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Questions and answers on the Thematic Strategy on soil protection

Why is soil important?

Soil is literally one of the foundations for our economic prosperity and our quality of life. All our human activities are somehow related to soil.

Soil is a fundamental and irreplaceable natural resource. It provides the essential link between the components that make up our environment. It also performs a number of functions. It produces food and fibre; is the interface between earth, air and water; stores, filters and transforms many substances including water, nitrogen and carbon; and it is in fact the most important carbon store in the world.

Soil also shelters habitats and therefore plays a key role in protecting biodiversity. Soil's own diversity is an issue in its own right as, in Europe alone, there are 320 major soil types and within each of these types, there are enormous variations in physical, chemical and biological properties. It takes hundreds of years to produce a few centimetres of soil. This key natural resource is therefore largely non renewable.

What is soil threatened by?

In many parts of Europe, soil degradation is taking place at an increasing rate, due to certain practices in agriculture and forestry, contamination, urban sprawl and climate change. Some soil degradation processes are natural phenomena but they are exacerbated by all kinds of unsustainable human uses.

The loss of soil (**erosion**) is made worse by inappropriate cultivation techniques and inadequate cropping practices. The soil becomes less fertile and the aquatic ecosystem is contaminated.

Soil **organic matter**, the organic fraction of soil, is very important for the fertility, structure, water retention capacity and biodiversity of soil. Soil is also a major store of carbon. Some land management practices help agricultural soils store carbon and therefore contribute to climate change mitigation. The decline of soil organic matter in soil threatens soil fertility, soil structure and the capacity of soil to retain rainwater, and worsens climate change effects.

Salt is already present in our soil but the vast majority of **salinisation** (the build up of salts in soil) is due to the fact that humans alter the way water moves through the environment by irrigation. Artificial fertilisers can also add salts to soil. As a result soil fertility drops and ultimately it may even be unable to sustain hardly any plant growth.

Excessive stocking rates and the inappropriate use of heavy machinery in agriculture makes the soil too compact (**compaction**). This reduces the soil's capacity to retain water and to supply oxygen to plant roots. This in turn leads to soil erosion, increased water runoff and increased greenhouse gas emissions.

Urban and industrial sprawl and transport networks have sealed a significant proportion of EU soil (**sealing**), leading to irreversible loss of fertile soils.

As a result of over two hundred years of industrialisation, Europe has a problem of soil **contamination** due to the use and presence of dangerous substances in many production processes and poor or inadequate management practices.

Biodiversity decline: soil biodiversity means not only the diversity of genes, species, ecosystems and functions but also the metabolic capacity of the ecosystem[1]. Soil biodiversity is affected by all the degradation processes listed above.

Several of these threats are exacerbated by the effects of **climate change** such as increase in temperature and extreme weather events, and may accelerate desertification. For example, an increase in rain in some areas will accelerate erosion, while areas which are becoming more arid are subject to increased salinisation.

Does soil degradation have an impact on health?

Food and feed crops may uptake soil contaminants. This may affect the quality of products which circulate within the internal market and, in due course, the human and animal health in the EU. Landslides can also lead to casualties.

What is the extent of the problem?

Over the last few decades, there has been a significant increase in soil degradation processes. These processes are likely to further accelerate if nothing is done to protect soil.

Erosion: 115 million ha (12% of Europe's total land area) are affected by water erosion and 42 million ha are affected by wind erosion, 2% of which are severely affected.

Organic matter decline: Around 45% of soils in Europe have low or very low organic matter content (0-2% organic carbon) and 45% have a medium content (2-6% organic carbon). Organic matter decline is an issue in particular in Southern Europe but parts of France, the United Kingdom, Germany, The Netherlands and Sweden are also concerned.

Compaction: estimates of risk areas vary between 36% and 32% of European subsoils being very vulnerable and 18% moderately so.

Salinisation - around 3.8 million ha in Europe are affected by the accumulation of soluble salts. The most affected areas are Campania in Italy, the Ebro Valley in Spain and the Great Alföld in Hungary.

Landslides tend to occur more frequently in areas with clayey sub-soil, steep slopes, intense and abundant precipitation and land abandonment, such as the Alpine and the Mediterranean regions.

[1] Metabolism is the entire physical and chemical processes involved in the maintenance and reproduction of life in which nutrients are broken down to generate energy.

Contamination: approximately 3.5 million sites may be potentially contaminated. 0.5 million sites are expected to be really contaminated and need remediation.

Sealing: the area of soil surface covered with an impermeable material represents around 9% of the total area in Member States. Between 1990 and 2000, the sealed area in EU15 increased by 6% and the demand for both new construction and transport infrastructures due to increased urban sprawl continues to rise.

Why act at the EU level?

The 6th Community Environment Action Programme[2] calls for the development of a Thematic Strategy on soil protection. The Community Institutions broadly welcomed the Commission's Communication entitled "Towards a Thematic Strategy for Soil Protection"[3], which triggered off the debate on soil protection at EU level.

Action is required at EU level because:

- Soil is a non renewable natural resource of common interest to Europe because of the crucial functions it performs for society and the ecosystems.
- European environmental legislation is incomplete without soil policy, hampering the objective to reach a high level of environmental protection in Europe[4].
- Differences among Member States in dealing with soil problems may distort competition within the single market.
- Most of the costs of soil degradation are not borne by the land users, who are responsible for the degradation, but by the tax payers.
- Soil degradation has transboundary consequences.
- As soil contamination may affect the quality of food and feed products.
- The health of the European population can be impaired as a result of soil degradation.
- Charters and conventions, of which the Community is a partner, have been adopted to protect soil on a global scale.

What has the EU done so far to protect soil?

Environmental Community legislation dealing with water, waste, chemicals, industrial pollution prevention, nature protection and pesticides, contains soil protection provisions. Cross-compliance requirements and the Rural Development policy introduce agricultural soil protection aspects into the reformed Common Agricultural Policy.

However, existing EU legislation varies in scope and objective and does not sufficiently address significant soil problems as it does not cover all soils and does not address all soil threats. Moreover, since soil degradation continues and is even getting worse, all this legislation is simply not enough.

[2] Decision 1600/2002/EC of the European Parliament and of the Council.

[3] (COM(2002) 179)

[4] Article 174 of the EC Treaty states that one of the objectives of the EU is a high level of environmental protection.

Why is the reform of the Common Agricultural Policy not enough?

Significant benefits can be expected from linking the direct payments ("cross-compliance") to farmers to the application of 'soil-friendly' agricultural practices. However, these measures are not obligatory everywhere and they only apply to farmers who are under the payment regimes, which is not the case for all types of farming activities. Farmers who do not receive payments are not bound to adopt these soil-friendly practices. Therefore, cross compliance will only partially contribute to the preservation and sustainable use of soil.

Why act now?

Over the last few decades, there has been a significant increase in soil degradation processes. These processes are likely to further accelerate if nothing is done now to protect soil

In the European Union, only nine Member States have specific legislation on soil protection, usually targeted at very specific threats, e.g. desertification in Greece, Italy, Portugal and Spain, contamination in the Netherlands, Germany and Belgium (Flanders). Since soil degradation continues and is even getting worse, this legislation is simply not enough.

What does the Thematic Strategy on soil protection contain?

The Strategy is made up of a Communication from the Commission to the other EU Institutions, a proposal for a Directive of the European Parliament and of the Council and an Impact Assessment.

The **Communication** sets the frame. It explains why further action is needed to ensure a high level of soil protection and what kind of measures must be taken. It establishes a ten-year work program for the European Commission.

The **Directive** is structured along three lines:

- *1 .Preventive measures* – Member States must ensure a sustainable use of soil. If soil is used in a way that hampers its functions, mitigating actions must be undertaken. Other policies' impacts on soil must be assessed.
- 2 I*dentification of the problem* - Member States will identify the areas where there is a risk of erosion, of decline in organic matter, of salinisation, compaction, sealing, and landslides. As far as contamination is concerned, they will set up an inventory of contaminated sites.
- *3. Operational measures* - Member States will then have to act upon the risks identified by adopting programmes of measures for the risk areas, national remediation strategies for the contaminated sites and measures to limit or mitigate sealing. However, they are free to decide upon the level of ambition of their soil policy, to set their own targets and to decide how and by when to achieve them.

The Impact Assessment contains an analysis of the economic, social and environmental impacts of the different options that were considered in the preparatory phase and of the measures finally retained.

What are the objectives of the strategy?

The Strategy's objective is to define a common and comprehensive approach, focusing on the preservation of soil functions, based on the following principles:

1. Preventing further soil degradation and preserving its functions:

   By acting on soil use and management patterns, when soil is used and its functions are exploited,

   By taking action at source, when soil acts as a sink/receptor of the effects of human activities or environmental phenomena.

2. Restoring degraded soils to a level of functionality consistent at least with current and intended use, thus also considering the cost implications of the restoration of soil.

What is new about the strategy?

The strategy tackles the full range of threats to soil, in a comprehensive and coherent way. It creates a common legal framework to ensure that EU soils stay healthy for future generations and remain capable of supporting the ecosystems on which our economic activities and our well-being depend.

It is one of the seven thematic strategies which the Commission is proposing. They represent the next generation of environment policy, taking a global and medium-term perspective, setting clear environment objectives and seeking to identify the most appropriate instruments to achieve these objectives. They are based on extensive research and consultation with stakeholders.

Why is a legally binding instrument needed?

The fragmented approach taken so far and the extent of the problem with the attached significant off-site effects and costs to be borne by society demonstrate that the absence of a focused policy approach has not been sufficient to protect soil. Moreover, failure to protect soil will hamper any effort undertaken to achieve the targets set by existing legislation in the area of water, nature, climate change, biodiversity, human health and food safety. Soil deserves the same level of protection as the other environmental media (air and water), as it is the missing piece in the puzzle to manage environmental media effectively.

Nevertheless, the Directive proposed by the Commission is flexible. It is recognized that a “one-fit-all” approach would not work.

What impact will the strategy have on other EU policies?

The Integrated Pollution Prevention and Control (IPPC) Directive will be revised. Its soil protection and contamination prevention aspects will be strengthened.

The European Commission will assess Member States’ contributions under cross compliance and will carry on monitoring closely the impact of rural development and structural fund programmes on soil protection.

The Commission and the Member States will ensure that soil protection and sustainable use are taken into account by sectoral policies (regional and urban spatial planning, transport, energy, agriculture, rural development, forestry, raw material extraction, trade and industry, tourism, climate change, environment, nature and landscape, coastal integrated management).

The strategy will also have an impact on the EU Research policy. The proposed Seventh Research Framework Programme (2007-2013) covers research into soil functions in its "Environment" priority area, within the 'Cooperation' theme.

What are the current costs of soil degradation?

It is difficult to estimate those costs due to the lack of sufficient quantitative and qualitative data but several studies point to significant *annual* costs to society, in the ranges of:

erosion:	€0.7 – 14.0 billion,
organic matter decline:	€3.4 – 5.6 billion,
compaction:	no estimate possible,
salinisation:	€158 – 321 million,
landslides:	up to €1.2 billion per event,
contamination:	€2.4 – 17.3 billion,
sealing:	no estimate possible,
biodiversity decline:	no estimate possible.

Erosion, organic matter decline, salinisation, landslides and contamination might be costing the EU up to €38 billion annually. As the costs of the other threats could not be assessed, the real costs of soil degradation are likely to exceed this estimate. The majority of these costs are borne by society

How much will it cost to implement the strategy?

The costs and benefits of the strategy are presented in full in the Impact Assessment. They are mainly derived from:

(1) identification of risk areas and of contaminated sites;

The overall costs for the identification of risk areas are likely to be less than €2 million per year for the whole of the EU. The costs for the first five-year stage to establish an inventory of contaminated sites, based on a preliminary inventory are estimated at about €51 million per year for the whole of the EU. This first stage of the inventory will be followed by a series of on site investigations to check if there is indeed a serious risk to human health or the environment. These investigations might cost *up to* an upper bound annual amount of €240 million during the full 25year period provided for completing the inventory.

Establishing a system to identify the problem will allow the Member States to address soil protection and combat soil threats systematically, effectively and efficiently. They will be in a position to adopt more targeted and efficient measures and to plan medium and long term strategies. By encouraging a sustainable use of soil and taking a preventive approach, the Member States will save costs which so far were borne by society. These benefits will by far outweigh the additional costs of the Directive.

(2) subsequent measures to combat the problems, to be taken by Member States.

The proposed Directive requires Member States to take specific measures to address soil threats but it is up to them to decide on risk acceptability, to define targets and take measures to meet those targets. It is therefore not possible to fully assess the environmental, economic and social impacts impact of the proposed Directive at this stage. They could only be described qualitatively.

Which sectors will be most affected and how will they benefit from the strategy?

Society as a whole will benefit from the strategy as it bears the majority of the costs of soil degradation. Individual land users will cease to suffer from the direct consequences of soil degradation such as a loss of productivity, land depreciation, the loss of land use possibilities and a loss of real estate value.

The Directive does not establish who bears the costs of its implementation, as this will be decided by each Member State. Depending on the funding schemes they will adopt, costs will be borne in varying degrees by land users, economic sectors, national budgets or the EU budget. The benefits are also to be shared between the public administration, society at large and the economic operators involved.

Not all costs will be incurred simultaneously and the distribution of costs and benefits will not be even among Member States. Some threats are more important in certain Member States than others and some Member States are more advanced than others in combating soil degradation.

Has the Commission consulted widely on the strategy?

The Commission has extensively consulted stakeholders and the public. In 2003, it launched a wide public consultation, and subsequently set up a number of working groups composed by experts from public administrations, agricultural, industrial, and environmental and consumer organisations, science and research institutes, and Commission services, as well as many other associations which had European coverage and an interest in soil.

In 2004, the working groups published reports on the state of soils in Europe, the pressures, the driving forces for soil degradation, together with a set of recommendations addressed to the Commission. These reports are available on the Internet at: http://ec.europa.eu/comm/environment/soil/index.htm

In 2005, the Commission carried out an Internet consultation aimed at citizens, soil experts and organisations, to elicit opinions on specific measures. 1206 citizens, 377 soil experts and 287 organisations from 25 countries replied.

91% of participating citizens and 90% of the experts and organisations expressed the view that preventing and mitigating soil degradation in Europe is important or very important. The vast majority of the respondents endorsed the Commission's approach of creating a Framework at EU level for measures to be taken at national or regional level (75% of citizens and 88% of experts and organisations). A summary of the responses is presented in the Impact Assessment, while a comprehensive report on the statistical analysis of all questions is published on the internet at http://ec.europa.eu/comm/environment/soil/index.htm

What are the next steps?

The adoption of the Directive by the European Parliament and the Council could take two years. Then the Member States will transpose it into national legislation and start implementing it:

- The general provisions of the Directive are into force from that moment on.
- Within five years after the transposition, they will have to identify risk areas.
- Within seven years, they will have to adopt targets and a programme of measures to reach these targets and report to the European Commission.
- Within five years, the Member States will also have to achieve a preliminary inventory of contaminated sites.
- Within seven years they have to establish a national remediation strategy in order to manage their contaminated sites over the medium and long term. They will establish a funding mechanism for the remediation of orphan sites, as well as a soil status report.

Member States will ensure that the public is given early and effective opportunities to participate in the preparation, modification and review of the required programmes of measures on risk areas and national remediation strategies.

As for the European Commission, it will:

- promote improvement of knowledge and its dissemination, exchange of information and best practices;
- develop best practices to mitigate the negative effects of sealing;
- prepare a Common Implementation Strategy for the Soil Framework Directive and the other pillars of the strategy;
- address the interaction between soil protection and climate change;
- assess synergies with measures under the Water Framework Directive;
- ensure integration of soil protection in product policy to prevent contamination of soil;
- ensure that the actions undertaken under this strategy are consistent with initiatives taken under the UNCCD, the UNCBD, the Kyoto Protocol and the Alpine Convention.

For the Strategy and accompanying documents, see website:

http://ec.europa.eu/comm/environment/soil/index.htm