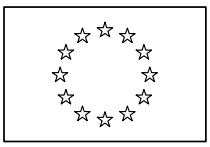

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COMMUNICATION FROM THE COMMISSION TO THE COUNCIL, THE EUROPEAN PARLIAMENT, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

Thematic Strategy for Soil Protection

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COMMUNICATION FROM THE COMMISSION TO THE COUNCIL, THE EUROPEAN PARLIAMENT, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

Thematic Strategy for Soil Protection

(Text with EEA relevance)

1. INTRODUCTION

Soil is generally defined as the top layer of the earth's crust, formed by mineral particles, organic matter, water, air and living organisms. It is the interface between earth, air and water and hosts most of the biosphere.

As soil formation is an extremely slow process, soil can be considered essentially as a non-renewable resource. Soil provides us with food, biomass and raw materials. It serves as a platform for human activities and landscape and as an archive of heritage and plays a central role as a habitat and gene pool. It stores, filters and transforms many substances, including water, nutrients and carbon. In fact, it is the biggest carbon store in the world (1,500 gigatonnes). These functions must be protected because of both their socio-economic and environmental importance.

Soil is an extremely complex and variable medium. Over 320 major soil types have been identified in Europe and within each there are enormous variations in physical, chemical and biological properties. Soil's structure plays a major role in determining its ability to perform its functions. Any damage to its structure also damages other environmental media and ecosystems.

Soil is subject to a series of degradation processes or threats. These include erosion, decline in organic matter, local and diffuse contamination, sealing, compaction, decline in biodiversity, salinisation, floods and landslides. A combination of some of these threats can ultimately lead arid or sub-arid climatic conditions to desertification.

Given the importance of soil and the need to prevent further soil degradation, the Sixth Environment Action Programme[1] called for the development of a Thematic Strategy on Soil Protection ('the strategy').

As a first step, in 2002 the Commission presented a Communication[2] which was the subject of favourable conclusions by the other European institutions.

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1 Decision No 1600/2002/EC of the European Parliament and of the Council of 22 July 2002 laying down the Sixth Community Environment Action Programme (OJ L 242, 10.9.2002, p. 1).

2 COM(2002)179.

2. ASSESSMENT OF THE SITUATION

2.1. The state of Europe's soil

Soil degradation is a serious problem in Europe. It is driven or exacerbated by human activity such as inadequate agricultural and forestry practices, industrial activities, tourism, urban and industrial sprawl and construction works. These activities have a negative impact, preventing the soil from performing its broad range of functions and services to humans and ecosystems. This results in loss of soil fertility, carbon and biodiversity, lower water-retention capacity, disruption of gas and nutrient cycles and reduced degradation of contaminants.

Soil degradation has a direct impact on water and air quality, biodiversity and climate change. It can also impair the health of European citizens and threaten food and feed safety.

Although soil degradation processes vary considerably from Member State to Member State, with different threats having different degrees of severity, soil degradation is an issue all over the EU.

– An estimated 115 million hectares or 12% of Europe's total land area are subject to water erosion, and 42 million hectares are affected by wind erosion[3].

– An estimated 45% of European soils have low organic matter content, principally in southern Europe but also in areas of France, the UK and Germany.

– The number of potentially contaminated sites in EU-25 is estimated at approximately 3.5 million[4].

The Corine Land Cover database[5] shows significant changes in land use in Europe which have an impact on soil. Between 1990 and 2000, at least 2.8% of Europe's land was subject to a change in use, including a significant increase in urban areas. Big differences exist between Member States and regions, with the proportion of the surface sealed during that period ranging from 0.3% to 10%.

It is difficult to extrapolate current trends into the future based on the limited existing data. However, the human-induced driving forces causing the threats are showing an upward trend. Climate change, in the form of rising temperatures and extreme weather events, is exacerbating both greenhouse gas emissions from soil and threats such as erosion, landslides, salinisation and organic matter decline. All this suggests that soil degradation in Europe will continue, possibly at a faster pace.

Extensive evidence shows that most of the costs of soil degradation are not borne by the immediate land users, instead they are often borne by society at large and by players far from the location of the problem (off site).

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3 EEA (European Environment Agency), 1995: Chapter 7 Soil in Europe's Environment the Dobris assessment - covers geographical Europe.

4 See the impact assessment.

5 http://terrestrial.eionet.eu.int/CLC2000/docs/publications/corinescreen.pdf.

2.2. European, national and international policy background

Different Community policies contribute to soil protection, particularly environment (e.g. air and water) and agricultural (agri-environment and cross-compliance) policy. Agriculture can have positive effects on the state of soil. For instance, land management practices such as organic and integrated farming or extensive agricultural practices in mountain areas can maintain and enhance organic matter in the soil and prevent landslides respectively. However, provisions in favour of soil protection are spread across many areas and, to the extent that they often aim to safeguard other environmental media or to promote other objectives, do not constitute a coherent soil protection policy. This means that even if exploited to the full, existing policies are far from covering all soils and all soil threats identified. Hence, soil degradation continues.

Since the adoption of the 2002 Communication[2], an effort has been made to ensure that recently adopted environment policy initiatives on waste, water, air, climate change, chemicals, flooding, biodiversity and environmental liability will contribute to improving soil protection. In particular, the Directive on environmental liability[6] creates a harmonised framework for the liability regime to be applied across the EU when land contamination creates a significant risk of human health. However, it does not apply to historical contamination or to damage prior to its entry into force. There are a variety of approaches to soil protection in the Member States. Nine Member States have specific legislation on soil protection. However, these laws often cover only one specific threat, such as soil contamination and do not always provide a coherent protection framework.

Increased awareness of the importance of soil protection at international level is reflected by the 2003 revision of Council of Europe' Charter for the protection and sustainable management of soil.

All Member States as well as the Community are parties to the United Nation Convention to Combat Desertification (UNCCD). Some Mediterranean and most new Member States are affected parties and are therefore in the process of adopting regional and national Action Programmes to combat desertification.

The Protocol on Soil Protection under the Alpine Convention, seeks to preserve the ecological functions of soil, prevent soil degradation and ensure a rational use of soil in that region.

The Kyoto Protocol highlights that soil is a major carbon store which must be protected and increased where possible. Carbon sequestration in agricultural soils by some land management practices can contribute to mitigating climate change. The European Climate Change Programme (ECCP) Working Group on Sinks Related to Agricultural Soils estimated this potential at equivalent to 1.5 to 1.7% of the EU's anthropogenic CO_2 emissions during the first commitment period[7] under the Kyoto Protocol.

The Convention on Biological Diversity (CBD) identified soil biodiversity as an area requiring particular attention. An International Initiative for the Conservation and Sustainable Use of Soil Biodiversity has been established.

Several countries, including the USA, Japan, Canada, Australia, Brazil and several developing countries have established soil protection policies which include legislation, guidance

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6 Directive 2004/35/EC (OJ L 143, 30.4.2004, p. 56).

7 See: http://ec.europa.eu/comm/environment/climat/pdf/finalreport_agricsoils.pdf.

documents, monitoring systems, identification of risk areas, inventories, remediation programmes and funding mechanisms for contaminated sites for which no responsible party can be found. Such policies ensure a comparable level of soil protection to the approach endorsed by this strategy.

3. OBJECTIVE OF THE STRATEGY

3.1. Ensuring sustainable use of soil

Against this background, the Commission considers that a comprehensive EU strategy for soil protection is required. This strategy should take into account all the different functions that soils can perform, their variability and complexity and the range of different degradation processes to which they can be subject, while also considering socio-economic aspects.

The overall objective is protection and sustainable use of soil, based on the following guiding principles:

(1) Preventing further soil degradation and preserving its functions:

- when soil is used and its functions are exploited, action has to be taken on soil use and management patterns, and
- when soil acts as a sink/receptor of the effects of human activities or environmental phenomena, action has to be taken at source.

(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.

3.2. Level of intervention

To achieve these objectives, action is required at different levels – local, national and European. Action at European level is a necessary addition to the action by Member States, given that[8]:

- **Soil degradation affects other environmental areas** for which Community legislation exists. Failure to protect soil will undermine sustainability and long-term competitiveness in Europe. Indeed, soil is interlinked with air and water in such a way that it regulates their quality. In addition soil functions enormously contribute to areas such as biodiversity and marine protection, coastal management, and to the mitigation of climate change.
- **Distortion of the functioning of the internal market** – the wide differences between national soil protection regimes, in particular as regards soil contamination, sometimes impose very different obligations on economic operators, thus creating an unbalanced situation in their fixed costs. The absence of such regimes and the uncertainty as regards the extent of soil degradation can, in some cases, also hinder private investment.

[8] See the impact assessment for supporting evidence.

– **Transboundary impact** – soil, though generally immobile, is not completely so and therefore degradation in one Member State or region can have transboundary consequences. Losses of soil organic matter in one Member State impair achievement of the EU's Kyoto Protocol targets. Dams are blocked and infrastructure is damaged downstream by sediments from massive erosion further upstream in another country. Groundwater in bordering countries is polluted by contaminated sites on the other side of the border. Therefore it is of outmost importance to act at source to prevent damage and subsequent remedial actions, otherwise costs to restore environmental quality may be borne by another Member State.

– **Food safety** – uptake of contaminants in the soil by food and feed crops and some food producing animals can have a significant impact on the safety of feed and food, which are traded freely within the internal market, by increasing their level of contaminants, hence posing a risk to human or animal health. Acting at source and at European level, by preventing soil contamination or reducing its level, are a necessary complement to the strict EU measures and controls performed to ensure feed and food safety.

– **International dimension** – soil degradation is receiving increasing attention in international agreements and charters. By establishing an appropriate and coherent framework which will translate into better knowledge and management of soil, the EU can play a leading role internationally, facilitating the transfer of know-how and technical assistance whilst at the same time ensuring the competitiveness of their economies.

In addition, action at EU level will also have an added value by contributing to the protection of the health of European citizens that can be impaired in different ways by soil degradation, for instance because of exposure to soil contaminants by direct ingestion (children in playgrounds) or indirect intake (through contaminated food or drinking water). Equally, casualties may occur in the event of landslides.

Therefore the Commission proposes establishing a targeted policy to close the gap and ensure comprehensive soil protection. In doing so, the Commission is fully conscious of the need to respect the principles of subsidiarity and of taking decisions and action at the most appropriate level. Soil is a prime example of the need to think global and act local.

4. ACTIONS AND MEANS

The strategy proposed by the Commission is built around four key pillars:

(1) framework legislation with protection and sustainable use of soil as its principal aim;

(2) integration of soil protection in the formulation and implementation of national and Community policies;

(3) closing the current recognised knowledge gap in certain areas of soil protection through research supported by Community and national research programmes;

(4) increasing public awareness of the need to protect soil.

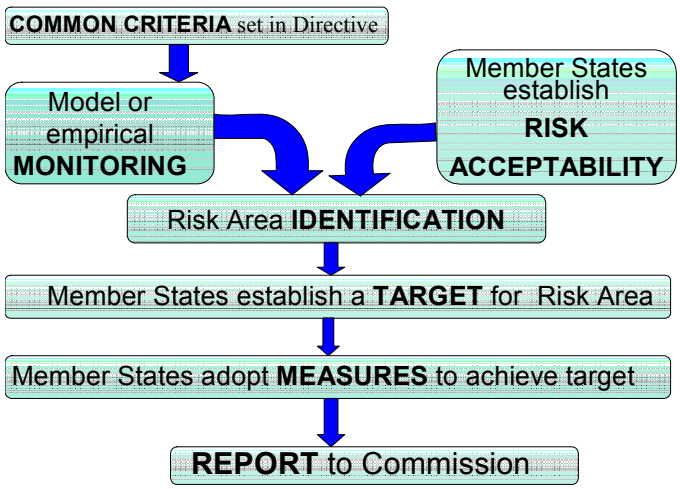
4.1. Legislative proposal

Having examined different options, the Commission proposes a Framework Directive as the best means of ensuring a comprehensive approach to soil protection whilst fully respecting subsidiarity. Member States will be required to take specific measures to address soil threats, but the Directive will leave to them ample freedom on how to implement this requirement. This means that risk acceptability, the level of ambition regarding the targets to be achieved and the choice of measures to reach those targets are left to Member States.

This recognises that certain threats, such as erosion, organic matter decline, compaction, salinisation and landslides[9], occur in specific risk areas which must be identified. For contamination and sealing, a national or regional approach is more appropriate. The proposal sets up a framework for adopting, at the appropriate geographical and administrative level, plans to address the threats where they occur.

4.1.1. Erosion, organic matter decline, salinisation, compaction and landslides

Erosion, organic matter decline, salinisation, compaction and landslides are addressed taking the following approach:



The proposed Directive will require Member States to identify risk areas on the basis of common elements to be taken into account, set risk reduction targets for those areas and establish programmes of measures to achieve them. For identifying risk areas, the Commission encourages Member States to use existing monitoring schemes. Over time a more harmonised monitoring approach and methodology may be developed, exploiting ongoing work of the European Soil Bureau Network on harmonisation of methodologies. Risk acceptability and measures will vary in response to the severity of the degradation processes, local conditions and socio-economic considerations.

Programmes can build on measures already implemented in national and Community contexts, such as cross-compliance and rural development under the CAP, codes of good agricultural practice and action programmes under the Nitrates Directive, future measures under the river basin management plans for the Water Framework Directive, flood risk

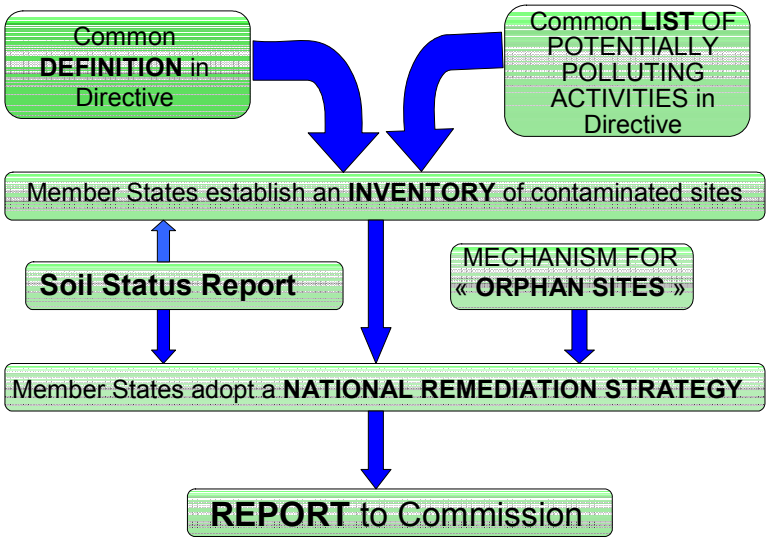
[9] Flooding has been addressed in a separate proposal for a Directive on the assessment and management of floods (COM(2006)15).

management plans, national forest programmes and sustainable forestry practices and forest fire prevention measures. Concerning measures for combating the decline in soil organic matter, not all types of organic matter have the potential to address this threat. Stable organic matter is present in compost and manure and, to a much lesser extent, in sewage sludge and animal slurry, and it is this stable fraction which contributes to the humus pool in the soil, thereby improving soil properties.

Member States will be free to combine approaches to combat concurrent threats. This will be particularly beneficial for Member States addressing desertification under the UNCCD and will avoid duplication of effort.

4.1.2. Contamination

With respect to management of contamination, an approach based on the following approach is envisaged:



On the basis of a common definition of contaminated sites (i.e. sites which pose significant risk to human health and the environment), its application by the Member States, and a common list of potentially polluting activities, Member States will be required to identify the contaminated sites on their territory and establish a national remediation strategy. This strategy will be based on sound and transparent prioritisation of the sites to be remediated, aiming at reducing soil contamination and the risk caused by it and including a mechanism to fund the remediation of orphan sites. This is complemented by the obligation for a seller or a prospective buyer to provide to the administration and to the other party in the transaction a soil status report for sites where a potentially contaminating activity has taken or is taking place. The Directive also addresses prevention of contamination via a requirement to limit the introduction of dangerous substances into the soil.

4.1.3. Sealing

In order to achieve a more rational use of soil, Member States will be required to take appropriate measures to limit sealing by rehabilitating brownfield sites and to mitigate its effects by using construction techniques that allow maintaining as many soil functions as possible.

4.1.4. Other threats

The Directive does not cover soil biodiversity directly. Biodiversity will generally benefit from the action proposed on other threats. This will contribute to achieving the objective of halting the decline of biodiversity by 2010.

4.2. Research

Further research is necessary to close the gaps in knowledge about soil and strengthen the foundation for policies. The Commission intends to follow the recommendations from the stakeholder consultation, on the priority clusters:

– processes underlying soil functions (e.g. soil's role in global CO_2 accounting and in the protection of biodiversity),

– spatial and temporal changes in soil processes,

– ecological, economic and social drivers of soil threats,

– factors influencing soil eco-services, and

– operational procedures and technologies for soil protection and restoration.

The proposal for the Seventh Framework Programme (2007-2013) covers research into soil functions as part of its "Environment" and "Food, Agriculture and Biotechnology" priority areas.

4.2.1. Biodiversity

Not enough is known about soil biodiversity. This will also be addressed in the Seventh Framework Programme with a view to gaining a better understanding of the function of biodiversity as an environmental service. This knowledge-building process will also be supported by ongoing initiatives under the Convention on Biological Diversity and the Forest Focus Programme.

4.3. Integration

Community policies on, *inter alia*, agriculture, regional development, transport and research have a significant impact on soil. Soil protection will need to be further integrated in other policy areas, if the goals of this strategy are to be met.

The Commission envisages taking some actions described under section 6.

4.4. Awareness-raising

There is little public awareness of the importance of soil protection. Measures to improve knowledge and exchange information and best practices are needed to fill this gap. The Commission will foster initiatives such as:

- wide distribution of the Soil Atlas of Europe, and maintenance of the soil web site http://eusoils.jrc.it for open access to policy relevant soil information in Europe,

- continuation of the European Summer School on Soil Survey to provide specific training to young researchers,

- encouragement of initiatives such as the European Manifesto on Earth Heritage and Geodiversity,

- integration of soil knowledge and protection aspects in Community-funded information and training events,

- soil management awards, where appropriate,

- initiatives within the UNCCD, particularly in 2006, International Year of Deserts and Desertification.

5. EXPECTED IMPACT AND RESULTS

This strategy has been subjected to an impact assessment and extensive stakeholder consultation. Various options and related measures have been analysed as part of this work, including no binding action, a flexible non-prescriptive EU legal framework, and laws on the different threats to soil, setting targets and means at EU level.

The recommendations by stakeholders, the current situation with soil protection in the EU, including policies and measures in place in a minority of Member States, allied to the total cost to society of soil degradation have convinced the Commission that a flexible Framework Directive would be the most appropriate way of addressing soil protection.

The impact assessment, carried out in accordance with the Commission's guidelines and on the basis of available data, shows that soil degradation could cost up to €38 billion a year.

The costs directly derived from the proposed Directive, which are mainly stemming from the obligations to carry out the identification of risk areas and the inventory of contaminated sites, are estimated to be up to €290 million a year for EU-25 in the first five years and up to €240 in the following 20 years. These costs will drop to less than €2 million per year thereafter and will mainly be borne by public administrations.

The benefits deriving from these obligations will come from a better knowledge of the extent and location of the soil threats which will allow adopting more targeted and efficient measures. These benefits could not be quantified as they will depend on the actual use that will be made of this improved knowledge.

The Directive allows Member States to set their own levels of ambition on targets and to select the measures under the programmes and remediation strategies which they consider most appropriate and most cost-effective. Therefore, the costs and benefits will depend on this level of ambition and will also vary according to the extent to which Member States make use of the possibilities offered by existing legislation, such as cross-compliance within the CAP, to contribute to soil protection.

Different scenarios of measures can be envisaged, based on different levels of ambition. Common to all scenarios is that additional costs would only start to apply from around 2015 onwards and may be borne either by the land users and the polluter and/or by the public

administration, depending on the decisions ultimately taken by Member States. The benefits would be shared mainly by society at large and a number of economic operators.

For specific scenarios of medium to high levels of ambition, the social, economic and environmental impact of possible measures that could be adopted by Member States have been analysed in an annex to the impact assessment.

In assessing the possible additional costs, in particular of the scenario envisaged, it has to be borne in mind that estimated benefits clearly outweigh costs even more so as many environmental benefits from soil services, notably preserving biodiversity and ensuring nutrient and gas cycles, could not be included.

Moreover the Directive marks the first policy approach targeted at soil protection at EU level and is designed to protect the soil as an important and essentially non-renewable resource of the EU, totalling approximately 400 million hectares.

6. NEXT STEPS

To ensure that the action outlined above is put into practice, the Commission will:

– develop calls for research projects to support policymaking in line with the objectives of this strategy and incorporate in decision-making any new knowledge acquired on soil biodiversity from 2006 onwards,

– review the Sewage Sludge Directive in 2007, as also announced in the Thematic Strategy on Waste Prevention and Recycling[10], to ensure that maximum benefit is reaped from the reintroduction of nutrients while further limiting the release of dangerous substances into the soil,

– review the Integrated Pollution Prevention and Control (IPPC) Directive[11] in 2007 to strengthen its soil protection and contamination prevention aspects by exploring, in particular, harmonisation of the basic obligation to avoid any pollution risk, returning the site of IPPC installations to a "satisfactory state", and periodically monitoring soil on the site,

– monitor closely whether the need to protect soil is adequately taken into account in the Rural Development Plans for 2007-2013, and thereafter,

– check the contribution made to soil protection by the minimum requirements for good agricultural and environmental condition defined by Member States in accordance with Article 5 and Annex IV of Regulation 1782/2003,

– initiate activities to develop best practices to mitigate negative effects of sealing on soil functions in 2007,

– prepare a Common Implementation Strategy for the Framework Directive and the other pillars of the strategy, in partnership with Member States, while maintaining an open

[10] COM(2005)666.
[11] Directive 96/61/EC (OJ L 257, 10.10.1996, p. 26).

dialogue with experts who participated in the stakeholder consultation. This will allow initiating activities to support Member States in identifying and developing the most cost-effective measures to achieve the objectives of the strategy. This will also allow better cooperation between Member States in reaching comparable approaches to soil protection,

– build a robust approach to address the interaction between soil protection and climate change from the viewpoints of research, economy and rural development so that policies in this areas are mutually supportive,

– assess possible synergies between measures aiming at protection and sustainable use of soil and measures incorporated in river basin management plans under the Water Framework Directive in 2009,

– assess possible synergies between measures aiming at protection and sustainable use of soil and measures aiming at the protection of coastal waters, including those incorporated in the Thematic Strategy on the Protection and Conservation of the Marine Environment[12],

– ensure integration of soil protection aspects in product policy to prevent contamination of soil,

– ensure that the actions of this strategy and the initiatives taken under the UNCCD, the UNCBD, the Kyoto Protocol and the Alpine Convention are mutually supportive, consistent and complementary.

This strategy contains the measures deemed appropriate at this stage at EU level. Progress towards meeting the objectives of this strategy will be evaluated as part of the review of the Sixth EAP, as appropriate.

[12] COM(2005)504.