuring concentrations of biologically accessible levels of metals and other chemical elements make the soil health parameters differ significantly from other areas". Such areas are best determined by national and/or regional authorities with in-depth knowledge of spatial distribution of geochemical data.

Article 4 – soil districts

Sweden proposes that article 4 should be deleted. Sweden fails to see the added value of article 4. Sweden is of the opinion that it should be up to each member state to organize the implementation of the directive in the most suitable way for their respective conditions and existing administrative systems.

There is a need for an exception for the national security military defence in relation to soil districts and requirements on monitoring. Many areas are covered by secrecy and should not be compiled or registered in any foreign register.

Article 5 – Competent authorities

Sweden proposes to delete the second sentence from article 5. It should be up to each member state to determine what level of designation that is most suitable for carrying out the duties laid down in this Directive.

CLUSTER 2 (CHAPTER II)

Article 3 - Definitions related to chapter II (3, 9, 11, 14, 15, 16, 17, 18, 21, 24)

Sweden questions the need for monitoring land take within the frame of the Directive. The concept of "land take" as defined in definition 17 is problematic as it lacks limitation both in time and space. Land exploitation can be temporary with the possibility of restoring the soil. It also seems unreasonable and non-proportional to monitor all forms of land acquisition, regardless of size. For example, minor measures that do not require a permit would be impossible to monitor.

Further comments on the definitions will follow later.

Article 6 – soil health and land take monitoring framework

Sweden proposes adding an article before article 6 which describes a risk-based approach. Sweden suggests that soil sampling is preceded by a risk assessment to ensure cost-efficiency and flexibility according to member states different needs, geology, land use and existing knowledge. The risk assessment should be based on criteria for making an overall assessment of site-specific conditions and risks. The assessment would form a basis for prioritization and decisions on further investigations. It could be done based on knowledge from existing, national monitoring programmes. Sweden can return with a text-proposal on this.

Sweden seeks clarification on how the directive will affect the ownership of soil data according to article 6. Soil is to a large extent a privately owned resource that is managed by landowners. What does it mean that a digital soil health data portal at the EU-institutions shall provide access in georeferenced spatial format according to paragraph 6? COM is to establish formats or methods for sharing and collecting the data? It is essential that individual sample points are not traceable to individual landowners or managers, and Sweden question if they are to be transferred to international databases. This needs to be further discussed. Sweden questions the need for monitoring land take within the frame of the directive. Spatial planning, the need for construction and its design are national interests. To monitor this for the purpose of improving soil health seems costly and disproportionate. Kindly also note the comment under Article 3 definition 17.

Article 7 – soil descriptors, criteria for healthy soil condition, and land take and soil sealing indicators

The proposed descriptors and criteria are primarily suitable for agricultural areas and not as relevant for forests, archipelagos, mountains, or urban areas. There is a need for more flexibility to adjust descriptors and only monitor those that are relevant for different types of areas.

Some of the descriptors for agricultural soils are not relevant for Swedish conditions and should not be mandatory to monitor. Sweden sees the need to be able to continue using methods that has been judged most suitable for analysing arable land in Sweden in previous monitoring.

Regarding land take, se comments above under article 2 and article 3 definition 17.

Annex I – soil descriptors – part A

Sweden seeks more flexibility to be able to continue to use methods that are currently used for soil monitoring even I cases were a transfer function is not possible

Sweden suggests adding a soil descriptor for acidification, relevant for forest soils. In the Swedish soil inventory, pH is measured in the C horizon (mineral soil) and base saturation in the B horizon. These are both relevant measurements to determine the level of acidification in forest soils.

Soil erosion: On forest soils in Sweden, the time between management practices is often decades or more, and the impact is patchy. For example, in driving tracks, scarification patches, ditches and clear cuttings at steep slopes soil erosion can be significant, but on a large part of the forest area, erosion is less of a problem. It is not stated in the proposal how this heterogeneity should be handled.

Salinization – electrical conductivity: not relevant for agricultural and forest soils in Sweden and should be voluntary.

Loss of soil organic carbon: it is suggested that the SOC/Clay ratio should be more than 1/13. This is suitable for light clay soils and not for heavy clay or sandy soils. The ratio cannot be achieved for heavy clays with measures to increase the humus content. This should only be monitored where it serves its purpose and moved to part B of the Annex. For forest soils it is more relevant to measure the pool of organic matter in the soil profile than to use SOC/Clay ratio. This is today measured in the Swedish soil inventory. It can be noted that for this descriptor there is an exclusion of "non-managed soils in natural land areas". It is unclear if some areas of forested land in Sweden fall within this category.

Subsoil compaction: this is an important aspect of soil health. At the same time, it is an almost irreversible process, making it impossible to improve the threshold values for the bulk density and should therefore be moved to part C of the Annex.

Annex I part B

Excess nutrient content: Sweden proposes to exclude this aspect of soil degradation from the directive, since it is handled within other legislation. The implementation of the nitrate directive and the water framework directive demands classification of water, limitation measures, monitoring and reporting that is relevant for the purpose of reducing loss of nutrients from arable land.

Annex I part C

Excess nutrient content: Sweden proposes that this indicator is excluded from the directive. High content of nitrogen in soil is directly linked to the humus content, which is a relevant indicator for soil fertility.

Soil respiration: Sweden wants to delete this descriptor because we do not see what values it is adding. Soil respiration is not a descriptor for biodiversity, it is a descriptor for soil activity.

Annex I part D

Sweden would like to receive the view from the Council Legal Service if article 11 and related monitoring in any way inflict on the national competence for spatial planning and urban development. Part D of Annex I has its relevancy in relation to article 11. Spatial planning and the assessment of the need for new housing is of national competence, separated from the legal basis of environmental legislation. The need for indicators for monitoring land take can therefore be questioned. Also note the comment under article 3 definition 17.

Article 8 – measurements and methodologies

Sweden sees a need for differentiating the sampling interval for different descriptors after an initial screening phase, so that the sampling can be adjusted to geographical and climatic conditions, as well as land use and risk assessment, to improve the cost-efficiency of the directive. Many of the processes of change are slow, which can motivate longer sampling intervals than 5 years.

Sweden sees a general need for more flexibility in choosing different methodologies since a transfer-function is not always available, see comments on Annex II for Swedish examples.

Regarding article 8.6, it is important that data based on remote sensing and Copernicus is developed in close cooperation with the member states and that methods and products is validated based also on national data and together with national experts.

In addition to what Sweden has already highlighted regarding land take, Sweden questions the reason for updating the value of the land take and soil sealing indicators every year.

Annex II – Methodologies – part A

Sweden has concerns about the determination of soil sampling points and the assessments that are to be made from them, and still seek clarification in this regard. Sweden looks forward to the expert group meeting on the 14 of December and foresees a discussion in the WPE afterwards.

Sweden has identified another practical problem concerning how samples should be collected taking into account large areas of roadless land and aspects of private ownership.

Annex II part B

Soil texture: Sweden uses another scale, "Atterbergsskalan". There is no direct transfer function so the Annex need to have a flexibility for different methodologies.

Soil organic carbon: Sweden proposes to replace the LECO-method with loss on ignition, which is less expensive and is the method used within field mapping.

Bulk density in subsoil: there is a need for flexibility in relation to the chosen scale to be used. Sweden uses the [Atterberg-scale].

Extractable phosphorus: Sweden proposes to exclude this descriptor for reasons explained above. Other than that, there is a need for more flexibility for using other methods for analysing phosphorus. Sweden uses P-AL instead of P-Olsen. There is no transfer-function between the two and therefor it is important that both can be chosen. Sweden has a comprehensive soil monitoring programme, and it is important to have the possibility to use our time series to trend analysis after the implementation of the soil monitoring law.

Soil respiration: To keep the sample frozen from the sample point to the laboratory is very difficult and another methodology, which do not require frozen facilities is necessary.

Annex II part C

Sweden would like to receive the view from the Council Legal Service if article 11 and related monitoring in any way inflict on the national competence for spatial planning and urban development. Part C of Annex II has its relevancy in relation to article 11. Physical planning and the assessment of the need for new housing is of national competence, separated from the legal basis of environmental legislation. The need for indicators for monitoring land take can therefore be questioned.

Article 9 – assessment of the soil health

Sweden questions the proposal that soil is to be classified as unhealthy where one of the criteria is not met. Methodologies for assessing soil health status ought to be more flexible and incorporate circumstances which are relevant for the specific sampling point. It is still not clear how the assessment of soil health made from a certain sampling point can be extrapolated to a larger area and how this area is to be defined. This makes it difficult to fully understand the consequences of article 9 and also its relation to article 10. This needs to be further clarified. Sweden is open for proposals orientated towards a traffic light system with several possible categories when it is clear that the suggested system with extrapolations of results from soil samples from certain points really can be used for assessments of soil health in a larger area with impacts from different landowners and land uses.

Regarding the voluntary soil health certificates, Sweden sees a need for a supplementary impact assessment and more information about the expected effects for different sectors and businesses as well as costs for establishing and operating such a mechanism. The impact

assessment should describe both the aspects from the current land owner and a byers perspective.

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CLUSTER 3 (CHAPTER IV)

Article 12 – risk-based approach

Sweden seeks a clarification regarding paragraph 4 and the opportunities that shall be given to the public, how this process is going to be implemented.

Sweden supports the intention to manage the issue of contaminated and potentially contaminated sites based on risks for human health and the environment, and that member states shall define what constitutes such risks.

Sweden have concerns about how areas with high, natural background-levels of contaminants shall be managed in relation to reasonable assessments of the need for risk reduction and requirements for responsibility of measures and costs.

Article 13 – identification of potentially contaminated sites

Sweden seeks clarification on how the wording in paragraph 1 "through all available means" should be understood. It seems very extensive and far reaching since it does not have a limitation. This should be expressed more clearly.

Article 14 – investigation of potentially contaminated sites

Sweden questions if the method to investigate "all" potentially contaminated areas according to article 13, is really in line with a risk-based approach. Does this have to include sampling in the field? Sweden proposes that areas classified with a low risk could be mandatory to investigate when needed, for example when there is an interest in exploitation.

Article 15 – risk assessment and management of contaminated sites

Sweden questions whether paragraphs 3 and 4 are in line with the polluter pays principle, stating that it is the competent authority that shall carry out a site-specific assessment and that shall take the appropriate measures to bring the risks to an acceptable level. This is not in line with established work methodology in Sweden.

Article 16 – Register

Sweden has highlighted the need for a full exclusion of areas of national security military defence from the scope of the directive. As a general exception has not yet been further discussed, Sweden also needs to ensure that information about contaminated and potentially contaminated areas used by the military is handled with secrecy. Such areas cannot be included in a public register.

CZECH REPUBLIC

Comments on the Proposal for a Directive of the European Parliament and of the Council on Soil Monitoring and Resilience (Soil Monitoring Law) – clusters 1 - 3

24 November 2023

In the request for contribution dated 21 November 2023, Presidency invited Member States to send written comments and drafting suggestions related to Clusters 1, 2 and 3 by 24 November 2023. The Czech Republic proposes following amendments and related comments; however, the Czech Republic reserves a further scrutiny reservation.

Amendments – cluster 1:

Article 1

"Article 1

Objective and Subject matter

1. *The objective of the Directive is to put in place a solid and coherent soil monitoring framework for all soils across the EU and to continuously improve soil health in the Union with the view to achieve healthy soils by 2050,* ~~*and*~~ *maintain soils in healthy condition* ***and mitigate land take****, so that they can supply multiple ecosystem services at a scale sufficient to meet environmental, societal and economic needs, prevent and mitigate the impacts of climate change and biodiversity loss, increase the resilience against natural disasters and for food security and that soil contamination is reduced to levels no longer considered harmful to human health and the environment.*

2. *This Directive lays down measures on:*

   (a) monitoring and assessment of soil health;

   (b) sustainable soil management;

   (c) contaminated sites."

Note: The Czech Republic notes that the directive proposal has largely abandoned the implementation of the EU Soil Strategy for 2030, as regards the objectives of area-based soil protection. Since the objective to achieve healthy soils by 2050 does not concern protection against land takes (see definition of healthy soils in Article 9(1 and 2)), it is crucial to include objective on land take into Article 1. Given the non-binding nature of Article 1(1), such inclusion should not pose any problems.

Article 4(2)

"*2. When establishing the geographic extent of soil districts, Member States may take into account existing administrative units and shall seek homogeneity within each soil district regarding* ***especially*** *the following parameters:*

(a) soil type as defined in the World Reference Base for Soil Resources[1]*;*

(b) climatic conditions;

(c) environmental zone as described in Alterra Report 2281[2]*;*

(d) land use or land cover as used in the Land Use/Cover Area frame statistical Survey (LUCAS) programme."

Note: Given the heterogeneity of soils in the EU, different land uses and, most importantly, rather incompatible nature of parameters in Article 4(2) of the directive proposal, we suggest softening of the proposed wording.

Amendments – cluster 2:

Article 3(16)

" *'artificial land' means land used ~~as a platform~~ for constructions and infrastructure* ***and for land directly adjacent hereto*** *or as a direct source of raw material or as archive for historic patrimony at the expense of the capacity of soils to provide other ecosystem services;*"

Note: In its comments to Articles 1 – 9, the EK specified that the terms "constructions" and "infrastructure" were supposed to be understood in a broad sense. Nevertheless, the proposed definition of "artificial land" does not, according to our understanding, allow such interpretation. This is why we propose minor modifications, namely the inclusion of "land directly adjacent hereto". Example: when considering a project of factory in terms of land take, not only the area of construction platform is taken into account, but whole area under common fencing (including parking, but also lawns with sparse vegetation). This is meant by the term "land directly adjacent hereto". We do not see as appropriate to consider these areas as semi-natural land.

Article 3(27) new

" ***'soil sealing' means process of covering the soil surface by impervious materials;*** "

[1] https://www.fao.org/soils-portal/data-hub/soil-classification/world-reference-base/en/

[2] M.J. Metzger, A.D. Shkaruba, R.H.G. Jongman and R.G.H. Bunce, Descriptions of the European Environmental Zones and Strata, Alterra Report 2281 ISSN 1566-7197.

Note: The term "soil sealing" is used extensively in the text of the directive proposal, often side by side with the term "land take". But unlike "land take", the term "soil sealing" is not defined in Article 3. Therefore, the abovementioned definition is proposed.

Article 7 (alternative 1 – all soil descriptors set at national level) – preferred version

"Article 7

Soil descriptors, criteria for healthy soil condition, and land take and soil sealing indicators

1. *When monitoring and assessing soil health, Member States shall apply* ***at least 5*** ~~*the*~~ *soil descriptors and soil health criteria listed in* ***part A and part B of the*** *Annex I* ***and at least 3 soil descriptors in part C****.*

   When monitoring land take, Member States shall apply the land take and soil sealing indicators referred to in Annex I.

2. ~~*Member States may adapt the soil descriptors and the soil health criteria referred to in part A of Annex I, in accordance with the specifications referred to in the second and third columns in part A of Annex I.*~~ ***Member States shall set soil health criteria for the soil descriptors listed in part A and B of Annex I in accordance with the provisions set out in the third column in part A and B of Annex I.***

3. *Member States shall determine the organic contaminants for the soil descriptor related to soil contamination referred to in part B of Annex I.*

4. ~~*Member States shall set soil health criteria for the soil descriptors listed in part B of Annex I in accordance with the provisions set out in the third column in part B of Annex I.*~~

5. *Member States may set additional soil descriptors and land take indicators, including but not limited to the optional descriptors and indicators listed in part C and D of Annex I, for monitoring purposes ('additional soil descriptors' and 'additional land take indicators').*

6. *Member States shall inform the Commission when soil descriptors, land take indicators and soil health criteria are set or adapted in accordance with paragraphs 2 to 5 of this Article.*"

Article 7 (alternative 2 – soil descriptors in Part A are set at EU level)

"Article 7

Soil descriptors, criteria for healthy soil condition, and land take and soil sealing indicators

1. *When monitoring and assessing soil health, Member States shall apply* ***at least 5*** ~~*the*~~ *soil descriptors and soil health criteria listed in* ***part A and part B of the*** *Annex I* ***and at least 3 soil descriptors in part C****.*

When monitoring land take, Member States shall apply the land take and soil sealing indicators referred to in Annex I.

2. *Member States may adapt the soil descriptors and the soil health criteria referred to in part A of Annex I, in accordance with the specifications referred to in the second and third columns in part A of Annex I.*

3. *Member States shall determine the organic contaminants for the soil descriptor related to soil contamination referred to in part B of Annex I.*

4. *Member States shall set soil health criteria for the soil descriptors listed in part B of Annex I in accordance with the provisions set out in the third column in part B of Annex I.*

5. *Member States may set additional soil descriptors and land take indicators, including but not limited to the optional descriptors and indicators listed in part C and D of Annex I, for monitoring purposes ('additional soil descriptors' and 'additional land take indicators').*

6. *Member States shall inform the Commission when soil descriptors, land take indicators and soil health criteria are set or adapted in accordance with paragraphs 2 to 5 of this Article.*"

Note: Alternative 1 – in regard to specific characteristics of the territory concerned, including soil and climatic conditions, existing agricultural conditions, farming practices, size and structure of undertakings, land use and other specifics, we see as appropriate and in line with principle of subsidiarity that the Member States should determine all the values of soil descriptors, i.e. including soil descriptors mentioned in Part A of Annex I. Modifications made in Alternative 1 follow such logic.

Furthermore, the Czech Republic was consistently calling for more differentiated approach where each soil district having a specific set of soil descriptors that would be well adapted to its specificities (most notably specificities of forest lands). We understand that this would necessitate structural changes in whole system of soil health monitoring and unfortunately, considering the short deadlines we were given, we were unable to propose more elaborated changes in this matter. As a provisional solution, we suggest the following: in Part A and B of Annex I there are 7 soil descriptors. Considering that salinization is completely irrelevant for the Czech Republic and excess nutrient content, soil contamination and to some extent reduction of soil capacity to retain water is irrelevant for forest soils, we suggest that Member States would obligatorily have to choose 5 of these descriptors in each soil district that would be monitored. Likewise, Member States would obligatorily have to choose 3 out of 4 soil descriptors enumerated in Part C. Main reason for this is reduction of financial and administrative burden that accompanies the implementation of the directive.

Alternative 2 – subsidiary to alternative 1, the reasoning is the same as in alternative 1, the difference is that the alternative 2 does not propose to determine all the values of soil descriptors by the Member States.

Article 8

"Article 8

Measurements and methodologies

1. *Member States shall determine sampling points by applying the methodology set out in part A of Annex II.*

2. *Member States shall carry out soil measurements by taking soil samples at the sampling points referred to in paragraph 1 and collect, process and analyse data in order to determine the following:*

   (a) the values of the soil descriptors as set in Annex I;

   (b) where relevant, the values of the additional soil descriptors;

   (c) the values of the land take and soil sealing indicators listed in part D of Annex I.

3. *Member States shall apply the following:*

   (a) the methodologies for determining or estimating the values of the soil descriptors set out in part B of Annex II;

   (b) the minimum methodological criteria for determining the values of the land take and soil sealing indicators set out in part C of Annex II;

   (c) any requirements laid down by the Commission in accordance with paragraph 6.

   Member States may apply other methodologies than the ones listed in the first subparagraph, points (a) and (b), provided that validated transfer functions are available, as required in Annex II, part B, fourth column, ***or may be estimated by comparing data taken at Member State level with in-situ monitoring coordinated by the Commission****.*

4. *Member States shall ensure that the first soil measurements are performed at the latest by… (OP: please insert the date = 4 years after date of entry into force of the Directive).*

5. *Member States shall ensure that new soil measurements are performed at least every ~~5~~ 7 years.*

   Member States shall ensure that the value of the land take and soil sealing indicators are updated at least every **2 ~~year~~ years**.

6. The Commission is empowered to adopt delegated acts in accordance with Article 20 to amend Annex II in order to adapt the reference methodologies mentioned in it to scientific and technical progress, in particular where values of soil descriptors can be determined by remote sensing referred to in Article 6(5)."

Note: Modification proposed in par. 3 takes inspiration from proposal of ENVI committee of the European Parliament. We consider this as a good move towards inclusion of existing soil monitoring systems into newly proposed monitoring.

As for par. 5 subpar. 1, the proposed period is meant as a compromise between uniform approach to perform measurements every 5 years in all districts regardless the fact that different soil types have different dynamics of development and more differentiated approach that would set measurement period differently for each soil district (particularly for district with forest soils). However, at the time of the first review of the directive, we strongly recommend to take account of specificities of forest soils and reflect that into diverse periods for measurement. As for modification of par. 5 subpar. 2, we consider yearly update of land take values as unnecessary administrative burden, while 2 years period gives Member States more room.

Article 9 (alternative 1 – all soil descriptors set at national level) – preferred version

"Article 9

Assessment of the soil health

1. *Member States shall assess the soil health in all their soil districts based on the data collected in the context of the monitoring referred to in Articles 6, 7 and 8 for each of the soil descriptors referred to in Parts A and B of Annex I.*

   Member States shall also take into account the data collected in the context of soil investigations referred to in Article 14.

   Member States shall ensure that soil health assessments are performed at least every ~~5~~7 years and that the first soil health assessment is performed by … (OP: please insert the date = 5 years after date of entry into force of the Directive).

2. *A soil is considered healthy in accordance with this Directive where the following cumulative conditions are fulfilled:*

   ~~(a) the values for all soil descriptors listed in part A of Annex I meet the criteria laid down therein and, where applicable, adapted in accordance with Article 7;~~

   *(b) the values for all soil descriptors listed in part **A and** B of Annex I meet the criteria set in accordance with Article 7 ('healthy soil').*

   By way of derogation from the first subparagraph the assessment of soils within a land area listed in the fourth column of Annex I, shall not take into account the values set out in the third column for that land area.

   Soil is unhealthy where at least one of the criteria referred to in subparagraph 1 is not met ('unhealthy soil').

3. Member States shall analyse the values for the soil descriptors listed in part C of Annex I and assess whether there is a critical loss of ecosystem services, taking into account the relevant data and available scientific knowledge.

Member States shall analyse the values of land take and soil sealing indicators listed in part D of Annex I and assess their impact on the loss of ecosystem services and on the objectives and targets established under Regulation (EU) 2018/841.

4. Based on the assessment of soil health carried out in accordance with this Article, the competent authority shall, where relevant in coordination with local, regional, national authorities, identify, in each soil district, the areas which present unhealthy soils and inform the public in accordance with Article 19.

5. Member States shall set up a mechanism for a voluntary soil health certification for land owners and managers pursuant to the conditions in paragraph 2 of this Article.

The Commission may adopt implementing acts to harmonise the format of soil health certification. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 21."

~~6. Member States shall communicate soil health data and assessment referred to in Articles 6 to 9 to the relevant land owners and land managers upon their request, in particular to support the development of the advice referred to in Article 10(3).~~

Article 9 (alternative 2 – soil descriptors in Part A are set at EU level)

"Article 9

Assessment of the soil health

1. Member States shall assess the soil health in all their soil districts based on the data collected in the context of the monitoring referred to in Articles 6, 7 and 8 for each of the soil descriptors referred to in Parts A and B of Annex I.

Member States shall also take into account the data collected in the context of soil investigations referred to in Article 14.

Member States shall ensure that soil health assessments are performed at least every ~~5~~7 years and that the first soil health assessment is performed by ... (OP: please insert the date = 5 years after date of entry into force of the Directive).

2. A soil is considered healthy in accordance with this Directive where the following cumulative conditions are fulfilled:

(a) the values for all soil descriptors listed in part A of Annex I meet the criteria laid down therein and, where applicable, adapted in accordance with Article 7;

(b) the values for all soil descriptors listed in part B of Annex I meet the criteria set in accordance with Article 7 ('healthy soil').

By way of derogation from the first subparagraph the assessment of soils within a land area listed in the fourth column of Annex I, shall not take into account the values set out in the third column for that land area.

Soil is unhealthy where at least one of the criteria referred to in subparagraph 1 is not met ('unhealthy soil').

3. *Member States shall analyse the values for the soil descriptors listed in part C of Annex I and assess whether there is a critical loss of ecosystem services, taking into account the relevant data and available scientific knowledge.*

   Member States shall analyse the values of land take and soil sealing indicators listed in part D of Annex I and assess their impact on the loss of ecosystem services and on the objectives and targets established under Regulation (EU) 2018/841.

4. *Based on the assessment of soil health carried out in accordance with this Article, the competent authority shall, where relevant in coordination with local, regional, national authorities, identify, in each soil district, the areas which present unhealthy soils and inform the public in accordance with Article 19.*

5. *Member States shall set up a mechanism for a voluntary soil health certification for land owners and managers pursuant to the conditions in paragraph 2 of this Article.*

   The Commission may adopt implementing acts to harmonise the format of soil health certification. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 21."

~~6. *Member States shall communicate soil health data and assessment referred to in Articles 6 to 9 to the relevant land owners and land managers upon their request, in particular to support the development of the advice referred to in Article 10(3).*~~

Note: Alternative 1 – the modification of period for soil health assessments in par. 1 was done in order to reflect modification of proposed Article 8(5). Modifications in par. 2 are supposed to reflect the proposal to determine soil descriptors solely on national level.

We believe that Article 9(6) imposes an unnecessary administrative burden on the Member States. Article 6(6 and 7) provides that the digital soil health data portal will contain all information relating to soil health and that this information will be accessible to the general public. Furthermore, Article 19 deals with making information available to the public. We therefore see no reason for monitoring data to be specifically communicated to specific land owners / soil managers (also in view of the rather complicated ownership/co-ownership structure of land parcels in the Czech Republic). For this reason, we propose to delete Article 9(6).

Finally, the principle "one out-all out" is provisionally kept in par. 2, although we would still prefer more granular approach to soil health. Firstly, because at this moment we are still analysing possible thresholds for otherwise supported traffic light approach, and secondly because of modifications proposed in Article 7(1) and in Annex I.

Alternative 2 – subsidiary to alternative 1, the reasoning is the same as in alternative 1, the difference is that the alternative 2 does not propose to determine all the values of soil descriptors by the Member States.

Annex I (Part A)

Alternative 1: Parts A and B contain soil descriptors the values of which are to be set by Member States

Alternative 2: Considered that descriptors in Part A are to be set at EU level

Aspect of soil degradation	Soil descriptor	Criteria for healthy soil condition	Land areas that shall be excluded from achieving the related criterion
Part A: soil descriptors with criteria for healthy soil condition established at Union level			
Salinization	Electrical Conductivity (deci-Siemens per meter)	< 4 dS m^{-1} when using saturated soil paste extract (eEC) measurement method, or equivalent criterion if using another measurement method	Naturally saline land areas; Land areas directly affected by sea level rise**, sealed soils**
~~Soil erosion~~	~~Soil erosion rate (tonnes per hectare per year)~~	~~≤ 2 t ha^{-1} y^{-1}~~	~~Badlands and other unmanaged natural land areas, except if they represent a significant disaster risk~~
Loss of soil organic carbon	Soil Organic Carbon (SOC) concentration (g per kg)	- For organic soils: respect targets set for such soils at national level in accordance with Article 4.1, 4.2, 9.4 of Regulation (EU) …/…[+]	~~No exclusion~~**Sealed soils**
		- For mineral soils: SOC/Clay ratio > 1/13; Member States may apply a corrective factor where specific soil types or climatic conditions justify it, taking into account the actual SOC content in permanent grasslands.	Non- managed soils in natural land areas**, sealed soils**

[+] OP : please insert in the text the number of Regulation on nature restoration contained in document COM(2022) 304

<table>
<tr>
<td>Subsoil compaction</td>
<td>Bulk density in subsoil (upper part of B or E horizon[3]); Member States may replace this descriptor with an equivalent parameter (g per cm^3)</td>
<td>
<table>
<tr><td>Soil texture[4]</td><td>range</td></tr>
<tr><td>sand, loamy sand, sandy loam, loam</td><td><1.80</td></tr>
<tr><td>Sandy clay loam, loam, clay loam, silt, silt loam</td><td><1.75</td></tr>
<tr><td>silt loam, silty clay loam</td><td><1.65</td></tr>
<tr><td>Sandy clay, silty clay, clay loam with 35-45% clay</td><td><1.58</td></tr>
<tr><td>Clay</td><td><1.47</td></tr>
</table>

In case a Member State replaces the soil descriptor “bulk density in subsoil” with an equivalent parameter, it shall adopt a criterion for healthy soil condition for the chosen soil descriptor that is equivalent to the criterion set for “bulk density in subsoil”.
</td>
<td>Non-managed soils in natural land areas<u>, sealed soils</u>”</td>
</tr>
</table>

Note: Alternative 1 – this version operates with the scenario that all of the soil descriptors values would be determined by the Member States, therefore the third column containing exact values would have to be deleted. As far as fourth column is concerned, it would be identical to the one proposed in alternative 2.

Alternative 2 – subsidiary to alternative 1. Alternative 2 intends to modify Part A of Annex I in the way that soil erosion as an aspect of soil degradation would be moved to Part B of Annex I (explained below). Moreover, we proposed to add term “sealed soils” into fourth column. The reason behind this is that sealed soils lack basic ecosystem value and supplies no or very little ecosystem services, as stated in communication "EU Soil Strategy for 2030" (COM (2021) 699 final) of 17 November 2021 (sub-chapter 3.2.2). Therefore, the health of sealed soil is of (almost) no relevance with regard to meeting the objective under Article 1. Finally, any regeneration activities are impossible in case of sealed soils, as long as these remain sealed.

[3] As defined in the FAO Guidelines for Soil Description, Chapter 5 (https://www.fao.org/3/a0541e/a0541e.pdf)

[4] As defined in Arshad, M.A., B. Lowery, and B. Grossman. 1996. Physical tests for monitoring soil quality. p.123- 142. In: J.W. Doran and A.J. Jones (eds.) Methods for assessing soil quality. Soil Sci. Soc. Am. Spec. Publ. 49. SSSA, Madison, WI.

Annex I (Part B)

Part B: soil descriptors with criteria for healthy soil condition established at Member States level			
Excess nutrient content in soil	Extractable phosphorus (mg per kg)	< "maximum value"; The "maximum value" shall be laid down by the Member State within the range 30-50 mg kg^{-1}	~~No exclusion~~**Sealed soils**
Soil contamination	- concentration of heavy metals in soil: As, Sb, Cd, Co, Cr (total), Cr (VI), Cu, Hg, Pb, Ni, Tl, V, Zn (µg per kg) - concentration of a selection of organic contaminants established by Member States and taking into account existing concentration limits e.g. for water quality and air emissions in Union legislation	Reasonable assurance, obtained from soil point sampling, identification and investigation of contaminated sites and any other relevant information, that no unacceptable risk for human health and the environment from soil contamination exists. Habitats with naturally high concentration of heavy metals that are included in Annex I of Council Directive 92/43/EEC[5] shall remain protected.	~~No exclusion~~**Sealed soil, soils with naturally high concentration of heavy metals**
Reduction of soil capacity to retain water	Soil water holding capacity of the soil sample (% of volume of water / volume of saturated soil)	The estimated value for the total water holding capacity of a soil district by river basin or subbasin is above the minimal threshold. The minimal threshold shall be set (in tonnes) by the Member State at soil district and river basin or subbasin level at such a value that the impacts of floodings following intense rain events or of periods of low soil moisture due to drought events are mitigated.	No exclusion

[5] Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (OJ L 206, 22.7.1992, p. 7).

Soil erosion	**Soil erosion rate (tonnes per hectare per year)**		**Badlands and other unmanaged natural land areas, except if they represent a significant disaster risk, sealed soils**

Note: In previous comments we repeatedly questioned the value of 2 t/ha/year for soil erosion as we see it as unrealistic and ill-founded. In our opinion this aspect of soil degradation belongs to Part B of Annex I, because it drastically varies throughout the EU depending on local conditions.

More specifically for the Czech Republic (and for its arable land), according to current erosion models (based on the USLE - universal soil loss equation) founded on detailed and up-to-date data, 72% of arable land is above the limit of 2 t/ha/year. If conventional agrotechnical measures were applied on all soils, 58 % of arable land would still be above the 2 t/ha/year limit. It is therefore not possible to protect all arable land below the required limit by conventional and agrotechnical means alone. This would only be possible if very expensive technical measures (swales, ditches, etc.) and an unrealistic division of land blocks into very small or narrow plots were to be applied.

It is also important to note that in this case only water erosion values are involved. Including potential erosion from wind and tillage would give even higher figures. However, there are currently no detailed and accurate data for quantifying these types of erosion in the Czech Republic. However, according to conceptual calculations, potential soil loss due to tillage may contribute up to 20-30 % to the total loss.

The average potential soil loss in the Czech Republic based on the local real crop mix is 7.48 t/ha/year (median 4.83) in case of arable land. The introduction of soil conservation agrotechniques would reduce this to an average loss of 5.00 t/ha/year (median 3.17). For more details, we refer to the following study: Žížala, D., Juřicová, A., Kapička, J., & Novotný, I. (2021). The potential risk of combined effects of water and tillage erosion on the agricultural landscape in Czechia. *Journal of Maps*, *17*(2), 428-438. See the link: https://www.tandfonline.com/doi/full/10.1080/17445647.2021.1942251.

Concerning modifications made in fourth column of Part B, we propose to add sealed soils into all the rows except for the one related to reduction of soil capacity to retain water - we see other aspects of soil degradation as irrelevant to sealed soils. Finally, we propose to add soils with naturally high concentration of heavy metals into the row with soil contamination, because we are persuaded that occurrence of natural contamination cannot lead to a conclusion that the soil is unhealthy.

Annex II (Part B)

Soil organic carbon – the Czech Republic proposes to include a method under "EN ISO 17184 Soil quality - Determination of carbon and nitrogen by near-infrared spectrometry (NIRS)" and proposes to report the result as a percentage.

Extractable phosphorus – the Czech Republic proposes to replace method P-Olsen with the more economical, time-saving and environmentally friendly Mehlich 3 method, with reference to the GLOSOLAN standard operating procedure.

Concentration of heavy metals in soil – the Czech Republic states that the chosen method (0,43M HNO3) does not set limit values for concentrations of individual elements, furthermore this method is not intended for the determination of Cr(VI) concentrations.

Nitrogen in soil – it is essential to consider what are the benefits the monitoring of this indicator. The method set out in Annex II determines the total nitrogen, which testifies about the organic matter content of the soil, not, for example, about excessive fertilisation. It is more appropriate to use the mineral nitrogen content as an indicator of over-fertilisation, but this indicator is highly variable over time and its determination at five-year intervals (or seven-year intervals as proposed in Article 8(5), respectively) does not make sense.

Moreover, apart from phosphorus and nitrogen, the contents of the main nutrients are not monitored at all (in terms of excess), although this is an important indicator for forest management. Finally, the Czech Republic does not consider the chosen method (Kjeldahl method) to be environmentally friendly. It should therefore be replaced by the dry combustion method (a recognised elemental analysis according to ISO 13878) or NIRS.

Note: The Czech Republic sees major shortcomings in methods enumerated in Annex II, in particular, some of these methods seem to be outdated. Moreover, the ISO standards referred to include the year of publication, while some of these standards are very old. The Czech Republic proposes that the relevant standard should be referred to without a specific year, and as a result up-to-date version of the standard would apply.

Last, but not least, the Czech Republic would appreciate more specification on soil sampling, such as depth of sampling and method of sampling.

Amendments – cluster 3

Article 13(1)

"1. Member States shall systematically and actively identify all sites where a soil contamination is suspected based on evidence collected ~~through all available means~~ ('potentially contaminated sites')."

Note: The wording "through all available means" puts, in our opinion, too much pressure on Member States. Its application might lead to situation where Member States would be obliged to use new methods (regardless of their costs) in event that these are the only ones that might effectively determine the degree of soil contamination. We prefer to delete such a term.

Article 15

"Article 15

Risk assessment and management of contaminated sites

1. Member States shall lay down the specific methodology for determining the site-specific risks of contaminated sites. Such methodology shall be based on the phases and requirements for site-specific risk assessment listed in Annex VI.

2. Member States shall define what constitutes an unacceptable risk for human health and the environment resulting from contaminated sites by taking into account existing scientific knowledge, the precautionary principle, local specificities, and current and future land use.

2a. In case of each contaminated site identified pursuant to Article 14 or by any other means, Member States shall identify its operator[6], if possible.

3. For each contaminated site identified pursuant to Article 14 or by any other means, the ~~responsible~~ **operator identified pursuant to paragrapg 2a, or, in the absence of identified operator,** competent authority**,** shall carry out a site-specific assessment for the current and planned land uses to determine whether the contaminated site poses unacceptable risks for human health or the environment.

4. On the basis of the outcome of the assessment referred to in paragraph 3, the ~~responsible~~ **operator identified pursuant to paragrapg 2a, or, in the absence of identified operator,** competent authority**,** shall take the appropriate measures to bring the risks to an acceptable level for human health and the environment ('risk reduction measures').

5. The risk reduction measures may consist of the measures referred to in Annex V. When deciding on the appropriate risk reduction measures, the competent authority shall take into consideration the costs, benefits, effectiveness, durability, and technical feasibility of available risk reduction measures.

6. The Commission is empowered to adopt delegated acts in accordance with Article 20 to amend Annexes V and VI to adapt the list of risk reduction measures and the requirements for site-specific risk assessment to scientific and technical progress."

Note: We believe that Article 15 should put more emphasis on "polluter pays" principle, therefore modifications have been made in par. 3 and 4 and new par. 2a has been inserted. In our opinion it should be clearly stated that primary subject to carry out site-specific assessment / take measures to bring the risks to an acceptable level is the polluter.

Article 16(4)

"*4. Member States shall make public the register and information referred to in paragraphs 1 and 2**, with exception to information related to the territories important for defence of Member States**. Disclosure of any information may be refused or restricted by the competent authority where the conditions laid down in*

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[6] **In the sense of Article 2(6) of 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**

Article 4 of Directive 2003/4/EC of the European Parliament and of the Council[7] *are fulfilled.*

The register shall be made available in an online georeferenced spatial database."

Note: In view of interests related to national defence, we suggest adding an exception into Article 16(4) as regards making public of information contained in the register. More generally, we leave for consideration whether areas important for defence of Member States should be exempted from overall application of the directive proposal – we refer to Article 5b in the proposal for a regulation of the European Parliament and of the Council on nature restoration.

[7] Directive 2003/4/EC of the European Parliament and of the Council of 28 January 2003 on public access to environmental information and repealing Council Directive 90/313/EEC (OJ L 41, 14.2.2003, p. 26).

24 November 2023

LITHUANIA

Comments on the Proposal for a Directive of the European Parliament and of the Council on Soil Monitoring and Resilience (Soil Monitoring Law)

CLUSTERS 1–3

Article 2 „Scope"

We believe that areas used for activities with the sole purpose of national defence must be excluded from the scope of the Directive. Such areas are used under a special regime for military purposes and would be difficult to monitor. The soil is continuously impacted by the activities and therefore soil remediation measures would not have a positive impact.

Article 4 "Soil districts"

*2. When establishing the geographic extent of soil districts, Member States may take into account existing administrative units and shall seek homogeneity within each soil district**, for example according to*** ~~*regarding*~~ *the following parameters:*

(a) soil type as defined in the World Reference Base for Soil Resources;

(b) climatic conditions;

(c) environmental zone as described in Alterra Report 2281;

(d) land use or land cover as used in the Land Use/Cover Area frame statistical Survey (LUCAS) programme.

Justification. We believe that Member States should be allowed flexibility in defining soil districts. We have doubts about the need to apply all the parameters referred to in the second paragraph. These parameters should only be given as examples.

Article 5 "Competent authorities"

Member States shall designate the competent authorities responsible at an appropriate level for carrying out the duties laid down in this Directive.

Member States shall designate ~~*one*~~ *competent authority for each soil district established in accordance with Article 4.*

Justification. We believe that there should not be a strict requirement to designate a separate competent authority for each soil district. This is particularly important for small Member States, as the designation of a competent authority involves both additional financial resources and administrative burden. We propose to delete word "one" in the second paragraph and to leave it up to the Member States to decide on the number of competent authorities.

Article 7 "Soil descriptors, criteria for healthy soil condition, and land take and soil sealing indicators"

We are convinced that Member States must be given the flexibility to choose the soil descriptors and soil health criteria that best reflect their national specificities. Not all soil descriptors listed in Annex I are relevant for all Member States. Descriptors that are not meaningful in relation to soil type should not be required to be assessed. We therefore propose that soil descriptors be differentiated based on land use, as the same descriptor can exhibit considerably different trends in agricultural soils compared to forest soils. We also propose to set a list of a mandatory descriptors that are relevant for all Member States, in order to allow comparisons between data. The rest of the descriptors could be optional and could be chosen considering local conditions and soil characteristics.

Article 8 „Measurements and methodologies“

*4. Member States shall ensure that the first soil measurements are performed at the latest by… (OP: please insert the date = ~~4~~ **6** years after date of entry into force of the Directive).*

Justification. Following the entry into force of the Directive, Lithuania will have to fundamentally revise its legal framework and the existing soil monitoring system. The transposition of the Directive into national law will take two years. The Commission's proposal of 4 years for the first soil measurements is therefore insufficient. We therefore propose a deadline of 6 years.

5. […]

*Member States shall ensure that the value of the land take and soil sealing indicators are updated at least every ~~year~~ **2 years**.*

Justification. We have serious doubts about the requirement for new soil measurements at least every 5 years. Not all soil descriptors change so quickly. Soil type and land use should also be taken into account. For example, changes in carbon content slow down over time, so a measurement every 5 years will not show statistically significant differences. We would suggest that each descriptor is assessed and that different measurement intervals are defined for different descriptors.

We also believe that the land take and soil sealing indicators should be updated at least every 2 years.

Article 9 “Assessment of the soil health“

1. […]

*Member States shall ensure that soil health assessments are performed at least every 5 years and that the first soil health assessment is performed by … (OP: please insert the date = ~~5~~ **7** years after date of entry into force of the Directive).*

Justification. Following the entry into force of the Directive, Lithuania will have to fundamentally revise its legal framework and the existing soil monitoring system. We therefore propose to perform the first soil health assessment 7 years after date of entry into force of the Directive.

Paragraph 2 of Article 9

In our view, Article 9(2) and “one out, all out” principle are among the most problematic provisions of this Directive. A single descriptor should not determine whether a soil is in good or bad condition. We are open to a deeper discussion on this issue.

5. Member States shall set up a mechanism for a voluntary soil health certification for land owners and managers pursuant to the conditions in paragraph 2 of this Article.
*The Commission ~~may~~ **shall** adopt implementing acts to harmonise the format of soil health certification. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 21.*
Justification. We believe that a clear duty to the Commission („shall adopt") and the date of adoption of the implementing act must be established here. Otherwise, we may find ourselves in a situation where the Members States will set up the certification mechanisms, and after a few years the Commission will adopt an implementing act and the mechanisms will have to be changed.

Article 13 „Identification of potentially contaminated sites"
*3. Member States shall ensure that all potentially contaminated sites are identified **to the extent possible** by (OP: please insert date = ~~7~~ **10** years after date of entry into force of the Directive) and are duly recorded in the register referred to in Article 16 by that date.*
Justification. Firstly, we believe that 7 years may not be sufficient to identify all potentially contaminated sites. According to Article 12(2) Member States have 4 years to establish a risk-based approach and according to Article 16(1) – 4 years to establish a register. This means that out of 7 years only 3 years are left for identification. We therefore propose a 10-year deadline for the identification of potentially contaminated sites instead of 7 years.
Secondly, the requirement to identify all potentially contaminated sites is questionable. We believe that, even with every effort, there may be cases of historical pollution that were previously unknown to the authorities. We therefore suggest using more flexible wording and adding the phrase "to the extent possible".

Article 15 „Risk assessment and management of contaminated sites"
*3. For each contaminated site identified pursuant to Article 14 or by any other means, ~~the responsible competent authority~~ **Member States** shall carry out a site-specific assessment for the current and planned land uses to determine whether the contaminated site poses unacceptable risks for human health or the environment.*
*4. On the basis of the outcome of the assessment referred to in paragraph 3, ~~the responsible competent authority~~ **Member States** shall take the appropriate measures to bring the risks to an acceptable level for human health and the environment ('risk reduction measures').*
Justification. We do not believe that in all cases the competent authority should be responsible for carrying out the site-specific assessment and taking the appropriate measures. Where the polluter is known, the „polluter pays" principle must apply. We therefore propose to leave it up to the Member States to decide to whom to delegate the responsibility – to the competent authority or to the polluter. We would also appreciate clarification as to whether the responsible competent authority referred to in paragraphs 3 and 4 must be the same in all cases. Can Member States decide to delegate the responsibility for site-specific assessment to one authority and the responsibility for implementing risk reduction measures to another authority?

Annex I. "Soil descriptors, criteria for healthy soil condition, and land take and soil sealing indicators"

In Part C, row "Excess nutrient content in soil", we propose to assess the mineral nitrogen content instead of total nitrogen.

Annex II "Methodologies"

Some soil testing methodologies currently used in Lithuania differ from those set out in part B of Annex II. Tests in Lithuania and in neighbouring countries show that nitric acid leach leaves out up to 80 % of results for some metals below detection limit. For example, it is difficult to determine Sb content in soil using nitric acid dilution, therefore the preferable method is *Aqua regia* digestion. Also, we use the *Aqua regia* method to estimate the concentration of heavy metals in the soil. ISO 17586-2016 referred to in the Proposal is not sufficiently sensitive and is not suitable for soil testing in Lithuania. For determination of pH in H_2O and $CaCl_2$ extract we use the KCl method. The process proposed by the Commission for transfer functions is not clear. So as not to distort the data, we propose allowing each Member State to have the freedom to choose which of the approved methods to use, considering natural features and other individual criteria.

An additional observation regarding slide 35

After evaluating the answers provided by the Commission *(slide 35: „PCS that are not contaminated, should no longer be considered as potentially contaminated"*) and the recital 43 (*„Soil investigation may prove that a potentially contaminated site is in fact not contaminated. In that case, the site should no longer be labelled by the Member State as potentially contaminated <...>"*) Lithuanian experts believe that it is not rational to remove the potentially contaminated site from the list if investigation proves that the potentially contaminated site is not contaminated, especially if potentially risky activities are still ongoing. It is considered that the operating object can be a potential source of pollution for the entire period of its operation. It should also be noted that soil investigation is carried out according to the purpose of land use determined at the time and if later the purpose of land use will change, the limit values of polluting substances may change as well. If a potential source of pollution will be deleted from the list, important historical information will be lost and site can cause risk to human health and environment. All collected data about a potentially contaminated site are essential. So, we suggest that in those cases when soil investigation proves that a potentially contaminated site is not contaminated according to the purpose of the land use, the data about the territory should not be open to public but still remain in database for institutional use only.

AUSTRIA
Comments on Soil Monitoring and Resilience Directive

Austria thanks the European Commission for the written answers to the questions raised by the Member States. Also the last three Council Working Group meetings have contributed to a better understanding.

The general statements in the already submitted comments (Austrian Comments on Soil Monitoring and Resilience Directive WK11669.EN.23) as well as the uniform statement of the federal states on questions of subsidiarity and proportionality (VSt-6515/117, transmitted on October 2nd, 2023 to the Committee of the Regions, Department for Subsidiarity Control) remain upright.

According to the Presidency's offer to submit concrete amendments Austria would like to contribute the following proposals to the discussion:

Chapter 1

Article 3

Proposal new definition:
'soil sealing' means the destruction or covering of soils by buildings, construction and layers of completely or partly impermeable artificial material (asphalt, concrete, heavily compressed gravel etc.).

Justification: The aim of the SML is to monitor the loss of soil ecosystem services. Soil sealing results in the greatest possible loss of soil ecosystem services, which is why soil sealing is a key indicator that should be monitored in accordance with Art. 7. Therefore, also a definition for "soil sealing" should be included in Art. 3. The proposed definition is based on an EEA-definition (Working paper for the Soil Health Law: Land take):

Proposal:
(16) 'semi-artificial land': means an area where ecological assemblages have been heavily modified or completely replaced in their composition, balance or function by human activities in an extent where the production function is currently prevented, but on the other side can still maintain value in terms of biodiversity and specific ecosystem services the area provides (e.g. gardens, parks, golf courses, vegetated sport and recreation facilities);

Proposal:
(18) 'land take' means the conversion of natural and semi-natural land into semi-artificial or artificial land;

Justification: Settlement areas that are heavily anthropogenically remodelled so the production function of the soil for primarily agricultural goods can no longer be fulfilled should be assigned to a separate "semi-artificial" class (e.g. parks and gardens, golf courses, sports facilities, etc.). We therefore propose a new indicator for "semi-artificial land".

Proposal:
(14) 'natural land' means an area where human activity has not substantially modified an area's primary ecological functions and species composition (e.g. protected forests, natural grasslands, peatlands);

(15) 'semi-natural land' means an area where ecological assemblages have been substantially modified in their composition, balance or function by human activities, but maintain potentially high value in terms of biodiversity and the ecosystem services it provides **(e.g. agricultural land, forest land);**

Justification: Furthermore we suggest that an exemplary list should be included in the definitions. Those two definitions could also be merged

The definition proposed by the EU for monitoring "land take" differ greatly from previous EU definitions, and thus from the Austrian approach which is heavily based on them. The proposed definition neither fulfils the goal in the field of spatial planning to use space sparingly, nor supports the goal to protect agricultural production areas. This is mainly because of the heterogeneity of within the category "semi-natural" land, which includes intensive agricultural production areas, golf courses, house gardens, playgrounds, football pitches etc.
This proposed change in definition for land take would result in major modifications to the Austrian monitoring system involving additional costs. In addition, inaccuracies due to data availability would be unavoidable. The Austrian monitoring of land take was recently developed and follows a state of the art approach.

Alternatively, Austria is open to discuss deleting the definitions of land use (Art. 3. 14, 15, 16, 17) and to focus on the monitoring of soil sealing. Sealing is the most suitable indicator for monitoring the ecosystem services of the soil, as the ecosystem services of the soil are largely lost in the event of sealing. In the case of land take, the extent of the impairment of ecosystem services varies greatly. However both indicators are of high relevance and our preferred option is to improve the "land take" indicator with the additional suggested class AND to include a separate "soil sealing indicator".

Proposal for (10), (20), (23), (24) and (26):
"(10) '~~contaminated~~ polluted site' means a delineated area ~~of one or several plots~~ with confirmed presence of soil contamination, caused by point-source risk ~~anthropogenic~~ activities or events, that may be harmful to human health or the quality of environment;"
"(20) 'soil contamination' means the presence of a chemical or substance in the soil in a concentration significantly exceeding natural background as a result of human activities ~~that may be harmful to human health or the environment~~;"

"(23) 'risk' means the likelihood ~~possibility~~ of harmful effects to human health or the quality of environment resulting from exposure to soil contamination;"

"(24) 'soil investigation' means a process to control the ~~assess the presence and~~ concentration of contaminants in the soil and delineate the extent of a contaminated site which is usually implemented stepwise ~~performed in different stages~~;"

"(26) 'soil remediation' means a regeneration action that reduces, isolates or immobilizes contaminants ~~concentrations~~ in the soil at polluted sites."

Justification: With regard to definitions in Art. 3(10) and Art. 3(20) harmonisation to the Water Framework Directive (WFD, 2000) and the Industrial Emissions Directive (IED, 2010) is recommendable, which means to amend key terms to "polluted sites" and "soil pollution".

Furthermore human health or ecological impacts are not only related to contaminant concentrations, but as well to the size of a contamination. Accordingly not only "concentrations" but as well "quantity" of contaminants should be considered in site assessments and therefore in Art. 3(10), (24) and (26). To assess "risks" generic technical concepts account for the probability (e.g. of harm or damage) and the extent of the consequence (e.g. ecological losses, like addressed under the WFD and the IED as: "harm to the quality of environment).

Article 4

Proposal:
2. When establishing the geographic extent of soil districts, Member States may take into account existing administrative units and shall seek homogeneity within each soil district regarding the following parameters:

(a) pattern of soil groups as defined in the World Reference Base for Soil Resources **or soil types in well-established national soil classification systems**;
(b) prevailing climatic conditions;
(c) environmental zone as described in Alterra Report 228175;
(d) pattern of land use or land cover e.g. as used in the Land Use/Cover Area frame statistical Survey (LUCAS) programme.

Justification: With national soil mapping systems (Austrian Soil Mapping and Soil Estimation), Austria has a comprehensive and proven soil mapping system in the agricultural sector which is based on a national soil classification system. A revision to the international WRB would involve large costs and personnel expenditure with a simultaneous loss of information. There is therefore no discernible added value in applying the mandatory application of the WRB.

Article 5

Proposal:
Member States shall designate ~~one~~ the competent authority for each soil district established in accordance with Article 4.

Justification: In Austria, as in other Member States, there are already various authorities responsible for soils, for example the federal government is responsible for forest soils, while the federal states are responsible for agricultural soils. We consider it very problematic that the Member States should in future appoint a responsible authority for each soil district unit established in accordance with Article 4, because this undermines the established national responsibilities and thus subsidiarity as well as existing authorities and massively increases the administrative burden. The added value is not obvious compared to the costs from an Austrian perspective. Article 5 would therefore have to be adapted so that the federal structure of the member states is also taken into account. This would be possible, for example, by stipulating in sentence 2 that the authorities responsible for each soil district should be named ("the competent authorities" instead of "one competent authority"). In this context, Article 4(2) TEU, according to which the European Union respects the national identity of the Member States," has to be considered.

Chapter 2

Article 6:

Proposal:
6.1.
Member States shall establish a monitoring framework at a level appropriate for the descriptors and the responsible authority according to the requirements based on the soil districts established in accordance with Article 4(1) or based on Member State level, to ensure that regular and accurate monitoring of soil health is carried out in accordance with this Article and Annexes I and II.

6.2.
Member States shall monitor soil ~~health~~condition and land take at a level appropriate for the descriptors and the responsible authority in each soil district or on Member State level.

Justification: In Austria, soil monitoring instruments or monitoring measures already exist at various levels (e.g. forest soil condition inventory, soil condition inventories of the Federal States (Länder), long-term soil observations). The introduction of a new monitoring system would not only lead to a considerable administrative and financial effort but equally run counter existing and proven systems. E.g. for land take or for modelling erosion it may not make sense to carry out the monitoring on the level of a soil district but on Member State level. This does not mean that the assessment of the result should not be carried out on the basis of a soil district.

6.3.
This article states that Member States shall establish a monitoring framework based on the soil districts and that soil monitoring shall be carried out in every soil district according to the listed criteria. Soil districts are only meaningful if they allow for a specific or differentiated approach to monitoring, assessing soil health and determining soil management and regeneration practices.

6.5.
Proposal:
The Commission and the European Environment Agency (EEA) shall leverage existing space-based data and products delivered under the Copernicus component of the EU Space Programme established by Regulation (EU) 2021/696 to explore and develop together with the Member States soil remote sensing products, to support the Member States in monitoring the relevant soil descriptors.

Justification: As this products have to be used obligatory it is necessary to involve Member States already in the development of those soil remote sensing products.

6.6.
It is still unclear what happens to the data collected, whether and to whom there are transfer obligations for the Member States, who has access to it, where and for how long it is stored, what it may be used for, and whether and in what form each use must be documented and communicated to the Member States as data originators. Basically, we see unresolved issues also in connection with data protection aspects. Above that it is unclear how this data portal is connected to the soil observatory and why two data portals are necessary in the future.

6.7.
Proposal:

The digital soil health data portal referred to in paragraph 6 may also provide access to other soil health related data than the data referred to in that paragraph if having obtained the consent of the Member State concerned and if those data were shared or collected in accordance with the formats or methods established by the Commission pursuant to paragraph 8.

Justification: If data e.g. of private origin are included in the data portal it is necessary to have a consent of the Member State, which is affected from the data.

Article 7:

Proposal:
Recital 26
The selected soil descriptors refer to soil degradation and not to soil functions from which ecosystem services can be directly derived. As the descriptors themselves cannot take into account national or regional conditions there should be more gradation in the criteria within the EU (see text to recital 27).

Recital 27
In order to take sufficient account of this recital, the soil descriptors laid down or the associated soil health criteria would have to be adapted much more closely to national and regional conditions. Therefore, from the Austrian point of view, these should be defined at national or regional level.

Recital 29
This recital is technically understandable, but is not sufficiently reflected in the Directive. Sufficient consideration would require that the MS have the possibility to exclude areas from a soil health assessment if it can be assumed that the non-compliance with the soil health criteria is of natural origin. As an example, it may be mentioned that certain soil types naturally have storage densities that would have to be classified as unhealthy in the context of the Directive.

7.1.
Proposal:
When monitoring and assessing soil health, the MS shall apply the soil descriptors and soil health criteria listed in Annex I, from which there may be justified deviations at national or soil district level.

Justification: It is important to have enough flexibility to adapt soil descriptors and soil health criteria according to the need within the Member State or soil district.

7.2.
Proposal:
Member States may adapt the soil descriptors and the soil health criteria referred to in ~~part A of~~ Annex I~~, in accordance with the specifications referred to in the second and third columns in part A of Annex I~~.

Justification: It is important to have enough flexibility to adapt soil descriptors and soil health criteria according to the need within the Member State or soil district.

7.4.
The possibility of individual adaptation of soil health criteria is considered positive in principle, but should generally (technically justified) apply to all parameters. The setting of soil health criteria or limit values at national level or the introduction of additional soil health criteria (e.g. for organic pollutants) can have a significant influence on the soil health assessment and lead to low

comparability of assessments across Europe. It would be appropriate if the additional parameters were not included in the obligatory and reportable soil health assessment.
The EC is asked to explain how this issue will be addressed.

Article 8:

8.1.
The directive proposal does not provide any guidance how this could be done but refers only to the original article of Bethel which has no link to soil surveys. This should be clarified by, e.g., making reference to Ballin et al. (2022) where the use of the Bethel algorithm is demonstrated for the LUCAS sampling schemes. However, it still remains unclear if and how the location of the sampling points selected by the Bethel / LUCAS methodology would integrate the sampling sites of the existing soil monitoring programmes of the member states. It should be clarified in the SML that member states in the first place shall continue their existing monitoring. Using the Bethel algorithm, sampling sites required by the SML shall be selected using the Bethel-algorithm-based LUCAS scheme. And if needed, additional sampling sites can be selected using the same approach. Given that the majority of member states has been conducting soil monitoring for decades, it is not proportionate to introduce a new sampling scheme without explicitly considering existing programmes. There is a risk that the current SML proposal will result in additional costs that are not required to achieve the objectives of the directive. Many national monitoring systems follow a regular grid, some with a high density of sampling points.

8.3.
Proposal:
Member States may apply other methodologies than the ones listed in the first subparagraph, points (a) and (b), provided that validated transfer functions are available, as required in Annex II, part B, fourth column. If no validated transfer functions are available the Member State has to describe the methodologies used.

Justification: Due to several mostly historical reasons Member States currently use a lot of different methods for the investigation of soil descriptors. It is therefore not acceptable that those methods cannot be used anymore in the future unless validated transfer functions are available. It costs a lot of time and money to determine validated transfer functions for all of the methods but also to introduce new methodologies within the Member State. Therefore we would plead for the possibility that Member States can continue to use their well-tested methods also if no transfer functions are in place, but e.g. have to describe their methods. The Commission has to be aware that if Member States have to introduce new methods the already existing data might be useless.

8.4.
Proposal:
Member States shall ensure that the first soil measurements are performed at the latest by… (*OP: please insert the date = ~~4~~ 5 years after date of entry into force of the Directive*).

Justification: Member States have to do a lot of preparatory work before the first samples are taken, so a period of 4 years seems to be too short for the first sampling.

8.5.
Proposal:
Member States shall ensure that new soil measurements are performed ~~at least~~ every 5 years. Member States may deviate from this frequency in justified cases if it can be argued that there will be no change in the values of the descriptor after 5 years.

Member States shall ensure that the value of the land take and soil sealing indicators are updated ~~at least~~ every 3 years.

Justification:
An annual update of the value of the land take and soil sealing indicators is deemed disproportionate, an update every 3 years seems sufficient and more adequate. The monitoring system for land use and sealing in AT aims at a 3-year reporting cycle. This is because in AT the necessary baseline (aerial photographs) - for a complete update - is available every 3 years. For many parameters or soils (e.g. heavy metals, forest soils) the specified monitoring interval of 5 years does not allow for expected changes.

8.6.
Proposal:
The Commission ~~is empowered to~~ may adopt ~~delegated~~ implementing acts in accordance with Article 20 to amend Annex II and in accordance with European standards in order to adapt the reference methodologies mentioned in it to scientific and technical progress, in particular where values of soil descriptors can be determined by remote sensing referred to in Article 6(5).

Justification: Austria prefers implementing acts instead of delegating acts.

Article 9:

9.1.
Proposal:
Member States shall ensure that soil ~~health~~ health assessments are performed every 5 years and that the first soil health assessment is performed by … *(OP: please insert the date = 5 years after date of entry into force of the Directive)*. Member States may deviate from this frequency in justified cases if it can be argued that there will be no change in the values of the descriptor after 5 years.

Justification: For many parameters or soils (e.g. heavy metals, forest soils) the specified monitoring interval of 5 years does not allow for expected changes.

9.2.
The fundamental question is whether the proposed parameters and thresholds can provide a meaningful systemic approach that fits together? Soil is a matrix much more complex than air and water and any concept of "soil health" is far away from simple. Due to the great heterogeneity and the quantity of parameters, which influence the soil quality, we think that it is not appropriate to make a distinction between healthy and unhealthy soils using EU wide criteria. In the end, it is about finding a desirable optimum for a set of parameters and to allow Member States sufficient flexibility to define the criteria for achieving healthy soils. We see a risk that many soils will not meet the cumulative conditions required for healthy soils, especially if unrealistic values are set for the soil health criteria. A traffic light system could not only be useful for the soil criteria but also for the soil health assessment. So we suggest the terms: healthy, neutral and unhealthy.

9.3.
Proposal:
Member States ~~shall~~ may also analyse the values for the soil descriptors listed in part C of Annex I and assess whether there is a critical loss of ecosystem services, taking into account the relevant data and available scientific knowledge.

Member States ~~shall~~ may analyse the values of land take and soil sealing indicators listed in part D of Annex I and assess their impact on the loss of ecosystem services and on the objectives and targets established under Regulation (EU) 2018/841.

Justification: Methods for assessing ecosystem services are still underdeveloped and different approaches in Member States lead to little comparable data and are associated with high costs. The EC is asked to clarify the objective of this assessment and the methodology for assessing ecosystem services.
At this stage, such an assessment is rejected and the further procedure should be examined in the course of the planned evaluation of the Directive.

9.4.
Proposal:
Based on the assessment of soil ~~health~~ health carried out in accordance with this Article, the competent authority shall, where relevant in coordination with local, regional, national authorities~~,~~ identify, in each soil district, the areas which present unhealthy soils and inform the public about the results on the level of the soil district ~~in accordance with Article 19~~.

Justification: At this point, the publication of data regarding unhealthy soils in each soil district must be examined against the background of proportionality and data protection. This could be burdensome for individual farmers and violate their right to privacy as the assessment mainly relies on soil samples taken at sampling points. We therefore argue that the information requirement should be reduced to the level of the soil district only, i.e. information should be provided on whether there are unhealthy soils in a soil district, and perhaps the percentage of the soil district affected if this is scientifically sound (depending on the representativeness of the sampling points and the changing soil conditions across the soil district). As public information is in principle adequately guaranteed by the Aarhus Convention, this proposed Directive should not go beyond current obligations. The relevant data protection provisions must also be compatible with the protection of landowners' rights.

9.5.
Proposal:
Member States ~~shall~~ may set up a mechanism for a voluntary soil health certification for land owners and managers pursuant to the conditions in paragraph 2 of this Article.

Justification: The (mandatory) establishment of a certification system has to be further evaluated but is seen critical. In particular, the added value is at the moment not yet fully recognisable.
On the contrary, "non-certified farms" could be confronted with possible disadvantages without contributory negligence. The question is to what extent these certificates have a direct benefit for soil protection. The certificate is intended to be used mainly for agricultural and forestry soils (since soil health is of primary importance). It is questionable whether the certificates will be accepted if the costs of sampling and analysis have to be borne by the owners. In the Impact Assessment, the EC assumes small and indirect positive effects. We therefore would prefer a may instead of a shall.

In order to be able to come to a national position we request more detailed explanations on the certification system. For example, on which data basis these are based (e.g. individual soil testing of farmers or statistical interpretation of the monitoring system). What added value does the EC expect from such a certification system? Will such a certification be temporary and subject to periodic renewal? What form should the market for these certificates take, who should buy them and at what price? What is the connection with the Carbon Removal Regulation?

9.6.

Does 9.6 in conjunction with 19 require precise (geographically unambiguous) publication of soil data? Isn't the publication already covered sufficiently by the Environmental Information Act?

Chapter IV

General remarks

While the need to identify and investigate sites likely to be seriously contaminated ("polluted") is supported, focus and priority should be given to the high-risk sites, such also ensuring coherence with existing EU policy.

As for Chapter IV and against practical experiences in managing historically contaminated sites in Austria the register on potentially contaminated sites (and the use of the term itself) are not deemed appropriate. Public registers kept and maintained by administration should not rely on "suspicions" but strictly on sound evidence. Accountability and transparency are key in contaminated land management. Nevertheless, the idea of a register of "potentially contaminated sites" is not supported, instead it is suggested to maintain and include a list of sites in need of investigation (like e.g. "National list of priority sites for investigation") for regular reporting by MS.

Article 12

Proposal
Risk-informed and stepwise ~~based~~ approach
1. Member States shall identify and manage the risks for human health and the environment of ~~potentially contaminated sites and~~ contaminated sites, and keep them to acceptable levels, taking account of the environmental, social and economic impacts of the soil contamination and of the risk reduction measures taken pursuant to Article 15 paragraph 4.
2. By … (OP: please insert the date =4 years after the date of entry into force of the Directive) Member States shall establish a risk-informed ~~based~~ approach for the following:
(a) the identification of sites requiring investigation based on evidence ~~of potentially contaminated sites~~ in accordance with Article 13;
(b) the investigation of ~~potentially contaminated~~ sites in case of reasonable evidence in accordance with Article 14;
(c) the management of polluted ~~contaminated~~ sites in accordance with Article 15.
3. The requirement laid down in paragraph 2 is without prejudice to more stringent requirements arising from Union or national legislation.
4. The public concerned shall be given early and effective opportunities:
(a) to participate in the establishment and concrete application of the risk-based approach for a stepwise identification of polluted sites as defined in this Article;
(b) to provide information relevant for the identification of ~~potentially contaminated~~ sites in accordance with Article 13, the investigation of ~~potentially contaminated~~ sites in accordance with Article 14 and the management of contaminated sites in accordance with Article 15;
(c) to request correction of information contained in the register for ~~contaminated~~ polluted sites ~~and potentially contaminated sites~~ in accordance with Article 16."

Justification: "Risk-based approaches" in contaminated site management critically rely on stepwise concepts to optimise the identification process of sites needing to be investigated and remediated, sound evidence and transparency. The key decision stages regard (i) investigation to verify/falsify whether unacceptable risks are given and (ii) remediation to reduce risks to a generally acceptable level. Considering the final objective of remediation, and in particular when taking into account environmental, social and economic impacts the concept to prepare decisions and implement

actions is broader than 'risk', like described by the joint statement of NICOLE and COMMON FORUM on "Risk-informed and sustainable remediation" (2013). Herein risk assessment has the crucial aim to enable decision makers and stakeholders to be 'risk-informed'. Article 12 should therefore be amended.

Article 13

Proposal:_

Identification of ~~potentially contaminated~~ sites for investigation

1. Member States shall systematically ~~and actively~~ identify all sites where a soil contamination is likely ~~suspected~~ based on evidence collected according to a risk-informed approach for a stepwise identification of polluted sites in accordance with Article 12(4)~~through all available means ('potentially contaminated sites')~~.

2. When identifying ~~the potentially contaminated~~ sites for surveillance Member States shall take into account the following criteria:

(a) operation of an active or abandoned ~~inactive~~ potentially contaminating risk activity;

(b) operation of an activity referred to in Annex I to Directive 2010/75/EU;

(c) operation of an establishment referred to in Directive 2012/18/EU of the European Parliament and of the Council76;

(d) operation of an activity referred to in Annex III to Directive 2004/35/CE of the European Parliament and of the Council[77];

(e) occurrence of a potentially contaminating accident, calamity, disaster, incident or spill;

(f) ~~any other event liable to cause soil contamination;~~

~~(g)~~ any information resulting from the soil health monitoring carried out in accordance with Articles 6, 7 and 8.

For the purpose of the first subparagraph point (a), Member States shall lay down a list of potentially contaminating risk activities. Those activities may be further classified according to their relevance ~~risk~~ to cause soil contamination based on scientific evidence.

3. Member States shall ensure that ~~all potentially contaminated~~ sites for investigation are identified ~~by (OP: please insert date = 7 years after date of entry into force of the Directive)~~ and are duly listed and reported according to Article 18~~recorded in the register referred to in Article 16 by that date~~."

Justification: Against the background that Art. 13 does not provide for any limitation in time it needs to be assumed that any events liable to cause contamination in future will need to be considered for investigation and remediation as well. Therefore a deadline for soil investigations like foreseen is not meaningful, neither absolute nor relative.

Article 13(1): The fundamental aim should enable for mapping sites, where evidence for 'potentially contaminating (risk) activities or events' can be established. The term 'potentially contaminated sites' is used, reported and recognised through the indicator LSI003 "progress in contaminated site management". Up to now comparability of national contaminated land management programs and according data at MS level is strongly limited. Furthermore the assumption that any inventorised sites may cause "unacceptable risks" would be simply wrong. Therefore it would be preferable to precise terminology instead of sticking to LSI003 terminology.

Article 13(2): Mapping 'potentially contaminating (risk) activities or events' aims to allow surveillance in terms of (i) investigating sites where "unacceptable risks" seem likely or (ii) informing in situations of land use changes and site development.

Any arbitrary or likely confusing use of the term "risk" should be avoided. Moreover, a classification should take account of the relevance of activities, which e.g. involves aspects like site of enterprises, amounts of chemicals used, duration of activities.

Article 13(2)(a): To address "historic" risk activities which already have been terminated "abandoned" should be introduced (instead of addressing "inactive ... activity")

Article 13(2)(f): Subpara. (f) should be deleted, as any 'criteria' always should be substantiated, which asks for providing for a clear background and reasoning regarding the origin/sources of contamination.

Article 13(3): As the proposal intends to cover recent/new contamination, it is simply impossible to provide a fixed deadline for identifying sites in need of investigation.

Article 14

Proposal:
Investigation ~~of potentially contaminated sites~~
1. Member States shall ensure that all ~~potentially contaminated~~ sites classified according to their relevance to cause soil contamination identified in accordance with Article 13 are subject to soil investigation.
2. Member States shall lay down the rules concerning ~~the deadline,~~ content, form and the prioritisation of the soil investigations. Those rules shall be established in accordance with the risk-informed ~~based~~ approach for a stepwise identification of polluted sites referred to in Article 12 and the list of potentially contaminating risk activities referred to in Article 13(2), second subparagraph.
[…] ”

Justification: The proposal calls on “competent authorities” to investigate, assess and remediate. This is in contradiction to the “polluter pays principle” and existing legal duties of any party liable for environmental pollution. Amendments to clarify that authorities should ensure any actions will be necessary. Obviously in case of “orphan sites”, where a party having caused contamination (pollution) cannot be held liable, MS administration shall establish specific national programs and resources.

Article 14(1): See comments on Art. 12(1).

Article 14(2): Given the fact that Art. 13 should not provide for any limitation in time it needs to be assumed that any events liable to cause contamination in future may need to be considered for investigation and remediation as well. Therefore a deadline for soil investigations is not meaningful, neither absolute nor relative.

For these reasons, we propose to amend Articles 14.

Article 15

Proposal:
Risk assessment and management ~~of contaminated sites~~
1. Member States shall lay down the specific methodology for determining the site-specific risks referring to site investigation according to Article 14~~of contaminated sites~~. Such methodology shall be based on the phases and requirements for site-specific risk assessment listed in Annex VI.
[…] 3. For each ~~contaminated~~ site investigated ~~identified~~ pursuant to Article 14 or by any other means, the responsible competent authority shall ensure and validate the ~~carry out a~~ site-specific assessment for the current and approved ~~planned~~ land uses to determine whether the contaminated site poses unacceptable risks for human health or the environment.

4. On the basis of the outcome of the assessment referred to in paragraph 3, the responsible competent authority shall ensure and control ~~take the~~ appropriate measures to bring the risks to an acceptable level for human health and the environment ('risk reduction measures').
5. The risk reduction measures may consist of the measures referred to in Annex V. When deciding on the appropriate risk reduction measures, considerations on the costs, benefits, effectiveness, durability and technical feasibility of available risk reduction measures shall be characterised, recorded and reported in a transparent manner ~~the competent authority shall take into consideration the costs, benefits, effectiveness, durability, and technical feasibility of available risk reduction measures~~.
6. The requirement laid down in paragraph 5 is without prejudice to more stringent requirements arising from Union or national legislation.
7. ~~6.~~ The Commission is empowered to adopt delegated acts in accordance with Article 20 to amend Annexes V and VI to adapt the list of risk reduction measures and the requirements for site-specific risk assessment to scientific and technical progress. […]"

Justification: See also comments on Article 14.

Article 15(3) and (4): Considering the "Polluter-pays-principle" the duty to carry out site-specific risk assessments is with the liable party and not with authorities, which of course need to supervise.

Article 15(4): As chapter IV on contaminated sites does not provide for any distinction in between "historical" and recent contamination (pollution) coherence to existing EU and national legislation will be needed. Therefore, measures and remediation objectives cannot be restricted on risk reduction. As an example measures under the Industrial Emissions Directive [Directive 2010/75/EU; as also referenced in Art. 13 (2b) of the proposal] shall usually recover 'baseline conditions', which is the chemical soil condition before starting the activity and such by purpose ('prevent and limit') more stringent.

Article 15(5): Considering the "Polluter-pays-principle" the duty to prepare decisions on risk reduction measures is with the liable party and not with authorities.

Article 15(6) new: As an example measures under the Industrial Emissions Directive [Directive 2010/75/EU; as also referenced in Art. 13 (2b)] shall usually recover 'baseline conditions', which is the chemical soil condition before starting the activity and therefore by purpose ('prevent and limit') more stringent. Article 15 should therefore be amended.

Article 16

Proposal:
Register
1. By … (OP : please insert date = 4 years after entry into force of the Directive), Member States shall, in accordance with paragraph 2 and Article 13(2), maintain a database of sites for surveillance and~~,~~ draw up a register of contaminated sites ~~and potentially contaminated sites~~. […]"

Justification: While a public register of "potentially contaminated sites" is not deemed appropriate, it is suggested to publish and inform the general public on any final results in investigations, risk assessments and site classification also when investigations show that a site is not seriously contaminated (polluted). Finally, the registers will also need to allow for delisting sites where contamination (pollution) has been eliminated to an extent that remaining risks are negligible. Article 16 should therefore be amended.

Annex I

General remarks to Annex I:

Austria is in favour of fundamentally revising the annexes. We would not only recommend increasing the flexibility for Member States concerning the choice of soil descriptors but also the values of the soil health criteria and the investigation methods.

General remarks on soil texture:

Some parameter values refer to the soil texture (clay content for C or clay/silt/sand ratio for subsoil compaction). This presupposes that the soil texture must be known (measured). Soil texture can be measured by using the classic standard "pipette method according to Köhn", which provides the most accurate and reliable results but is very labour-intensive and time-consuming but also by other less complex methods. Therefore, it should be possible to use alternative methods including an assessment using a finger test, which can be carried out by well-trained laboratory technicians with the desired accuracy.

Part A:

Salinization: Investigations should be limited to areas with expected occurrence of salinization, for example irrigated areas, urban areas, but normally not for grassland and forest land.

Soil erosion: The proposed value of 2t/ha for all types of erosion is not acceptable from an Austrian perspective, because it can only be achieved with massive intervention in land use change, i.e. transforming arable land into grassland, which will severely reduce food production in almost every European country. A rough estimation of factors that are used in the widely applied USLE to calculate soil loss for erosion by water (see for instance Panagos, 2015, Schmaltz et al.2023 or Fiener et al., 2020) suggests that already for very moderate conditions of rainfall erosivity (R=80), soil erodibility (K=0.30), slope length (L=100 m and slope (S = 4% = LS of 0.63) and land use (maize planted with minimum tillage management, C=0.12), calculated soil loss would already be at 1.8 t/ha/a (you need to multiply these factors to get the result). This means that even with the implementation of significant erosion control measures sustainable agricultural land use would not be possible above slopes of 4%.

It has to be stated in addition, that the implementation of a limit (independent of the extent of that limit) needs some way to evaluate it. At present, the only feasible way to validate seems to be the application of a modelling approach, such as the USLE/RUSLE or any other empirical model (see references above). Please note that all of these existing approaches have to deal with a significant uncertainty in a range of +/- 2-3 t/ha/a. Even the application of a model with identical data but different persons involved may lead to already significantly different results (Fiener et al., 2020). Thus, a limit of 2 t/ha/a can – at present, and most likely also in the future – not be validated with sufficient accuracy.

A further issue relates to the fact, that at present the limit of 2t/ha/a relates to all processes of erosion including wind erosion and harvest erosion. Unfortunately, there is only limited information available on the process of harvest erosion and the database relating to this process needs more consideration (Kuhwald et al., 2022), but available data suggest that harvest erosion may reach similar magnitudes as soil erosion by water. Fortunately, soil loss by harvest erosion does not mean that soil is completely lost, because usually – after processing for instance sugar beet – this soil is

stored in the processing factory and reallocated back to the fields. Thus, it should not be considered lost soil and not be included in a calculation of soil loss limits at all. There is also very little information available on the process of wind erosion (see below).

A further issue relates to soil formation. The rate of soil formation on which the current proposal of 2t/ha/a is based is indeed very rarely investigated and is subject to very critical scrutiny and, although a soil formation rate of 2t/ha/a seems to be regarded as common knowledge it is not, but results as a transmission of very little information about this issue. One major critics for the rate of soil formation is the fact that the few existing studies (for instance Alexander, 1985) do not relate to topsoil regeneration but to soil regeneration based on dissolution of consolidate bedrock. Auerswald et al. (1991) compared available literature dealing with bedrock formation and topsoil formation. Soil regeneration of topsoil was found to be about one order of magnitude higher compared to soil regeneration from bedrock. Soil regeneration is a topic, which needs to be examined in more detail in order to gain more knowledge and obtain meaningful and comprehensible values. Perhaps this topic should be included in the next work program of the soil mission. A better basis would then be available at the latest by the time the directive is evaluated.
Bircher et al. (2022) compared mapped soil loss from an area of 258 ha during 10 years with RUSLE-based modelled soil loss values. The mean mapped soil loss was 0.77 t/ha/a, while the modelled was 6.20 t/ha/a. The comparison of mapped and modelled soil loss show a substantial overestimation by modelling in the order of a factor 8. Areas with high mapped soil loss rates >4 t/ha/a were modelled quite accurately by the model. Areas with low mapped soil loss rates <4 t/ha/a were drastically over predicted by the model.

Austria therefore proposes new values for water erosion - embedded for instance in a traffic light system, which we think is much more sensitive for changes than having only one value. Schmaltz et al. (2023) show, that even if all offered measures from the Austrian agri-environmental programme ÖPUL would be applied the mean soil loss in Austria could not be below 4.7 t/ha/y. This thus depicts roughly the minimum amount of average soil erosion that could be obtained using soil protection on all arable land over all of Austria. The only way to decrease this value is to transform arable land into something different (grassland, forest, urban). We do not think that this could be intentional.
Of course, within the new CAP, the programme was further developed and there are also binding measures within the first pillar in place, but it can be expected, that we still have to expect a certain erosion rate in Austria which is clearly and distinctly above 2t/ha/a.

Therefore, we propose a change in structure to evaluate soil erosion:

1) Exclusion of harvest erosion – soil is not lost but brought back to the field
2) Setting up a traffic light system for soil loss: 0 – 5 t/ha: green, 5 – 8 t/ha: orange, >8 t/ha: red

These limits may be open for discussion but as presented, a mean soil loss below 4 t/ha/y cannot be obtained in practice and with a given certainty, provided that we rely on a validation system of modelling.

References:

Bircher, P., Liniger, H.P., Prasuhn, V. (2022) Comparison of long-term field-measured and RUSLE-based modelled soil loss in Switzerland. Geoderma Regional, Volume 31, December 2022, e00595

Earl B. Alexander (1985) Rates of soil formation from bedrock or consolidated sediments, Physical Geography, 6:1, 25-42

Fiener, P., Dostal, T., Krasa, J., Schmaltz, E., Strauss, P., and Wilken, F., 2020: Operational USLE-Based Modelling of Soil Erosion in Czech Republic, Austria, and Bavaria – Differences in Model Adaptation, Parametrization, and Data Availability. Applied sciences, 10, 3647, 1-18, doi:10.3390/app10103647.

Michael Kuhwald, Fritjof Busche, Philipp Saggau, Rainer Duttmann, Is soil loss due to crop harvesting the most disregarded soil erosion process? A review of harvest erosion, Soil and Tillage Research, Volume 215, 2022,

K. Auerswald, E. Nill und U. Schwertmann. Verwitterung und Bodenbildung als Kriterien des tolerierbaren Bodenabtrags Landwirtschaftliches Jahrbuch 68. Jhrg. Heft 5/91

Schmaltz, E., Krammer, C., Dersch, G., Weinberger, C., Kuderna, M., Strauss, P., 2023. The effectiveness of soil erosion measures for cropland in the Austrian Agri-environmental Programme: A national approach using local data. Agriculture, Ecosystems and Environment 355, 108590, pp. 1-13. https://doi.org/10.1016/j.agee.2023.108590

Wind erosion: To date, there is no sufficiently comparable data available at EU level for wind erosion. It would therefore make sense to separate water and wind erosion and define separate values. Wind erosion should only have to be taken into account if the Member State classifies this as relevant for the soil district.

Loss of organic carbon in the soil: The proposed descriptor is not suitable for determining whether an optimum humus content has been achieved. The paper by Johannes et al. (2017; Optimal organic carbon values for soil structure quality of arable soils. Does clay content matter? Geoderma 302) suggests a target soil carbon (Corg) value of a Corg:clay ratio of 0.1 (1:10) for an optimal soil structure quality but not a target for an optimum humus content. Therefore (i) the Corg:Clay ratio in the work is not a humus target indicator, but a structural indicator, (ii) the sample only takes into account soils up to < 35% clay, and (iii) the VESS score method is difficult on soils with a predominantly clay-related secretion structure and would require at least a corresponding special calibration.

Austria would therefore propose the use of the EEA indicator values for this descriptor or the values according the agreed values within Austrian recommendations for fertilization.

Option A: EEA Indicator „loss of soil organic carbon“:

Cropland falling below optimal SOC level
Light soils: <1.2% SOC
Medium soils: 1.2-1.9% SOC
Heavy soils: >1.9% SOC

Option B: Guideline for the appropriate fertilization in arable farming and grassland (guidance on the interpretation of soil test results in agriculture 8th edition (https://info.bml.gv.at/themen/landwirtschaft/landwirtschaft-in-oesterreich/bodenschutz/bodenschutz-duengung/Bodenschutz.html - 2022))

Table 4: Classification of humus content in arable land and grassland for mineral soils

	low	middle	high
cropland	< 2 %	2 - 4,5 %	> 4,5 %
grassland	< 4,5 %	4,5 - 9 %	> 9 %

Subsoil compaction: The proposed flexibility is welcomed, but it should be possible to exclude certain soils with a high natural density from the health assessment. Subsoils that should be ideally sampled should be defined. The effort of repeated, volumetric subsoil sampling with sufficient

replicates would be high, therefore the possibility of using other methods by applying a pedotransfer function (PTF) or a risk-assessment-based method would be appreciated (cf. e.g. Brus and van den Akker, 2018). However, it needs to be assured that the applied PTF implies the possibility to detect mid-term changes of bulk density, which is not the case for a vast majority of PTFs (e.g. Hollis et al., 2012, European Journal of Soil Science 63, 96 –109). Furthermore, this PTF has not yet been validated for some important soil groups, including Chernozems and Phaeozems that are important in the eastern parts of Austria. The criteria for soil health in relation to subsoil compaction are differentiated for soil textural classes for which the directive refers to SSSA methodology. Why not referring to the definition provided by FAO, which would be consistent with the use of the international guidelines for soil description and related classification of soil groups using the World Reference Base for Soil Resources as common in the EU?

However, in order to achieve improvements in subsoil compaction, a much longer period than 5 years is required.

Brus, D. J. and van den Akker, J. J. H.: How serious a problem is subsoil compaction in the Netherlands? A survey based on probability sampling, SOIL, 4, 37–45, https://doi-1org-1001616g10006.pisces.boku.ac.at/10.5194/soil-4-37-2018, 2018.

Part B:

Excess nutrient content in the soil: In general, the significance and informative value of this descriptor for assessing soil condition is questioned. The range of 30-50 mg/kg does only refer to the Olsen method and is not suitable to other methods. There are more than 10 different methods used in Europe (Jordan-Meille et al., 2012) for the determination of “plant available” P. In Austria and Germany, for example, the CAL method is used. Conversion equations from CAL to Olsen-P exist (e.g. Steinfurth et al., 2022), but they are derived from a limited amount of field experiments and should be validated in a larger number of comparison studies (as it is planned in the projects LUCASSA II, BENCHMARKS). Member States should therefore have the possibility to use their own methods in combination with national thresholds suitable to the method in place.

In Austria, we have according to the guideline for the appropriate fertilization in arable farming and grassland (guidance on the interpretation of soil test results in agriculture 8th edition (https://info.bml.gv.at/themen/landwirtschaft/landwirtschaft-in-oesterreich/bodenschutz/bodenschutz-duengung/Bodenschutz.html - 2022)) the following classification system:

Table 14: Classification of the phosphorus content

	Arable land	Grassland
Content class nutrient supply mg P/1000 g		
A very low	under 26	under 26
B low	26 - 46	26 - 46
C sufficient	47 - 111	47 - 68
D high	112 - 174	69 - 174
E very high	über 174	über 174

These gradations are the basis for the fertilizer recommendations. Regarding the Soil Monitoring Law, the main focus should lie on the risk of P-losses and this cannot be determined alone with a range/threshold of P concentrations. We suggest to determine the risk of P losses with combining high and very high P supply classes with a (very) high/extreme risk of erosion.

Soil Contamination: Flexibility for MS is welcomed. With the proposed parameters, Cr VI should only need to be examined on a risk-based approach.

Reduction in the water retention capacity of the soil: From an Austrian perspective, there are still open questions such as how e.g. sealed areas can be included in the calculation (inclusion is generally supported), soil profile depth, exact definition of the addressed soil property, method of determination and evaluation (thresholds, design events), etc.

Part C:

For soil descriptors without criteria, there should be no obligation to carry out a monitoring; these investigations should done a voluntary basis.

Basal Respiration:
Basal respiration of the soil is not a parameter for biological diversity in the soil. Basal respiration alone is also not a suitable parameter for determining/estimating the quantity of soil organisms. Basal respiration is a parameter for the activity of the soil organisms present. This information can be found in the respective ISO Norm. To ensure comparability of data across Europe, it would be advisable to use a standardized method (e.g. methodology 5 flow measurement with CO_2 analyzer). The currently used reference (a scientific article on sample storage) should definitely be discarded. It makes no sense to measure basal respiration from dry soil, as previously suggested (there is no activity in dry soil). The ISO standard suggests water contents of 40-60%. A standardized temperature for the measurement must also be defined because respiration is strongly temperature-dependent. The ISO standard suggests 22°C, which is quite high. Soils in northern Europe will of course never reach this temperature. 10 or 15°C would make more sense.

Part D

Annex II

In our view, there are still many unanswered questions regarding methods and standards. However, we would like to await the expert meeting on December 14.

SLOVAK REPUBLIC

Comments to the Working Party on Environment

on the Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on Soil Monitoring and Resilience (Soil Monitoring Law)

24 November 2023

Following the meetings of Working Party on Environment of 16th, 20th and 21st of November, Slovakia submits additional comments to the Commission.

Article 1 (Objective and Subject matter)

Slovakia believes that more emphasis should be put on **land take mitigation**. We are of the opinion that measures to limit land take deserve a special mention in this article, and cannot be just included under measures on monitoring and assessment of soil health or under measures on sustainable soil management. Soil sealing and land take represent the ultimate threat to soil health and it means complete and irreversible destruction of land, with permanent and complete loss of ecosystem services. That is why we believe that measures on land take mitigation deserve special mention in this article.

We propose the following amendment to article 1(1):

*The objective of the Directive is to put in place a solid and coherent soil monitoring framework for all soils across the EU and to continuously improve soil health in the Union with the view to achieve healthy soils by 2050, ~~and~~ maintain soils in healthy condition **and mitigate land take**, so that they can supply multiple ecosystem services at a scale sufficient to meet environmental, societal and economic needs (...)*

Article 2 (Scope)

Slovakia calls for **the exclusion of territories falling under a special regime** (for example, military districts) **from the scope of the directive**. Military districts and areas in Slovakia consist of significant areas primarily of forest land. And these areas are under a special regime and with very limited access, in which it will be problematic to ensure soil monitoring.

Article 3 (Definitions)

Due to its clear distinction from the term "land take" and the establishment of a "clear dividing line" between these processes, we propose to add a definition of the term **"soil sealing"** to Article 3.

In **3(10)** we propose **an exception for mining sites** (we ask for their exclusion from contaminated sites, since the natural environment is often in these areas with a higher occurrence of certain elements (geogenic or geogenic-anthropogenic origin)).

We also propose the following amendments to article 3:

We propose to modify the definition of "soil". We propose to replace the term **"bedrock"** with **"parent rock"** or **"parent material"**, because in the conditions of the Slovak Republic the parent rock is often made up of soils, not bedrock.

*(1) 'soil' means the top layer of the Earth's crust situated between the ~~bedrock~~ **parent rock/parent material** and the land surface, which is composed of mineral particles, organic matter, water, air and living organisms;*

We then propose to transform the term “soil investigation” into “soil contamination investigation” so that it is clear from the term itself so that this is only a investigation of soil contamination or pollution, not a soil investigation of any kind. And further, Slovakia proposes to delete the words: "which is usually performed in different stages" (the validity of this sentence is not obvious).

*(24) ‘soil **contamination** investigation’ means a process to assess the presence and concentration of contaminants in the soil ~~which is usually performed in different stages~~;*

Article 5 (Competent authorities)

Slovakia would welcome having the possibility to create/have in use **several competent authorities for one soil district**. For instance, one competent authority responsible for the implementation of measures in the area of contaminated sites (Ministry of Environment), and another competent authority responsible for monitoring agricultural land (in SK Ministry of Agriculture - the Soil Service).

We propose the following amendment to article 5:

*Member States shall designate **at least** one competent authority for each soil district established in accordance with Article 4.*

Annex 1 (Soil descriptors, criteria for healthy soil condition, and land take and soil sealing indicators)

Part A (soil descriptors with criteria for healthy soil condition established at Union level)

Salinization

In the Slovak Republic, soil salinization is currently only a local problem and occurs only on small geographically localized areas in the southern part of the country. In most of the territory of our country, the occurrence of this pedodegradation process in the existing soil and climate conditions is currently not possible. For the above reason, we consider full-scale monitoring of soil salinization in Slovak conditions to be inexpedient and associated with high costs, and **we propose reclassifying this soil descriptor among the Part B descriptors established at the level of Member States**, or enabling its monitoring only in those soil areas where it is relevant and where there is a risk of expanding soil salinization in connection with climate change. Soil salinization is a very important process of soil degradation, the spread of which is influenced by climate change, and its monitoring within the Union is important. However, this is a process conditioned by specific soil and climate conditions. **Soil erosion**

We understand the principle of setting the limit of healthy soil for this descriptor at the level of 2 t/ha per year derived from the average rate of soil formation based on the principle of sustainability - i.e. so that the rate of soil loss should not exceed the rate of soil formation. We also consider soil erosion to be one of the most important processes of soil degradation in terms of size and intensity, which is associated with inappropriate methods of soil management and therefore needs to be given special attention in the directive.

However, **we consider the set limit of 2 t/ha per year to be very strict**, especially in the context of applying the "one out - all out" principle. The application of this principle will not have a motivating effect in relation to the reduction of erosion in the areas most at risk of erosion, where it will not be possible to reach the limit of healthy soil even after the implementation of anti-erosion measures. On the contrary, it may result in focusing attention on relatively less erosion-endangered soils with soil loss only slightly above the limit of 2 t/ha per year, where it will be possible to achieve their reclassification from "unhealthy" soils to "healthy" soils with relatively little effort. However, the focus should be on the soils most at risk of erosion. For this reason, **we propose, not only for soil erosion, the replacement of the "one out all out" principle with the "traffic light" principle, enabling a more targeted implementation of measures.**

Regarding the methodology for determining erosion, we consider it necessary to point out the fact that the proposed value of the soil descriptor for erosion includes soil loss through all erosion processes (water, wind, tillage erosion and "harvest erosion"), however, most of the published data on soil loss comes from modelling erosion based on the "RUSLE" erosion model including only surface and furrow water erosion. The quantification of especially tillage erosion and harvest erosion is associated with methodological problems, and obtaining relevant data on the intensity of these processes can be problematic.

Article 12 (Risk-based approach)

Slovakia supports the requirement of several Member States **to distinguish between recently and historically contaminated sites**, i.e. when the polluter is/is not known or identifiable. We understand the primary intention of the Commission to reduce the risk itself to a non-threatening risk. However, this depends on who will carry out the measures at the site and who will fund them.

We would also like to ask for **the clarification of the application of public concerned** (para. 4) in practice. And we would welcome **a longer timeframe for the implementation of the risk-based approach** (para. 2).

Article 13 (Identification of potentially contaminated sites)

Slovakia is of the opinion that **the Commission should develop/define a list of potentially contaminating risk activities** in order to ensure the same approach of all member states in the identification of potentially contaminated sites within the entire EU.

Article 14 (Investigation of potentially contaminated sites)

Slovakia is concerned with the high **administrative burden and increased financial costs** related to the implementation of the proposed measures.

We also join a number of Member States and their concerns about the expense of investigating "all" potentially contaminated sites, if they are heritage from the period of Soviet occupation/former state enterprises/foreign contamination (who pays the costs and who is responsible). We feel a strong need for more clear prioritisation in the text and a "risk-based approach".

Article 16 (Register)

Slovakia has created a register of environmental burdens (in simple terms "old contaminated sites") and therefore supports the request for more flexibility in the parameters of the register of contaminated sites - we want to avoid major changes and difficult IT development.

We therefore suggest **inserting a new paragraph 4** after paragraph 3 and subsequent paragraphs would be moved:

4. A site can be deleted from the register if:

(a) an investigation of a potentially contaminated site under Article 14 has not identified the presence of contamination;

(b) a risk assessment referred to in Article 15(1) has proven that the site poses neither a health nor an environmental risk;

(c) the measures referred to in Article 15(3) have been implemented to reduce the risks to a level acceptable to human health and the environment.

ESTONIA

comments on the Soil Monitoring Law – 24.11

Estonia would like to express appreciation for an opportunity to provide comments on the SML proposal. Added wording is in **bold**.

Cluster 2

Article 3 (24)

Proposal: „'soil investigation' means **measuring and assessment of soil descriptors and** a process to assess the presence and concentration of contaminants in the soil which is usually performed in different stages"

Rationale: The proposed definition of the soil investigation is too limited and, as pointed out by soil scientists, would need to cover also overall measuring and assessment of soil descriptors.

LUXEMBOURG

Proposition de DIRECTIVE DU PARLEMENT EUROPÉEN ET DU CONSEIL relative à la surveillance et à la résilience des sols

-

De manière générale, le Luxembourg soutient la proposition de directive en question, ainsi que les objectifs afférents, bien que certains éléments de nature technique devraient être précisés davantage afin d'assurer une bonne mise en œuvre de ladite Directive.

Dans ce contexte, et tenant notamment compte du fardeau administratif ainsi que des coûts afférents, le Luxembourg souhaite attirer l'attention de la Présidence sur certains aspects relatifs au concept du « *soil district* » ; sur le principe du « *one-out-all-out* » ; sur certaines définitions ; ainsi que sur la gestion des sites (potentiellement) pollués.

Ainsi, sont rassemblés ci-dessous les commentaires du Luxembourg concernant les clusters I, II, et III de la proposition de la directive.

Commentaires concernant l'article 1

Alors que le Luxembourg soutient les objectifs définis à l'art. 1, nous estimons que les dispositions relatives à la gestion des sites contaminés au chapitre IV ne soient guère cohérentes avec l'objectif général de favoriser une amélioration continue de la santé des sols (prière de bien vouloir consulter dans ce contexte aussi nos commentaires relatifs au chapitre IV).

Commentaires concernant les définitions relatives au « *land take* » à l'article 3

Le Luxembourg estime que le concept du « *land take* » tel que proposé par la Commission devrait être davantage affiné. En effet, le processus d'urbanisation entraîne deux phénomènes différents sur les sols, qu'il nous semble important de distinguer. Dans ce sens, le premier phénomène serait celui de l'artificialisation des surfaces, couramment traduit en anglais par le terme de « *land take* » et par lequel on entend la conversion de l'usage et/ou de la couverture du sol (qui est liée à son usage) d'un usage naturel ou semi-naturel vers un usage artificiel. Cette conversion s'effectue du point de vue de la surface. Le deuxième phénomène est celui de l'artificialisation des sols qui engendre une modification substantielle des propriétés physiques, chimiques et/ou biologiques du sol, induite par différents procédés anthropiques. Cette modification s'effectue du point de vue de l'objet « sol » en tant que volume.

L'artificialisation des surfaces d'un côté, et l'artificialisation des sols de l'autre sont deux phénomènes connexes, mais pas strictement liés. Par exemple, une surface peut être artificialisée - dans le sens du « *land take* » - si elle est convertie d'un usage agricole vers un parc urbain, sans que le sol de la surface en question soit forcément artificialisé (c-à-d sans modification significative des propriétés du sol). À l'inverse, un sol peut être artificialisé sans qu'il y ait forcément une artificialisation de sa surface ; par

exemple, lorsqu'un sol d'un espace vert urbain (considéré comme un usage artificiel en raison de sa localisation urbaine) subit de profondes modifications dues à la construction d'infrastructures urbaines. Cette situation peut notamment être rencontrée lorsqu'une zone urbaine est densifiée afin d'éviter un étalement urbain.

Le phénomène d'artificialisation des sols est le phénomène le plus problématique vis-à-vis des sols, parce qu'il engendre une dégradation, voire une perte de services écosystémiques fournis par les sols.

L'imperméabilisation des sols constitue un type d'artificialisation des sols (forte modification des propriétés d'infiltration et des cycles biogéochimiques) qui est induite le plus souvent par l'artificialisation des surfaces, mais pas forcément.

Ainsi, la connaissance du niveau d'artificialisation des sols, notamment dans les zones déjà artificialisées en raison de leur usage, permet de mieux protéger ces sols ainsi que d'assurer un niveau suffisant de services écosystémiques fournis dans ces zones (généralement urbaines). Ce descripteur, appliqué aux zones périurbaines, permettrait également de mieux protéger les sols d'intérêt agronomique ou écologique.

Pour ce qui précède, le Luxembourg suggère que le niveau d'artificialisation des sols soit évalué sur base d'indicateurs définis dans chaque Etat-membre, et ce en fonction des connaissances scientifiques disponibles et de manière volontaire. En conséquence, le Luxembourg propose d'ajouter ce descripteur à l'Annexe I, partie D (« *optional indicators* »). Ledit descripteur pourrait prendre en compte au moins une des caractéristiques suivantes d'un sol :

i) capacité de support de végétation ;
ii) capacité de support de biodiversité ;
iii) capacité de production de biomasse (alimentaire et/ou non-alimentaire) ;
iv) capacité de stockage en carbone ;
v) capacité d'infiltration et de stockage d'eau ;
vi) de ne pas présenter de risque pour la santé humaine.

Une fois en place, ce descripteur permettrait de mieux gérer les différents impacts des activités humaines sur les sols, et ainsi de mieux protéger les services écosystémiques fournis par les sols.

Afin d'être en mesure de lutter de manière efficace contre l'artificialisation des sols, et l'artificialisation des surfaces, la proposition de directive devrait à notre avis distinguer clairement entre les deux phénomènes susmentionnés, et permettre aux Etats-membres de développer des indicateurs pertinents pour leur évaluation respective.

Alors que la définition du « *land take* » telle que proposée mélange ces deux phénomènes et risque en conséquence d'être préjudiciable lors de la mise en œuvre de la directive, le Luxembourg propose de modifier les définitions de l'article 3 comme suit :

Art. 3: Definitions

(14) 'natural land' means an area that is not managed or not directly used for human activities, and where human activity has not substantially modified an area's primary ecological functions and species composition;

(15) 'semi-natural land' means an area used for forestry and/or agriculture ~~means an area where ecological assemblages have been substantially modified in their composition, balance or function by human activities,~~, but which maintains potentially high value in terms of biodiversity and the ecosystem services it provides;

(16) 'artificial land' means ~~land~~ an area used for urban, industrial, traffic, mining, and quarrying activities. ~~as a platform for constructions and infrastructure, or as a direct source of raw material or as archive for historic patrimony at the expense of the capacity of soils to provide other ecosystem services.~~

(17) 'land take' means the conversion of natural and semi-natural land into artificial land;

(17b) 'soil artificialisation' means human-induced processes which substantially modify the soil's chemical, physical, and/or biological properties, thereby leading to a reduction of its capacity to fulfill its inherent functions and to provide soil ecosystem services.

ANNEX I, partie D (prière de bien vouloir consulter dans ce contexte également notre commentaire concernant le « *soil district* »)

Afin d'être en mesure de définir concrètement quel(s) usage(s) du sol correspond à quelle catégorie (« *natural, semi-natural, artificial* »), chaque Etat-membre devrait définir une typologie des usages. Afin d'assurer un maximum de cohérence, tout en prenant dûment en compte les spécificités nationales, le Luxembourg suggère que :

- la Commission propose une typologie d'usage des sols ;
- la directive stipule l'obligation pour les Etats-membres de définir une telle typologie au niveau national (permettant d'évaluer l'artificialisation des surfaces au cours du temps).

Dans ce contexte, une typologie à plusieurs niveaux de précision imbriqués nous semble pertinente. Nous proposons une typologie à trois niveaux de précision :

- Niveau 1 : naturel, agricole, urbain, forestier, surface en eau ;
- Niveau 2 : p.ex. urbain-industriel, urbain-habitation, urbain-espaces verts ;
- Niveau 3 : p.ex. urbain-habitation-habitat collectif, urbain-habitation-habitat individuel, urbain-habitation-habitat temporaire de loisir.

Commentaires concernant certaines définitions liées au terme de « contamination du sol »

Le Luxembourg souhaite souligner que le terme de « contamination du sol » devrait impérativement être lié à une origine anthropogène (pollution ponctuelle ou diffuse), et ne guère s'étendre à des sols qui sont naturellement riches en certaines substances comme p.ex. les métaux ou encore les substances organiques.

Pour ce qui précède, le Luxembourg propose d'introduire les définitions à continuation dans le texte de la directive :

- *' natural background level of contaminants ' means a concentration level defined for a contaminant in a specific soil or soil type, below which a concentration of the contaminant is considered not to be significantly elevated by human activities in that soil or soil type.*
- *'anthropogenic background level of contaminant' means a concentration range defined for a contaminant in a specific soil, soil type, land-use or area, caused by a combination of natural background levels and diffuse contamination sources.*

En outre, le Luxembourg souhaite amender les définitions de « contamination du sol » et de « contaminant » de la manière suivante :

- *'soil contamination' means the presence of a ~~chemical or substance~~ contaminant in the soil at a level that is considered significantly higher than its natural background level ~~in a concentration that~~ and may be harmful to human health or the environment.*
- *'contaminant' means a substance or chemical liable to be harmful to human health or the environment if present at high concentration in ~~cause~~ soil ~~contamination~~ ;*

Comme alternative à cette proposition, il pourrait aussi être envisagé d'exclure les sols naturellement riches en contaminants du « descripteur du sol » pour la contamination des sols ; à l'instar des sols naturellement salins qui sont exclus du descripteur relatif à la salinité des sols.

Commentaires concernant le concept de « *soil district* »

Le Luxembourg estime que le concept du « *soil district* » devrait être clarifié davantage. En effet, d'après la manière avec laquelle ce terme est défini et utilisé dans la proposition de directive, le « *soil district* » devrait jouer deux rôles différents et incompatibles à nos yeux : Le premier rôle est celui d'une unité administrative (minimum NUTS 1) sur laquelle une autorité compétente devra faire appliquer les dispositions de la directive, ainsi que le rapportage afférent. De par sa nature administrative, un « *soil district* » ne correspond pas à une homogénéité pédologique, de sorte qu'un « *soil district* » peut regrouper endéans de la même unité administrative des types de sols et des usages de sols potentiellement très hétérogènes.

Cependant, au « *soil district* » tel que proposé par la Commission reviendrait également le deuxième rôle d'unité géographique d'évaluation de la santé des sols. Afin d'être pertinente et efficace, cette évaluation requiert que les sols considérés et leurs usages soient le plus homogène possible. En effet, un certain degré d'homogénéité s'avère indispensable pour définir des valeurs seuils pertinentes pour l'ensemble des sols endéans d'un « *soil district* », et donc pour évaluer la santé du sol endéans de ce dernier.

Conscient du fait que cette incohérence a indirectement été prise en compte pour le descripteur « *reduction of soil capacity to retain water* » à l'annexe I, partie B (qui précise que ledit descripteur ne doit pas être évalué à l'échelle du « *soil district* », mais à l'échelle du bassin versant ou du sous bassin versant

en raison du manque d'homogénéité du « *soil district* » pour garantir une évaluation adéquate du descripteur), le Luxembourg estime qu'il en est de même pour tous les autres descripteurs de l'annexe I, à l'exception de la partie D.

Pour ce qui précède, le Luxembourg suggère d'encadrer le « *soil district* » tel qu'actuellement proposé par trois concepts complémentaires, à savoir :

- Premier concept : le « *soil district* » tel qu'il a été défini dans la proposition de directive concernant son aspect administratif ;
- Deuxième concept : le bassin versant et le sous bassin versant, tels qu'ils sont définis dans la directive 2000/60/EC.
- Troisième concept : l'unité de sol (« *soil unit* »), qui jouerait le rôle d'unité géographique homogène pour l'évaluation de la santé des sols.

Ainsi, la « *soil unit* » représenterait une unité géographique considérée comme relativement homogène d'un point de vue de type de sol et de son usage. À l'instar de la masse d'eau de surface qui permet d'évaluer son bon état dans le cadre de la directive 2000/60/EC, l'unité de sol servira à évaluer la santé du sol (en d'autres termes, ce serait au niveau de l'unité de sol que l'autorité compétente évalue l'état de santé d'un sol, et ce en fonction des mesures y réalisées, et des seuils propres à chacune de ces unités).

En outre, les unités de sol permettraient de localiser et d'identifier facilement les sols en mauvaise santé, et faciliteraient ainsi la mise en place des mesures de protection ou de régénération des sols (actuellement, la proposition indique simplement que l'Etat-membre doit identifier les zones du « *soil district* » où le sol n'est pas en bonne santé à l'art. 9(4)).

En résumé, ces trois concepts complémentaires s'avèrent à nos yeux nécessaires en raison du rôle qui leur est attribué, à savoir :

- Le « *soil district* » en tant qu'unité administrative permet aux Etats-membres d'appliquer les dispositions de la directive à travers la désignation d'une autorité compétente pour chaque « *soil district* », tout en prenant en compte l'architecture administrative (fédérale, centrale, régions administratives, etc.) des Etats-membres. En outre, le « *soil district* » correspond également au niveau pertinent pour l'évaluation du « *land take* », vu que ce dernier ne dépend pas du type de sol, mais plutôt de facteurs anthropiques comme p.ex. l'économie, le logement, ou encore les transports. Ce concept est à définir à l'art. 3.

- Le bassin versant et le sous bassin versant permettent d'évaluer le descripteur « *Reduction of soil capacity to retain water* » de l'annexe I, partie B. Ce concept est à définir à l'annexe I, partie B.

- L'unité de sol est le niveau pertinent pour évaluer les autres descripteurs de l'annexe I, parties A, B et C. Ce concept est également à définir à l'art. 3.

Afin d'identifier précisément à quel niveau un descripteur doit être évalué, nous proposons d'ajouter une cinquième colonne à l'annexe I, intitulé « niveau d'application ».

Amendements concernant le « soil district » :

Art. 3: Definitions

(8 a) *'soil district' means the part of the territory of a Member State, as delimited by that Member State in accordance with this Directive;*

(8b) *'soil unit' means a discrete and significant part of the territory of a Member State, which is considered homogeneous in terms of soil.*

Art. 4: Soil districts and soil units

1. Member States shall establish soil districts throughout their territory. When establishing the geographic extent of soil districts, Member States may take into account existing administrative units.

The number of soil districts for each Member State shall as a minimum correspond to the number of NUTS 1 territorial units established under Regulation (EC) No 1059/2003. A soil district is composed of at least one soil unit.

2. Member States shall establish soil units throughout the soil districts defined in accordance with paragraph 1.

When establishing the geographic extent of soil ~~districts~~units, Member States ~~may take into account existing administrative units and~~ shall seek homogeneity within each soil ~~district~~unit regarding the following parameters:

(a) soil ~~type~~ reference groups as defined in the World Reference Base for Soil Resources74;

(…)

(e) parental materials

Art. 6: Soil health and land take monitoring framework

1. Member States shall establish a monitoring framework based on the soil districts and soil units established in accordance with Article 4(1) and Article 4(2), to ensure that regular and accurate monitoring of soil health is carried out in accordance with this Article and Annexes I and II.

2. Member States shall monitor soil health in each soil unit and land take in each soil district. (…)

Art. 7: Soil descriptors, criteria for healthy soil condition, and land take and soil sealing indicators

(…) *2. Member States may adapt the soil descriptors and the soil health criteria referred to in part A of Annex I, in accordance with the specifications referred to in the second, ~~and~~ third and fifth columns in part A of Annex I.* (…)

Art. 9: Assessment of the soil health

1. Member States shall assess the soil health in all their soil ~~districts~~ units based on the data collected in the context of the monitoring referred to in Articles 6, 7 and 8 for each of the soil descriptors referred to in Parts A and B of Annex I. (…)

4. Based on the assessment of soil health carried out in accordance with this Article, the competent authority shall, where relevant in coordination with local, regional, national authorities, identify, in each soil district and soil unit, the areas which present unhealthy soils and inform the public in accordance with Article 19. (…)

ANNEX I

Aspect of soil degradation	***Soil descriptor***	***Criteria for healthy soil condition***	***Land areas that shall be excluded from achieving the related criterion***	***Level of implementation***
Part A: soil descriptors with criteria for healthy soil condition established at Union level				
Salinization	*Electrical Conductivity (deci-Siemens per meter)*	*< 4 dS m−1 when using saturated soil paste extract (eEC) measurement method, or equivalent criterion if using another measurement method*	*Naturally saline land areas;* *Land areas directly affected by sea level rise*	*Soil unit*
Soil erosion	*Soil erosion rate* *(tonnes per hectare per year)*	*≤ 2 t ha-1 y-1*	*Badlands and other unmanaged natural land areas, except if they represent a significant disaster risk*	*Soil unit*
Loss of soil organic carbon	*Soil Organic Carbon (SOC) concentration (g per kg)*	*- For organic soils: respect targets set for such soils at national level in accordance with Article 4.1, 4.2, 9.4*	*No exclusion*	*Soil unit*

<table>
<tr><td></td><td></td><td>of Regulation (EU) …/…+</td><td></td><td></td></tr>
<tr><td></td><td></td><td>- For mineral soils: SOC/Clay ratio > 1/13;

Member States may apply a corrective factor where specific soil types or climatic conditions justify it, taking into account the actual SOC content in permanent grasslands.</td><td>Non- managed soils in natural land areas</td><td></td></tr>
<tr><td>Subsoil compaction</td><td>Bulk density in subsoil (upper part of B or E horizon1); Member States may replace this descriptor with an equivalent parameter (g per cm3)</td><td><table><tr><th>Soil texture</th><th>Range</th></tr><tr><td>Sand, loamy sand, sandy loam, loam</td><td><1.80</td></tr><tr><td>Sand clay loam, loam, clay loam, silt, silt loam</td><td><1.75</td></tr><tr><td>Silt loam, silty clay loam</td><td><1.65</td></tr><tr><td>Sandy clay, silty clay, clay loam with 35-45% clay</td><td><1.58</td></tr><tr><td>clay</td><td><1.47</td></tr></table>In case a Member State replaces the soil descriptor “bulk density in subsoil” with an equivalent parameter, it shall adopt a criterion for healthy soil condition for the chosen soil descriptor that is</td><td>Non-managed soils in natural land areas</td><td>Soil unit</td></tr>
</table>

		equivalent to the criterion set for "bulk density in subsoil".		
Part B: soil descriptors with criteria for healthy soil condition established at Member States level				
Excess nutrient content in soil	*Extractable phosphorus (mg per kg)*	*< "maximum value";* *The "maximum value" shall be laid down by the Member State within the range 30-50 mg kg-1*	*No exclusion*	*Soil unit*
Soil contamination	*- concentration of heavy metals in soil: As, Sb, Cd, Co, Cr (total), Cr (VI), Cu, Hg, Pb, Ni, Tl, V, Zn (µg per kg) - concentration of a selection of organic contaminants established by Member States and taking into account existing concentration limits e.g. for water quality and air emissions in Union legislation*	*Reasonable assurance, obtained from soil point sampling, identification and investigation of contaminated sites and any other relevant information, that no unacceptable risk for human health and the environment from soil contamination exists.* *Habitats with naturally high concentration of heavy metals that are included in Annex I of Council Directive 92/43/EEC3 shall remain protected.*	*No exclusion*	*Soil unit*
Reduction of soil capacity to retain water	*Soil water holding capacity of the soil sample (% of volume of water / volume of saturated soil)*	*The estimated value for the total water holding capacity of a soil district by river basin or subbasin is above the minimal threshold.*	*No exclusion*	*River basin or sub basin*

		'River basin' and 'river sub-basin' as defined in Directive 2000/60/EC. *The minimal threshold shall be set (in tonnes) by the Member State at soil district and river basin or subbasin level at such a value that the impacts of floodings following intense rain events or of periods of low soil moisture due to drought events are mitigated.*		

Part C: soil descriptors without criteria		
Aspect of soil degradation	***Soil descriptor***	***Level of implementation***
Excess nutrient content in soil	*Nitrogen in soil (mg g-1)*	*Soil unit*
Acidification	*Soil acidity (pH)*	*Soil unit*
Topsoil compaction	*Bulk density in topsoil (A-horizon4) (g cm-3)*	*Soil unit*
Loss of soil biodiversity	*Soil basal respiration ((mm3 O2 g-1 hr-1) in dry soil* *Member States may also select other optional soil descriptors for biodiversity such as: - metabarcoding of bacteria, fungi, protists and animals; - abundance and diversity of nematodes; - microbial biomass; - abundance and diversity of earthworms (in cropland);* *- invasive alien species and plant pests*	*Soil unit*

Part D: land take and soil sealing indicators		
Aspect of soil degradation	***Land take and soil sealing indicators***	***Level of implementation***
Land take and soil sealing	*Total artificial land (km² and % of Member State surface)* *Land take, Reverse land take Net land take (average per year–- in km² and % of Member State surface)* *Soil sealing (total km² and % of Member State surface)* *Member States may also measure other related optional indicators such as:* *- soil artificialisation (degree of soil artificialisation)* *- land fragmentation* *- land recycling rate* *- land taken for commercial activities, logistic hubs, renewable energies, surfaces such as airports, roads, mines* *- consequences of land take such as quantification of loss of ecosystem services, change in floods intensity*	*Soil district*

Commentaires concernant le principe du « *one-out-all-out* »

L'article 9 (2) définit les conditions selon lesquelles un sol est considéré en bonne santé ou non. Alors que le Luxembourg est d'accord qu'il soit nécessaire de définir des conditions claires à cet égard, nous pensons que le principe du « *one-out-all-out* » tel que proposé ne soit guère adapté aux objectifs de la directive, et ce pour quatre raisons, à savoir :

- Le monitoring national des sols oblige les Etats-membres à mesurer les descripteurs de qualité des sols à une échelle relativement petite, et de représenter les résultats de façon agrégée au sein d'une unité géographique qui peut être un « *soil district* », un bassin versant, ou une unité de sol (voir remarque précédente). Ces unités géographiques représenteront donc de grandes parties du territoire d'un Etat-membre. En appliquant le principe du « *one-out-all-out* » à ces unités de surface, un seul sol dégradé entraînerait la classification automatique de l'ensemble de l'unité territoriale comme étant en mauvaise santé, ce qui ne reflète pas forcément la réalité sur le terrain.

- En sus, ce système ne permettrait pas de distinguer un sol peu dégradé (p.ex. un seul descripteur non respecté) d'un sol plus dégradé (p.ex. tous les descripteurs non respectés) ; ce qui n'est pas adapté d'un point de vue de comparaison des résultats entre différents « *soil districts* », ou même entre Etats-membres.
- En outre, ce système - et particulièrement l'absence de distinction entre sols fortement dégradés et sols relativement peu dégradés - s'avère aussi contreproductif pour évaluer l'évolution de l'état de santé d'un sol (amélioration ou dégradation au cours du temps).
- Enfin, vu l'absence de différenciation entre les descripteurs dans le résultat final (bonne/mauvaise santé), ce système ne permet pas de connaître la nature des dégradations affectant les sols. En revanche, un système permettant de distinguer les processus de dégradation dans le résultat final faciliterait aussi la compréhension de la situation, et la prise de décision pour mettre en place les meilleures mesures de protection et/ou de régénération au niveau local.

Pour les raisons susmentionnées, le Luxembourg suggère d'envisager un système composé :

- D'un indicateur global de la santé des sols d'une unité géographique défini selon un pourcentage de bonne santé, prenant en compte les différents descripteurs ;
- D'indicateurs dédiés à chacune des dégradations du sol (p.ex. érosion, compaction, perte de matière organique, etc.) telles qu'identifiées dans la « *Soil Thematic Strategy* » de (2021).

Enfin, la rédaction de l'art. 9 (2) en l'état ne permet guère d'identifier à quel niveau le système d'évaluation de la santé des sols devrait s'appliquer. Alors que le § 2 précise « *A soil is considered* (…) », il n'est pas clair à quel sol référence est faite : S'agit-il du sol du point d'échantillonnage mesuré dans le monitoring, ou bien de l'unité géographique considérée (soil district, bassin versant ou unité de sol) ?

Commentaires concernant la définition de « sol »

Le Luxembourg propose de remplacer dans la définition de « sol » la notion de « *bedrock* » par « *parental material* ». En outre, il nous paraît indispensable de préciser que l'investigation et la gestion des sites potentiellement contaminés ainsi que des sites contaminés doit prendre en compte la contamination présente dans le « *parental material* » (lequel peut également poser des risques non acceptables pour la santé humaine et l'environnement).

Commentaires concernant la définition et traduction de « site contaminé » :

Le Luxembourg souhaite traduire le terme de « *contaminated site* » par « site pollué » (plutôt que « site contaminé »). Par ailleurs, le Luxembourg propose de supprimer le bout de phrase « (…) constituée d'une ou de plusieurs parcelles (…) » de la définition de « *contaminated site*. En effet, vue que les délimitations parcellaires changent assez souvent, un lien direct entre limites parcellaires et sites contaminés/pollués engendrerait une charge de travail disproportionnée afin de mettre à jour et de gérer le registre.

Art. 3 Definitions

(10) 'contaminated site' means a delineated area ~~of one or several plots~~ with confirmed presence of soil contamination caused by point-source anthropogenic activities;

Commentaires concernant la définition d'« assainissement du sol » :

Bien que le terme « assainissement du sol » soit défini, aucune référence en est faite dans le texte même de la directive. Ainsi, à l'art. 15, référence est faite à la mesure de réduction des risques, laquelle, d'après l'annexe, reprend non-seulement l'assainissement du sol, mais aussi des mesures qui ne sont pas destinées à réduire le niveau de contamination. Dans ce contexte, le Luxembourg propose de rajouter une définition de *« mesures de réduction des risques »* :

> ***Art. 3 Definitions***
>
> *(27) 'risk reduction measures' means measures that aim to reduce the risks of contaminated sites to human health and the environment via soil remediation or by impacting the source pathway receptor linkage without reducing the levels of contamination.*

Commentaires concernant l'obligation d'identifier, d'enregistrer et d'investiguer <u>TOUS</u> les sites potentiellement contaminés endéans d'un délai de sept ans à partir de la date d'entrée en vigueur de la directive

Le Luxembourg estime qu'il n'est pas réaliste que les Etats-membres soient en mesure de respecter les dispositions concernant l'identification de tous les sites potentiellement contaminés, ainsi que leur enregistrement dans le registre endéans d'un délai de sept ans à compter de la date d'entrée en vigueur de la Directive (art. 13), entre autres en raison de la nature dynamique non figé du registre des sites potentiellement contaminés et des sites contaminés, due à la genèse de nouveaux sites potentiellement pollués via l'autorisation de nouvelles activités industrielles, ainsi qu'à cause d'accidents ou de malveillances.

En revanche, le Luxembourg propose de concentrer plutôt les efforts sur l'identification et l'assainissement des sites contaminés et présentant un risque imminent pour la santé humaine ou l'environnement.

En vue de ce qui précède, le Luxembourg propose les amendements suivants :

> ***Art. 13: Identification of potentially contaminated sites***
>
> *(1) Member States shall systematically and actively identify ~~all~~ sites where a soil contamination is suspected based on evidence collected through all available means ('potentially contaminated sites').*
>
> *(2) When identifying the potentially contaminated sites Member States shall take into account the following criteria:*
>
> (…)
>
> *(g) ~~any~~ relevant information resulting from the soil health monitoring carried out in accordance with Articles 6, 7 and 8.*

(3) Member States shall ensure that ~~all~~ potentially contaminated sites are identified systematically ~~by (OP: please insert date = 7 years after date of entry into force of the Directive)~~ and are duly recorded in the register referred to in Article 16~~by that date~~.

(4) By (OP: please insert date = 7 years after date of entry into force of the Directive) Member states shall identify priority sites among the potentially contaminated sites that, based on the type of activity, size of the potential contamination, indication of immediate risk or other relevant information, are most likely to pose a risk to human health or the environment.

Art. 14: Investigation of potentially contaminated sites

(1) Member States shall ensure that all potentially contaminated sites identified in accordance with Article 13 are subject to soil investigation.

Member States may consider baseline reports and monitoring measures implemented in accordance with the Directive 2010/75/EU as soil investigation where appropriate.

(2) Member States shall lay down the rules concerning the deadline, content, form and the prioritisation of the soil investigations for the priority sites identified according to article 13 paragraph 4. ~~Those rules shall be established in accordance with the risk-based approach referred to in Article 12 and the list of potentially contaminating risk activities referred to in Article 13(2), second subparagraph.~~

~~Member States may consider baseline reports and monitoring measures implemented in accordance with the Directive 2010/75/EU as soil investigation where appropriate.~~

(3) Member States shall also establish specific events that trigger an investigation of potentially contaminated sites including priority sites. ~~before the deadline set in accordance with paragraph 2~~.

Commentaires concernant la traduction et la définition du terme « *soil investigation* »

Le Luxembourg estime que la traduction de « *soil investigation* » par « *analyse de sol* » n'est pas adéquate. L'analyse de sol se réfère en général à la procédure analytique de la matrice solide du sol qui se fait au sein d'un laboratoire, tandis que la « *soil investigation* » reprend des éléments tels qu'une étude historique du site pollué, le prélèvement d'échantillons de sol et des eaux souterraines, l'analyse du sol dans un laboratoire, et l'évaluation des résultats analytiques. Pour ce, le Luxembourg considère que le terme de « *soil investigation* » serait mieux traduit par « étude de sol ».

Par ailleurs, le Luxembourg estime que la définition dudit terme soit trop restreinte, et que la possibilité de réaliser une évaluation des risques y fait absence. Ainsi, une étude de sol dans le cadre de la gestion de sites pollués va au-delà de la simple détermination d'une concentration d'un polluant dans le sol. En conséquence, il est indispensable de prendre également en compte des paramètres décrivant le contexte environnemental de la pollution, notamment dans le cadre d'une évaluation des risques provenant d'une telle pollution.

Enfin, le Luxembourg estime qu'il soit indispensable que l'évaluation des risques en tant qu'option soit aussi reprise dans la définition de « *soil investigation* » - autrement, les dispositions de l'art. 15 semblent indiquer que l'autorité compétente devrait elle-même réaliser des évaluations de risques, y compris le

rassemblement des informations nécessaires en vue d'une telle évaluation. Une telle approche irait à l'encontre des pratiques généralement appliquées, ainsi que du principe de pollueur payeur. Dans ce sens, une hiérarchie des responsabilités doit être établie aussi bien pour les études de sol que pour l'assainissement des sites posant des risques non acceptables. Aussi, un système de substitution des responsabilités pourrait promouvoir le développement des sites dans le cas où un investisseur solvable désire reprendre la responsabilité d'un pollueur.

Pour ce qui précède, le Luxembourg propose les amendements suivants :

> ***Art. 3 Definitions***
>
> *(24) 'soil investigation' means a process to assess the presence and concentration of contaminants in the soil and the chracterization of the contamination and its environmental context and may include an evaluation of the risk for the human health and the environement. ~~which is usually performed in different stages~~;*
>
> ***Art. 14 Investigation of potentially contaminated sites***
>
> (…)
>
> *(4) Member states shall define a hierarchy of responsibility defining the responsible party or parties that need to ensure that potentially contaminated sites are subjected to a soil investigation. Member states may consider establishing a procedure of substitution of responsibility in order to promote site development.*
>
> *If no other responsible party can be identified for a specific potentially contaminated site or if the state is responsible according to the responsibility hierarchy, the competent authority shall ensure the potentially contaminated sites is subjected to a soil investigation.*

Commentaires concernant l'obligation de procéder à une évaluation spécifique des sites contaminés

Le Luxembourg estime qu'il ne revient pas forcément à l'autorité compétente de réaliser une évaluation spécifique des risques pour chaque site contaminé, tel que prévu à l'art. 15 § 3.

En effet, la réalisation d'études spécifiques des risques est un travail souvent fastidieux et coûteux, qui requiert une multitude d'expertises et d'analyses environnementales spécifiques, non seulement du sol, mais aussi d'autres matrices.

Enfin, on peut se demander en quoi consiste la plus-value de l'annexe VI dans sa forme actuelle.

Au vu de ce qui précède, le Luxembourg propose les amendements suivants :

> ***Art. 15: Risk assessment and management of contaminated sites***
>
> *(1) Member States shall lay down the specific methodology for determining the site-specific risks of contaminated sites. ~~Such methodology shall be based on the phases and requirements for site-specific risk assessment listed in Annex VI.~~*
>
> *(2) Member States shall define what constitutes an unacceptable risk for human health and the environment resulting from contaminated sites by taking into account existing scientific knowledge, the precautionary principle, local specificities, and ~~current and future~~ land use.*

(3) For each contaminated site identified pursuant to Article 14 or by any other means, Member states shall ~~the responsible competent authority shall carry out a site-specific assessment for~~ ensure that ~~the current and planned land uses to determine whether the~~ contaminated site ~~poses~~ for which unacceptable risks for human health or the environment could not be excluded undergo risk reduction measures.

(4) Member states shall define a hierarchy of responsibility defining the responsible party or parties that need to ensure that contaminated sites, for which unacceptable risks for human health or the environment could not be excluded, are subjected to risk reduction measures. Member states may consider establishing a procedure of substitution of responsibility in order to promote site development.

If no other responsible party can be identified for a specific contaminated site or if the state is responsible according to the responsibility hierarchy, the competent authority shall ensure the contaminated sites is subjected to risk reduction measures.

Commentaires concernant le lien entre les dispositions du chapitre IV et des objectifs de la directive

L'article 1 stipule que l'objectif général de la directive est de « (…) *favoriser une amélioration constante de la santé [des sols] en vue de parvenir à un bon état de santé des sols d'ici à 2050 et de les maintenir dans cet état, afin qu'ils puissent fournir différents services écosystémiques* (…) ». Cependant, il apparaît que l'approche pour la gestion des sites pollués telle que définie au chapitre IV ne soit pas cohérente avec l'objectif susmentionné.

Contrairement à ce que préconise à l'art. 1, les dispositions du chapitre IV ne sont pas favorables à une amélioration continue de la santé des sols. En effet, la notion de santé implique la capacité du sol de fournir des services écosystémiques, tandis que l'approche basée sur les risques se limite à un état du sol qui n'engendre guère de risques non acceptables pour la santé humaine et l'environnement. Vu que l'approche basée sur les risques n'impose pas forcément une réduction du niveau de contamination, l'objectif de parvenir à un état du sol qui ne pose pas de risque non-acceptable peut être atteint via des mesures purement administratives (p.ex. interdictions d'accéder au site ; interdiction de modifier le type d'usage ; e.a.) ou via des mesures techniques telles que le recouvrement du site contaminé par des recouvrements de protection (p.ex. dalle en béton, géomembrane en HDPE). Cependant, ces mesures n'apportent pas d'amélioration de l'état du sol, et peuvent limiter l'aptitude du terrain à des usages résidentiels, agricoles, ou naturels.

L'application de cette approche à des sites qui ont été contaminés après l'entrée en vigueur de la présente directive pourrait laisser sous-entendre que cette dernière approuverait une dégradation continue des sols en question. En outre, une telle approche vis-à-vis des sites récemment contaminés risquerait de mener le principe du pollueur payant ad absurdum, vu qu'un pollueur pourrait opter pour des mesures de réduction des risques qui se limiteraient à l'usage et l'accès au site, sans mettre en œuvre des mesures de réhabilitation des sols.

Pour ce qui précède, le chapitre IV sous sa forme actuelle ne répond pas aux besoins d'une gestion durable des sols, et va à l'encontre du principe énoncé aux considérants 30 et 40. Une gestion des risques qui n'inclut guère de mesures de réduction de la contamination entraîne généralement une artificialisation

importante des sols, accompagnée d'une perte de services écosystémiques. Enfin, les dispositions du chapitre IV risquent d'aggraver la pression sur les sols non-artificialisés.

Dans ce contexte, on peut se demander pourquoi l'objectif de remettre les sites (nouvellement) contaminés dans leur état initial fait absence dans la présente proposition de directive, alors que ce même principe est d'ores et déjà appliqué à travers la Directive 2010/75/UE sur les émissions industrielles, laquelle prévoit « (…) *la réduction intégrée de la pollution due aux activités industrielles* (…) ».

Afin de pouvoir intégrer la gestion des sites pollués (« *contaminated sites* ») de façon cohérente dans les objectifs stipulés à l'art. 1, le Luxembourg propose de différencier entre les sites historiquement pollués (« *historically contaminated sites* ») et les sites nouvellement pollués (« *newly contminated sites* »). Une telle distinction pourrait ainsi servir à établir deux objectifs d'assainissement différents, dont celui relatif aux sites historiquement pollués suivrait la logique de l'approche basée sur les risques et du principe « *fit for use* », tandis que l'autre devrait tenter de restaurer le site de telle manière que sa multifonctionnalité soit rétablie. Le terme de multifonctionnalité dans ce contexte signifierait que le site est à remettre dans un état qui ne présente pas de risques non acceptables, peu importe le type d'usage attribué.

Pour ce qui précède, le Luxembourg propose d'introduire les deux définitions suivantes :

> ***Art. 3 Definitions***
>
> *(10) a. « newly contaminated sites » means contaminated sites where the contamination occurred after the (date to be defined by MS, but no later than the date of entry into force of the directive on soil monitoring and resilience) or, in case of industrial activities regulated by the Directive 2010/75/EU, sites which have been contaminated by industrial activity after the establishment of the baseline report according to the Directive 2010/75/EU, if the baseline report has been established prior to the (same date as defined above).*
>
> *(10) b : « historically contaminated sites » means contaminated sites which are not newly contaminated sites.*

Il est important de noter que la date faisant la distinction entre les sites historiquement pollués et les nouveaux sites pollués est à définir par les États-membres afin d'assurer la prise en compte d'éventuelles législations nationales ayant déjà instauré un tel principe ou un principe similaire. Par ailleurs, la cohérence avec la Directive 2010/75/UE est indispensable vu que cette directive prévoit un principe comparable.

En outre, le Luxembourg propose les amendements suivants :

> ***Art. 12 : Risk-based and approach***
>
> *1. Member States shall ensure that ~~manage~~ the risks for human health and the environment of potentially contaminated sites and contaminated sites are managed, and ~~keep~~ ~~them~~ kept to acceptable levels, taking account of the environmental, social and economic impacts of the soil contamination and of the risk reduction measures taken pursuant to Article 15 paragraph 4.* (…)
>
> ***Art. 15: Risk assessment and management of contaminated sites***

(…) ~~*(4) On the basis of the outcome of the assessment referred to in paragraph 3, the responsible competent authority shall take the appropriate measures to bring the risks to an acceptable level for human health and the environment ('risk reduction measures').*~~

(5) Risk reduction measures taken at historically contaminated sites shall ensure the reestablishment of the site to a state that no longer poses an unacceptable risk to human health and the environment.

Risk reduction measures taken at newly contaminated sites shall ensure the return of the site to a state that no longer poses an unacceptable risk to human health and the environment regardless of land use. For newly contaminated sites, risk reduction measures that do not reduce the level of contamination are only acceptable if soil remediation measures cannot reduce the risks for human health and the environment to an acceptable level.

~~*(5)*~~ *(6)* ~~*The risk reduction measures may consist of the measures referred to in Annex V.*~~ *When deciding on the appropriate risk reduction measures, the competent authority shall take into consideration the costs, benefits, effectiveness, durability, and technical feasibility of available risk reduction measures.*

Commentaires concernant le registre

Le Luxembourg est d'accord avec les dispositions des § 1 à 4 de l'art. 16, ainsi qu'à l'annexe VII. Cependant, afin d'assurer que les États membres puissent garder leurs systèmes existants d'enregistrement des sites - sous condition qu'ils assurent que les sites soient systématiquement enregistrés - le Luxembourg suggère de supprimer le § 5 de cet article.

Art. 16 Register

(…)

~~*5. The Commission shall adopt implementing acts establishing the format of the register. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 21*~~.

DENMARK

November 24th 2023

Article adjustment on the proposal for a Directive on Soil Monitoring and Resilience (Soil Monitoring Law) for the WPE-meeting on November 16th, 20th, and 21st

Cluster I:

	Commission proposal	DA proposal	Comments
		Recital	
Recital 16	It is necessary to set measures for monitoring and assessing soil health, managing soils sustainably and tackling contaminated sites to achieve healthy soils by 2050, to maintain them in healthy condition and meet the Union's objectives on climate and biodiversity, to prevent and respond to droughts and natural disasters, to protect human health and to ensure food security and safety.	It is necessary to set measures for monitoring and assessing soil health, managing soils sustainably and ~~tackling~~ assessing contaminated sites to achieve healthy soils by 2050, to maintain them in healthy condition and meet the Union's objectives on climate and biodiversity, to prevent and respond to droughts and natural disasters, to protect human health and to ensure food security and safety.	We propose that it is clarified in the recitals that the objective of the proposal of reaching the long-term goal of healthy soils in 2050 is non-binding, and that the first stage of the proposal is connected to soil health monitoring and assessment. Denmark has a long history of regulating and remediating soil contamination. Still, it is estimated that the process of remediating all contaminated sites will be finished in 2084. If Denmark and other member states are to advance this task within the proposed timeframe, it will have very high administrative burdens. We therefore request the Commission to highlight in the recitals that the goal

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			of achieving healthy soils in 2050 only applies to the member states having put in place a risk assessment of every contaminated site, and not to having remediated the contaminated sites.
Recital 23	The long-term objective of the Directive is to achieve healthy soils by 2050. As an intermediate step, in light of the limited knowledge about the condition of soils and about the effectiveness and costs of the measures to regenerate their health, the directive takes a staged approach. In the first stage the focus will be on setting up the soil monitoring framework and assessing the situation of soils throughout the EU. It also includes requirements to lay down measures to manage soils sustainably and regenerate unhealthy soils once their condition is established, but without imposing an obligation to achieve healthy soils by 2050 neither intermediate targets.	The non-binding, long-term objective of the Directive is to achieve healthy soils by 2050. As an intermediate step, in light of the limited knowledge about the condition of soils and about the effectiveness and costs of the measures to regenerate their health, the directive takes a staged approach. In the first stage, presented by this directive, the focus will be on setting up the soil monitoring framework and assessing the situation of soils throughout the EU. It also includes requirements to lay down measures to manage soils sustainably, ~~and~~ regenerate unhealthy soils and assess contaminated sites once their condition is established, but without imposing an obligation to achieve healthy soils by 2050 neither intermediate targets.	We propose that it is clarified in the recitals that the objective of the proposal of reaching the long-term goal of healthy soils in 2050 is non-binding, and that the first stage of the proposal is connected to soil health monitoring and assessment. Denmark has a long history of regulating and remediating soil contamination. Still, it is estimated that the process of remediating all contaminated sites will be finished in 2084. If Denmark and other member states are to advance this task within the proposed timeframe, it will have very high administrative burdens. We therefore request the Commission to highlight in the recitals that the goal of achieving healthy soils in 2050 only applies to the member states having put in place a risk assessment of every contaminated site, and not to having remediated the contaminated sites.
Chapter I			
Article 2			
Article 3 (12)	'land' means the surface of the Earth that is not covered by water;	COMMENT ONLY	The Commission should in their definition take into accounts areas that covered in water partly throughout the

			year to ensure that MS are not to monitor wetlands and other areas as remarked by the Netherlands.
Article 4			
Article 4 (2)	When establishing the geographic extent of soil districts, Member States may take into account existing administrative units and shall seek homogeneity within each soil district regarding the following parameters: (a) soil type as defined in the World Reference Base for Soil Resources74; (b) climatic conditions; (c) environmental zone as described in Alterra Report 228175; (d) land use or land cover as used in the Land Use/Cover Area frame statistical Survey (LUCAS) programme.	When establishing the geographic extent of soil districts, Member States may take into account existing administrative units and ~~shall~~ may seek homogeneity within each soil district regarding the following parameters: (a) soil type as defined in the World Reference Base for Soil Resources74; (b) climatic conditions; (c) environmental zone as described in Alterra Report 228175; (d) land use or land cover as used in the Land Use/Cover Area frame statistical Survey (LUCAS) programme.	With regards to article 4, the concept of soil districts needs further clarification. We suggest that the Commission underline that the parameters in article 4 (2) – such as soil type, climatic conditions etc. – are voluntary, and that member states may take these parameters into account when defining soil districts, but are not obliged to do so.
Article 5	Member States shall designate the competent authorities responsible at an appropriate level for carrying out the duties laid down in this Directive. Member States shall designate one competent authority for each soil district established in accordance with Article 4.	Member States shall designate the competent authorities for each soil district established in accordance with Article 4. Member States shall designate ~~one competent authority~~ the competent authorities responsible at an appropriate level for carrying out the duties laid down in this Directive.	Denmark supports the clarification by some member states that soil districts can have multiple authorities, and the proposal by the legal services to reverse the two sentences.

Cluster II:

	Commission proposal	DA proposal	Comments
		Recital	
Recital 33	The Commission is developing remote sensing services in the context of Copernicus as a user-driven programme, hereby also supporting Member States. In order to increase the timeliness and effectiveness of soil health monitoring, and where relevant, Member States should use remote sensing data including outputs from the Copernicus services for monitoring relevant soil descriptors and for assessing soil health. The Commission and the European Environment Agency should support exploring and developing soil remote sensing products, to assist the Member States in monitoring the relevant soil descriptors	COMMENT ONLY	It is stated that the Commission will develop remote sensing services under the Copernicus Programme that can support the member states. For Denmark, this service is especially relevant with regards to land take and soil sealing. It would be helpful, if the Commission could elaborate on this or provide technical guidelines on how the Copernicus Programme may be used for this purpose.
		CHAPTERS	
		Chapter II	
		Article 6	
Article 6 (4)	The Commission shall, subject to agreement from Member States concerned, carry out regular soil measurements on soil samples taken in-situ, based on the relevant descriptors and methodologies referred to in Articles 7 and 8, to support Member States' monitoring of soil health. Where a Member State provides agreement in accordance with this paragraph, it shall	The Commission shall, subject to agreement from Member States concerned, carry out regular soil measurements on soil samples taken in-situ, based on the ~~relevant~~ descriptors and methodologies referred to in Articles 7 and 8, that the Member States find relevant, to support Member States' monitoring of soil health. Where a Member State provides agreement in	Commission assistance on soil samples may be most relevant, if the Member States are able to pick the most relevant descriptors or data that fits with existing national monitoring systems etc.

	ensure that the Commission can carry out such in-situ soil sampling	accordance with this paragraph, it shall ensure that the Commission can carry out such in-situ soil sampling.	
Article 6 (5)	The Commission and the European Environment Agency (EEA) shall leverage existing space-based data and products delivered under the Copernicus component of the EU Space Programme established by Regulation (EU) 2021/696 to explore and develop soil remote sensing products, to support the Member States in monitoring the relevant soil descriptors.	COMMENT ONLY	Denmark welcomes this initiative from the Commission to develop remote sensing services under the Copernicus Programme that can support the member states. For Denmark, this service is especially relevant with regards to land take and soil sealing. It would be helpful, if the Commission could elaborate on this or provide technical guidelines on how the Copernicus Programme may be used for this purpose. Does the maximum of 20% also apply to remote sensing data under Copernicus-programme or only in-situ soil sampling in Art 6(4)?
Article 7			
Article 7 (3)	Member States shall determine the organic contaminants for the soil descriptor related to soil contamination referred to in part B of Annex I	Member States ~~shall determine~~ may adapt the organic contaminants for the soil descriptor related to soil contamination referred to in part B of Annex I	If the monitoring of organic contaminants were obligatory, it would be beneficial for MS to pick the same organic contaminants such as PFAS, pesticides or pharmaceuticals in order to ensure a comparable data. From the WPE-meeting on the November 20th, this did not seem to be feasible. Therefore, we suggest making the descriptors mandatory, as is the case of other additional soil descriptors.
Article 8			

Article 8 (1)	Member States shall determine sampling points by applying the methodology set out in part A of Annex II.	COMMENT ONLY	As we have previously flagged, we believe that is it important that the Commission specifies the requirements linked to the monitoring methodology in article 8 and Annex II. This is important for Denmark, because the main administrative burden in the directive for member states is linked to establishing and carrying out soil monitoring, and we would benefit from a clearer understanding of how the Commission envisages the scope of this. We therefore look forward to the Informal VC on December 14th, where the Commission should elaborate on the number of sampling points needed to meet the methodology requirements in Annex II. It would also be beneficial to learn more about how the Commission believes that the construction of soil districts can decrease the number of soil sampling points.
Article 9			
Article 9 (2)	A soil is considered healthy in accordance with this Directive where the following cumulative conditions are fulfilled: (a) the values for all soil descriptors listed in part A of Annex I meet the criteria laid down therein and, where	COMMENT ONLY	Denmark supports the discussion on how to supplement or replace the one-out-all-out-principle with alternative systems such as the traffic light-system, and would be interested in how the Commission and other Member States envisions this.

	applicable, adapted in accordance with Article 7; (b) the values for all soil descriptors listed in part B of Annex I meet the criteria set in accordance with Article 7 ('healthy soil'). By way of derogation from the first subparagraph the assessment of soils within a land area listed in the fourth column of Annex I, shall not take into account the values set out in the third column for that land area. Soil is unhealthy where at least one of the criteria referred to in subparagraph 1 is not met ('unhealthy soil')		For a potential revision of the directive, this would also diminish the costs of regenerative actions.
Article 9 (5)	Member States shall set up a mechanism for a voluntary soil health certification for land owners and managers pursuant to the conditions in paragraph 2 of this Article. The Commission may adopt implementing acts to harmonise the format of soil health certification. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 21.	Member States ~~shall~~ may set up a mechanism for a voluntary soil health certification for land owners and managers pursuant to the conditions in paragraph 2 of this Article. The Commission may adopt implementing acts to harmonise the format of soil health certification. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 21.	While the Commission has provided some answers regarding the soil health certification. However, we still find that there is a substantial need for clarification on how a voluntary soil health certification framework should be established and managed. Without further clarification, we suggest making the certification voluntary for member states. We would also like the Commission to elaborate on the added value of this framework, and for what types of land use and soil management areas it might be relevant. For instance, various certification schemes linked to sustainable forest management are already in place and

			could overlap with the new proposed soil health certification. As the carbon removal certification framework moves closer to adoption, we request the Commission to clarify how these two frameworks will work together. We are aware that the two frameworks could lead to soil managers being rewarded twice for the same sustainable soil management practices, for instance if carbon removal activities count as a co-benefit in the soil health certificates.
ANNEXES			
Annex I			
Annex I, Part B, 'Soil contamination'	No exclusions	~~No exclusions~~ Natural and semi-natural land areas that are subject to naturally high concentrations of heavy metals.	It would not be an appropriate indicator for soil health if areas with naturally high, background concentrations of soil contamination were included in the soil health assessment since these areas cannot and should not be subject of regeneration practices, such as natural land areas with high Cadmium-levels or forest areas with high levels of diffuse pollution coming from airborne emissions.
Annex II			
Annex II, Part A	The Commission sample for the survey set under Art 6(4) may contribute to a maximum of 20 % of the size of national samples.	COMMENT ONLY	Does the maximum of 20% also apply to remote sensing data under Copernicus-programme or only in-situ soil sampling in Art 6(4)?

Cluster 3:

	Commission proposal	DA proposal	Comments
	Recital		
Recital 46	Flexibility for the management of potentially contaminated sites and contaminated sites is needed to take account of costs, benefits and local specificities. Member States should therefore at least adopt a risk-based approach for managing potentially contaminated sites and contaminated sites, taking into account the difference between these two categories, and which allows to allocate resources taking account of the specific environmental, economic and social context. Decisions should be taken based on the nature and extent of potential risks for human health and the environment resulting from exposure to soil contaminants (e.g. exposure of vulnerable populations such as pregnant women, persons with disabilities, elderly people and children). The cost-benefit analysis of undertaking remediation should be positive. The optimum remediation solution should be sustainable and selected through a balanced decision-making process that takes account of the environmental, economic and social impacts. The management of potentially contaminated sites and contaminated sites should respect the polluter-pays,	Flexibility for the management of potentially contaminated sites and contaminated sites is needed to take account of costs, benefits and local specificities. Member States should therefore at least adopt a risk-based approach for managing potentially contaminated sites and contaminated sites, taking into account the difference between these two categories, and which allows to allocate resources taking account of the specific environmental, economic and social context. Decisions, including the prioritized risk-based approach, should be taken based on the nature and extent of potential risks for human health and the environment resulting from exposure to soil contaminants (e.g. exposure of vulnerable populations such as pregnant women, persons with disabilities, elderly people and children). The cost-benefit analysis of undertaking remediation should be positive. The optimum remediation solution should be sustainable and selected through a balanced decision-making process that takes account of the environmental, economic and social impacts. Once the contaminated sites are identified the investigation and management of sites are	As previously mentioned, we request the Commission to highlight in the recitals that the goal of achieving healthy soils in 2050 only applies to the member states having put in place a risk assessment of every contaminated site, and not to having remediated the contaminated sites.

	Commission proposal	DA proposal	Comments
	precautionary and proportionality principles. Member States should lay down the specific methodology for determining the site-specific risks of contaminated sites. Member States should also define what constitutes an unacceptable risk from a contaminated site based on scientific knowledge, the precautionary principle, local specificities, and current and future land use. In order to reduce the risks of contaminated sites to an acceptable level for human health and the environment, Member States should take adequate risk reduction measures including remediation. It should be possible to qualify measures taken under other Union legislation as risk reduction measures under this Directive when those measures effectively reduce risks posed by contaminated sites.	without an obligation to achieve healthy soils by 2050 neither intermediate targets. The management of potentially contaminated sites and contaminated sites should respect the polluter-pays, precautionary and proportionality principles. Member States should lay down the specific methodology for determining the site-specific risks of contaminated sites. Member States should also define what constitutes an unacceptable risk from a contaminated site based on scientific knowledge, the precautionary principle, local specificities, and current and future land use. In order to reduce the risks of contaminated sites to an acceptable level for human health and the environment, Member States should take adequate risk reduction measures including remediation. It should be possible to qualify measures taken under other Union legislation as risk reduction measures under this Directive when those measures effectively reduce risks posed by contaminated sites.	
Chapter IV			
Article 12			
Article 12.1	Member States shall manage the risks for human health and the environment of potentially contaminated sites and contaminated sites, and keep them to acceptable levels, taking account of the environmental, social and economic	Member States shall manage the risks for human health and the environment of potentially contaminated sites and contaminated sites, and keep them to acceptable levels, taking account of the environmental, social and economic	This additional paragraph suggests that a risk assessment of obtained information is established at each management step. This approach helps prioritize the handling of sites in accordance with a risk-based approach

	Commission proposal	DA proposal	Comments
	impacts of the soil contamination and of the risk reduction measures taken pursuant to Article 15 paragraph 4.	impacts of the soil contamination and of the risk reduction measures taken pursuant to Article 15 paragraph 4. A risk assessment may be carried out during each management step where additional information is obtained in accordance with Article 12 paragraph 2.	and supports that the increasing costs at each management stage is reduced and ensures that sites which pose the greatest risk is handled first.
Article 12.4	The public concerned shall be given early and effective opportunities: (a) to participate in the establishment and concrete application of the risk-based approach as defined in this Article; (b) to provide information relevant for the identification of potentially contaminated sites in accordance with Article 13, the investigation of potentially contaminated sites in accordance with Article 14 and the management of contaminated sites in accordance with Article 15; (c) to request correction of information contained in the register for contaminated sites and potentially contaminated sites in accordance with Article 16.	The public concerned shall be given early and effective opportunities: (a) to ~~participate in~~ comment on the establishment and concrete application of the risk-based approach as defined in this Article; (b) to provide information relevant for the identification of potentially contaminated sites in accordance with Article 13, the investigation of potentially contaminated sites in accordance with Article 14 and the management of contaminated sites in accordance with Article 15; (c) to ~~request~~ contribute with correction of information contained in the register for contaminated sites and potentially contaminated sites in accordance with Article 16.	The proposed rewording supports that establishing a risk-based approach should be based on the authorities' factual considerations and experience with a step-by-step risk-based approach. It supports that the competent authority *include relevant and new information* provided by the including information from the public concerned, deciding on the final design of the risk-based approach.
	Article 13		
Article 13.1	Member States shall systematically and actively identify all sites where a soil contamination is suspected based on evidence collected through all available means ('potentially contaminated sites').	Member States shall systematically and actively identify all sites where a soil contamination is suspected based on evidence collected through all ~~available means~~ relevant information ('potentially contaminated sites').	"available means" is too broad a term. The rewording specifies that information used in the decision if a site is potentially contaminated should be relevant.

	Commission proposal	DA proposal	Comments
Article 13.2	When identifying the potentially contaminated sites Member States shall take into account the following criteria: (…)	When identifying the potentially contaminated sites Member States shall take into account the following criteria where relevant: (…)	The added text underlines the flexibility of Member States to include and build upon existing, national systematic approaches to identify potentially contaminating risk activities.
Article 13.3	Member States shall ensure that all potentially contaminated sites are identified by *(OP: please insert date = 7 years after date of entry into force of the Directive)* and are duly recorded in the register referred to in Article 16 by that date.	Member States shall ensure that all potentially contaminated sites are identified by *(OP: please insert date = 7 years after date of entry into force of the Directive)* and sites that based on evidence are identified as potentially contaminated are duly recorded in the register referred to in Article 16 by that date.	The added text specifies that only the sites that after evidence-based assessments should be registered. This is in accordance with recital (44). If identification of contaminated sites implies collecting collect evidence among others through historical research, past industrial incidents and accidents, environmental permits and notifications by the public or authorities in accordance with recital (44), then 7 years will be on the short side.
		Article 14	
Article 14.1	Member States shall ensure that all potentially contaminated sites identified in accordance with Article 13 are subject to soil investigation.	Member States shall ensure that all potentially contaminated sites identified in accordance with Article 13 are subject to preliminary desk studies or field-investigation to gather evidence of whether potentially contaminated sites are contaminated and prioritizing investigations in accordance with the risk-based approach established in accordance with article 12.	Adding this additional text to the paragraph supports the stepwise approach to managing contaminated sites in accordance with recital (45). It specifies that the soil investigations in article 14 are different than more thorough investigations as mentioned in Annex VI. COM should specify that soil investigations can consist of a desk study, since information from baselines reports, former sampling and analysis

	Commission proposal	DA proposal	Comments
			of soil can provide information on the level of contamination on the site. This approach helps prioritize the handling of sites in accordance with a risk-based approach and supports that the increasing costs at each management stage is reduced and ensures that sites which pose the greatest risk is handled first.
Article [14.1a]	Member States shall systematically and actively identify all sites where a soil contamination is suspected based on evidence collected through all available means ('potentially contaminated sites').	Member States shall systematically and actively identify all sites where a soil contamination is suspected based on evidence collected through all available means ('potentially contaminated sites'). Member States may, at this stage, begin a more in-depth, exploratory investigation, in accordance with article 15 and Annex VI, immediately if evidence from identifying or preliminary investigations of potentially contaminated sites justifies it. If soil investigations of potentially contaminated sites prove not to be contaminated, the site may be removed from the register drawn up in accordance with article 16.	Adding this additional paragraph supports the stepwise approach to managing contaminated sites. Adding this additional paragraph clarifies that only potentially contaminated sites and documented contaminated sites should be registered in accordance with article 16. This is in accordance with recital (44)
Article [14.2]	Member States shall lay down the rules concerning the deadline, content, form and the prioritisation of the soil investigations. Those rules shall be	Member States shall lay down the rules concerning the ~~deadline~~, content, form and the prioritisation of the soil investigations. Those rules shall be	Setting a deadline is not in accordance with a stepwise, risk-based approach since deadlines for investigations can change in accordance with the

	Commission proposal	DA proposal	Comments
	established in accordance with the risk-based approach referred to in Article 12 and the list of potentially contaminating risk activities referred to in Article 13(2), second subparagraph.	established in accordance with the risk-based approach referred to in Article 12 and the list of potentially contaminating risk activities referred to in Article 13(2), second subparagraph.	process of prioritizing specific sites as they are identified. Setting a deadline speak against ensuring that resources are concentrated and prioritized on the sites that pose the greatest risk.
	Article [15]		
Article [15]	The risk reduction measures may consist of the measures referred to in Annex V. When deciding on the appropriate risk reduction measures, the competent authority shall take into consideration the costs, benefits, effectiveness, durability, and technical feasibility of available risk reduction measures.	The risk reduction measures may consist of the measures referred to in Annex V. When deciding on the appropriate risk reduction measures, the competent authority shall take into consideration the costs, benefits, effectiveness, durability, sustainability and technical feasibility of available risk reduction measures.	The principle of sustainability is important. Resource consumption, emissions and waste production in connection with a remediation project should be considered, when weighing a local improvement of the environment against global emissions, regional resource consumption and generation of waste products. This addition of text is in accordance with recital (46)
	Annex I		
Annex [I], [part B, column 2]	- Concentration of heavy metals in soil: As, Sb, Cd, Co, Cr (total), Cr (VI), Cu, Hg, Pb, Ni, Tl, V, Zn (µg per kg)	- Concentration of heavy metals in soil: As, Sb, Cd, ~~Co,~~ Cr (total), Cr (VI), Cu, Hg, Pb, Ni, Tl, ~~V~~, Zn (µg per kg)	Co and V are currently not monitored or covered through existing legislation on diffuse soil contamination, and are thus not deemed relevant.
Annex [I], [part B, column 3]	Reasonable assurance, obtained from soil point sampling, identification and investigation of contaminated sites and any other relevant information, that no unacceptable risk for human health and the environment from soil contamination exists.		This column should describe “Criteria for healthy soil condition”. Will the Commission elaborate on how “identification and investigation of contaminated sites” that is representative of a delineated area contribute to assessing the general state of a soil district?

	Commission proposal	DA proposal	Comments
Annex [I], [part B, column 4]	No exclusion	Contaminated sites as defined in article 3 (10) and identified in accordance with article 13	This exclusion specifies that chapter II has a different aim than chapter IV. Contaminated sites identified in the monitoring framework can still be part of the assessment as mentioned in column 3.
Annex [VII]			
Annex [VII], [part 1, (e)]	conclusion on the presence or absence, concentration, type and risk of the contamination (or residual contamination after remediation) where information on those elements is already available from the soil investigations and risk assessment referred to in Articles 14 and 15;	conclusion on the presence or absence, ~~concentration,~~ type and risk of the contamination (or residual contamination after remediation) where information on those elements is already available from the soil investigations and risk assessment referred to in Articles 14 and 15;	In most Member States and national inventories, it will be an almost impossible task to be able to make such information readily available. Concentration may vary in the delineated area and change over time.
Annex [VII], [part 1, (e)]	next actions and management steps required and referred to in Articles 14 and 15, including their timeline.	~~next actions and management steps required and referred to in Articles 14 and 15, including their timeline.~~	Due to the long-term perspective of the public effort, the next administrative steps may lie far in the future and be the subject of ongoing prioritization. Where no protection objective is relevant, including current land use, the only protection objective is possible future land use. In that case, efforts at the location can stop at registration according to the risk-based principle. For these reasons, it would be misleading to systematically announce a next management step. Especially "*including their timeline*" is too specific, since the timeline might change as the result of the stepwise approach, where the management of

	Commission proposal	DA proposal	Comments
			sites is prioritized to ensure the management is focused om the sites that constitutes the largest risk.

CYPRUS

Soil Monitoring Law Directive: WPE, November 2023

General comment: Additional flexibility and longer timeframe with regards to the implementation timeline.

Article 3:

Definitions of “Soil sealing”, "Unmanaged terrestrial areas" and "Significant disaster risks" (Annex I) should be included.

Article 4

The obligation to define territorial areas (Article 4) presents challenges, especially in a country like Cyprus with the complex and fragmented geological origin of the territories. Concerns about the definitions ‘’healthy soil" in soils with natural enrichment in chemical elements of geogenic origin (igneous rocks), soils near sulfurous mineral deposits as well as soils in the vicinity of abandoned mines which in Cyprus have been exposed due to the many years of historical mining activity. There are concerns regarding soils in Nitrate Vulnerable Zones (NVZ). In particular, we are concerned about the possibility of the need to restore the above-mentioned lands through criteria foreign to their conditions of origin (physical and historical).

Article 7

Paragraph 1

To clarify or leave it to the discretion of the CMs to define:

• the difference between "land take" and "soil sealing"

• the relevant indicators in Part D of Annex I

• the minimum methodological criteria for determining the values of land take and soil sealing indicators in Part C of Annex II

The Directive should avoid the inclusion of legally binding objectives for sustainable soil management, contaminated sites, land take and soil sealing.

Any requirement to implement and adhere to land take and soil sealing indicators will bring about large-scale changes as well as additional administrative and financial costs. It is noted that it is considered very difficult to directly monitor the developments and control the subsequent possible sealing of the free spaces of the development plots. Therefore, it is important to clarify the relevant

terms and their calculation methodologies. Also, our recommendation is to ensure, as far as possible, flexibility in the application of the indicators, to avoid mandatory targets and to give enough time for transposition into national law and implementation.

Paragraph 2

It is stated that Member States Member States may adapt the soil description characteristics and soil health criteria referred to in Part A of Annex I.

May? or should they adjust? Based on the above:

• Why has 4 ds/m been entered as the limit of electrical conductivity, since there are crops such as cotton (Ece=7.7) or barley (Ece=8) that can be grown in soils with higher conductivity values (per FAO) without having a loss of production? Shouldn't the conductivity value be dependent to the type of crop?

• In a country like Cyprus which is semi-arid and which possesses mineral soils, the concentration of organic carbon (SOC) is certainly not easy to increase or keep constant throughout the year. Shouldn't the particularities of each member state be taken into account?

• What does equivalent criterion mean? which one could it be? We would like clear examples with which to relate the characteristics of soil salinity and soil bulk density taking into account the soil report to which the Commission refers.

Paragraph 4

It is stated that Member States determine soil health criteria for the soil description characteristics listed in Part B of Annex I in accordance with the provisions of the third column of Part B of Annex I. Regarding the above:

• What does ‘excess nutrient content’ mean?

• Why has phosphorus been chosen as an obligatory soil characteristic, an element that belongs to the macronutrients, is not very mobile, and difficult to replenish in the soil and does not wash into the underground aquifer? Why has a maximum value of phosphorus concentration in the soil < 50 ppm been given where if we back calculate it to a decare (20 cm depth) we refer to 12 kg of phosphorus which is not enough to feed a crop of potatoes or deciduous crops? Perhaps it could be moved to Part C and in its place, Boron could be chosen as a monitored element, which if found in large quantities and causes much greater and permanent problems than the higher concentration of Phosphorus.

Article 8

Paragraph 1

It is stated that the Member States determine the sampling points by applying the methodology set out in Part A of Annex II. Basis of the above:

• We would like the E.U. give clear examples of how to calculate the number and density of sampling points based on Bethel, 1989.

Paragraph 4

We would like the deadline to be extended to 6 years after the entry into force of the Directive.

Paragraph 5

It is stated that Member States ensure that new soil measurements are carried out at least every 5 years.

• Many of the indicators presented in part B of annex II (such as soil mechanical analysis) do not change (at least over non-geological time). Why the Commission wants new measurements to be carried out at least every 5 years?

• The bulk density (at the B or E horizon) is a physical property which needs a lot of time, effort but maybe also machinery in order to sample, since the sample must be undisturbed (the same for Part B in Annex II). Even if PTFs are used the error rate may be high. Perhaps the Commission should give examples of the choice of some other feature.

The requirement to update the values of land take and soil sealing indicators annually, is deemed excessive, taking into account the existing technical and technological infrastructure, thus creating an excessive administrative burden and additional costs. The obligation of Article 18 for the submission of reports by the MS every five years should also be taken into account. The update requirement could be set every two years.

Article 10

Paragraph 1 a)

It states that Member States shall take at least the following measures, taking into account the type, use and condition of the soil: a) establishing sustainable soil management practices which respect the principles of sustainable soil management listed in Annex III, which must to be gradually applied to all managed lands...

• In what ways will it be possible to implement the principles that are mentioned but are not present in the programs/plans/objectives/measures of annex IV? Will there be fields and control templates in a checklist? Recommendation these to be set as good practices and not mandatory.

Articles 13, 14, 15 and 16

Soil condition, chemical and physical, should be assessed in relation to the physical background as well as in relation to land use. The distinction between high natural concentrations of chemical elements and soil pollution is not adequately described.

Limit values for soil chemistry should be related to the physical background and concentrations of chemical elements at regional to local scales and land use categories. Therefore, they cannot be applied in the same way for all soil types in different geological backgrounds.

Annex I

Comment: The part between parentheses in the soil descriptor *Soil water holding capacity of the soil sample* “(% of volume of water / volume of saturated soil)” specifies the saturated water content, not the water holding capacity. The water holding capacity is generally considered the water content at field capacity minus the water content at wilting point. Secondly, the criteria are extremely vague. For flooding it could link with and refer to the Flood Directive (2007/60/EC, Article 6.3 (c) floods with high probability (e.g., one in 20-year return period). The criteria will also be impossible to achieve on sloping lands with very shallow soils, which are common in Cyprus.

Annex II

Regarding “*Soil descriptor: Soil water holding capacity*
Methodology to determine the value for one sample point: ..”

Comment: Another methodology option could be to determine the soil water holding capacity from an in-situ observed volumetric water content time series, measured with capacitance (time-domain reflectometry/transmission) sensors, connected to a datalogger.