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Yttrande över EU-kommissionens förslag till direktiv om övervakning av jordhälsa och resiliens

Stockholms universitet har av Regeringskansliet (Klimat- och näringslivsdepartementet) anmodats att inkomma med synpunkter på EU-kommissionens förslag till direktiv om övervakning av jordhälsa och resiliens (Proposal for a Directive on Soil Monitoring and Resilience). Universitetets yttrande är i likhet med förslaget avfattat på engelska.

Introduction

Stockholm University is overall supportive of the proposal to establish a regulatory framework for soils. As stated in the proposal, a number of international as well as EU initiatives state that such a framework shall be established, for instance the three Rio Conventions (desertification, climate and biodiversity) and the EU Green Deal Biodiversity Strategy. Healthy soils are a necessity for sustainable development.

The University welcomes the fact that a number of EU institutions already have welcomed this initiative. It is of utmost importance that the proposal is being decided on before the upcoming EU election in June 2024, since otherwise the process of getting a soil legislation in place could be severely delayed. At the national level, the University notes with surprise that the Swedish government already formed a position presented at the latest AgriFish meeting, even though the deadline for its open consultation is yet not passed.

Nutrient leakage and soil condition

The proposal, including Annexes, is only including aspects of nutrient leakage to a limited extent. Since there is a strong linkage between soil quality and risk of nutrient leakage to surrounding waters and hence eutrophication, future soil policies should embrace the following.

- Good soil structure is crucial for minimising surface run off of phosphorus.
- Legacy of phosphorus in the soils is a major source for external input to water. For instance, in the Baltic Sea region, research shows that almost half of the phosphorus

currently entering the Baltic Sea could derive from a pool of accumulated phosphorus on land (McCrackin et al. 2018). The role of legacy P and the properties, fate and management of soil nutrient inventories, have to be considered in a future soil law.

- In order to reduce the risk of nutrient leakage from soils, manure has to be handled more effectively. The conditions of the soils influence manure management. The role of manure for improved soil structure should be reflected in the proposal.
- Reduction of nutrient sources from soils can have clear advantages for water quality, but there are trade-offs to be considered. For example, nitrogen additions have the potential to reduce carbon dioxide emissions and increase carbon storage (Janssens et al., 2010). Therefore, the cycling of carbon and nutrients should be monitored and considered together for effective soil management.
- Soil carbon stabilization (and associated nutrient retention) can be promoted by improving soil structure (e.g., no tillage) and increasing the diversity of residue inputs to soil (e.g., crop rotations, diversified agriculture, cover crops) (Lehmann et al., 2020).

Soil condition, nutrient leakage and climate

Soil condition and hence nutrient leakage, links to the impact of marine ecosystems on the climate. A marine ecosystem binds carbon in the vegetation and the sediments, but also releases methane. The ratio between carbon sinks or methane sources is dependent on the level of eutrophication of the waters. The more eutrophied, the higher is the risk of marine waters becoming sources of greenhouse gases. The EU Commission proposal does not include this aspect in its proposal.

Chemicals

Stockholm University supports the inclusion of chemical issues in the proposal. One important part of this complex issue is the impact from sewage sludge on soils. Due to present sewage systems, sludge holds high levels of for instance heavy metals and organic pollutants. Spreading of sewage sludge on soils can therefore lead to accumulation of chemical pollutants in both soils and crops, as well as accumulation of microplastics in soils, which may further leak to the aquatic environment, including groundwater. A future soil law must therefore be made coherent with a revised sewage sludge.

More specific comments

Article 3, p. 31, (3) “‘ecosystem services’ means indirect contributions of ecosystems to the economic, social, cultural and other benefits that people derive from those ecosystems;”.

Comment: Stockholm University wonders why only “indirect contributions” and not also “direct” ones. Here the definition is general, not only ecosystem services associated with soils, so direct contributions might be included. For soils, contributions are probably mostly indirect.

Annex I: “Loss of soil organic carbon” is measured in terms of soil organic carbon concentration (g of carbon per kg of soil).

Comment: The amount of organic carbon should be expressed in g of carbon per unit ground area (i.e., a stock, not a concentration). The carbon stock is obtained by multiplying concentration by soil bulk density and by the thickness of the sampled soil layer. Since bulk density should be measured as an indicator of soil compaction, this calculation would be easily implemented. This measure accounts for variations in soil density. For example, for a given carbon concentration, soils becoming compacted will have more carbon in a given sampling depth just because their mass per unit volume has increased.

Annex I: “Loss of soil biodiversity” is measured as oxygen consumption rate.

Comment: Rates of oxygen consumption depend on many factors independent of biodiversity, such as organic carbon concentration, temperature, and to some degree soil texture. Even standardizing the oxygen consumption measurement (e.g., specifying soil moisture during the measurement, pre-incubation durations etc.), Stockholm University wonders how results can be compared across soils in given Member State.

Annex I: “The estimated value for the total water holding capacity of a soil district by river basin or subbasin is above the minimal threshold.”

Comment: Soil texture and this water holding capacity change in space over short distances, so Stockholm University is not sure how Member States would calculate this parameter for entire river basins. At the very least, basin-scale values should be obtained by averaging soil samples representative of the range of textures in that basin. Methods described in P8 of Annex I regarding estimation of water holding capacity over entire basins are not clear.

Overall comment on Annex I

It is not clear at which depth(s) soil samples are supposed to be taken, or whether sampling depth should be determined based on fixed layer thickness or by soil horizon. In the literature it is also recognized that changes in soil carbon in the topsoil can be mirrored by opposite changes in the subsoil (e.g., after conversion of cropland to grassland). Therefore, focusing on top soil carbon will give a biased picture of whole profile carbon changes.

Detta beslut är i rektors ställe fattat av prorektor, professor Clas Hättestrand, i närvaro av avdelningschef Maria Wilenius. Studeranderepresentanter har informerats och haft tillfälle att



ytra sig. Ärendet har beretts inom Områdesnämnden för naturvetenskap. Övrig närvarande och föredragande i ärendet har varit utbildningsledare Rikard Skårfors, Ledningssekretariatet (protokollförare).