



# Environment fact sheet: soil protection — a new policy for the EU



- Soil is a key, largely non-renewable and very complex natural resource and yet it is increasingly damaged by certain human practices.
- EU law does not address all the threats in a comprehensive way and not all Member States have specific legislation on soil protection.
- The European Commission has launched a global cross-EU strategy to deal with all aspects of soil protection, while taking into account the variety of situations in each country.
- Adopting the soil strategy is the first stage in the development of a proper soil policy in the European Union.

## Key facts you should know about soil

1. Soil makes up the outermost layer of our planet and is formed from rocks and decaying plants and animals.
2. Soil has varying amounts of organic matter (resulting from the decomposition of living organisms), minerals and nutrients.
3. It helps clean the water we drink and the air that we breathe — for free!
4. An average soil sample is 45 % minerals, 25 % water, 25 % air and 5 % organic matter. Different-sized mineral particles, such as sand, silt and clay, give soil its texture.
5. Topsoil is the most productive soil layer.
6. Ten tonnes of topsoil spread evenly over a hectare is only as thick as a one Euro coin.
7. Natural processes can take more than 500 years to form two centimetres of topsoil.
8. In some cases, five tonnes of animal life can live in one hectare of soil.
9. Fungi and bacteria help break down organic matter in the soil.
10. Earthworms digest organic matter, recycle nutrients and make the surface soil richer.
11. Roots loosen the soil, allowing oxygen to penetrate. This benefits animals living in the soil. They also hold soil together and help prevent erosion.
12. A fully functioning soil reduces the risk of floods and protects underground water supplies by neutralising or filtering out potential pollutants and storing as much as 3 750 tonnes of water per hectare.
13. Soil scientists have identified over 10 000 different types of soil in Europe.
14. Soils worldwide contain 1 550 billion tonnes of organic carbon (to be compared with an atmospheric carbon pool of 760 billion tonnes and 560 billion tonnes of carbon in living organisms and plants).
15. Soil captures about 20 % of the world's man-made carbon dioxide emissions.

## Fact 1: Soil is a key, largely non-renewable and very complex natural resource and yet it is increasingly damaged by certain human practices.

Soil is the fragile, friable layer of the earth's crust that covers the continents, between the surface and the bedrock. It is 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.

Soil provides us with food, biomass and raw materials, serves as a platform for human activities, our landscape and our heritage and plays a central role as a habitat and gene pool. It stores, filters and transforms substances such as water, nutrients and carbon.

Soil structure is very complex and variable — in Europe alone, 10 000 different types of soil (categorised into over 320 major soil types) have been identified (see box on key facts). Damage to soil structure has repercussions on other environmental media and ecosystems.

It takes centuries to build up a mere centimetre of soil but, if mistreated, soil can be blown or washed away in a few seasons. And yet, soil degradation is accelerating. This is in part a natural phenomenon but some soil degradation processes are exacerbated by all kinds of unsustainable human uses. Inappropriate agricultural practices accelerate water and wind erosion and the decline in organic matter, leading to a loss of soil fertility. Too many animals grazing in a given area and inappropriate use of heavy machinery make the soil too compact. Inappropriate irrigation leads to an increase in salt. Intensive land use, population growth and tourism increase the risk of landslides in areas with steep slopes, lots of rain





and abandoned land. Earlier industrialisation and poor management practices have left a legacy of thousands of contaminated sites throughout Europe. Some 9 % of the area of the EU is covered with roads or concrete, disrupting gas, water and energy flows and leading to irreversible loss of fertile soil. The cost of soil degradation in the EU is estimated at some EUR 38 billion each year.

Several of these threats are exacerbated by the effects of climate change, which causes increases in temperature and extreme weather events. If some of these threats are combined, they may ultimately lead to desertification.

**Fact 2: EU law does not address all the threats in a comprehensive way and not all Member States have specific legislation on soil protection.**

In addition to environment policy (e.g. air and water), different EU policies contribute to soil protection, especially agricultural policy which links farmers' eligibility for agricultural subsidies to the respect of certain environmental conditions. 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 erosion and landslides.

However, the provisions in favour of soil protection are spread across many policy areas, and are usually designed to safeguard other environmental media or to promote other objectives. They do not therefore constitute a coherent soil protection policy. This patchy and incoherent approach is not preventing further soil degradation across the EU.

At Member State level, approaches to soil protection vary from one country to another. Nine of them have specific legislation on soil protection but, even then, often covering only one specific threat, such as soil contamination.

**Fact 3: The European Commission has launched a global cross-EU strategy to deal with all aspects of soil protection while taking into account the variety of situations in each country.**

In 2002, the EU launched a new approach to environmental legislation. It started work on seven 'thematic' strategies (see box), including one on soil.

The soil thematic strategy was adopted by the European Commission on 22 September 2006 after a thorough development process involving a broad range of stakeholders — experts from public administrations, agricultural, industrial, environmental and consumer organisations, science and research institutes, the European Environment Agency, the Joint Research Centre and

## A new generation of environmental legislation

In 2005 and 2006, the European Commission adopted seven thematic strategies — on soils, pesticides, air pollution, the marine environment, waste prevention and recycling, natural resources and the urban environment. They are now going through the EU decision-making process (EU Council of Ministers, European Parliament, etc.) in view of being implemented by the Member States.

The thematic strategies are a new, holistic approach to whole topic areas. They contain measures which are destined to be integrated into existing policies and legislation. Only when this is not possible is it necessary to propose new legislation or other appropriate instruments.

They are based on a broad review of existing policy and required several years of scientific and economic analysis together with extensive consultation of stakeholders. They look at pressures and impacts which often cut across those themes. They examine the links between environmental impacts and sectoral policies. They look at a broad range of options and a varied policy mix, including the use of market-based instruments, technology and innovation to deal with the problems identified in a strategic and effective manner. They also take a long-term perspective, setting the framework for EU and Member State action for the next two decades. They propose strategic objectives and explore short- and medium-term measures where appropriate, thus helping to meet the EU's global commitments.

Each strategy takes the form of a package comprising an overall approach towards the theme concerned, presented in a communication that highlights issues and proposes solutions, legislative proposals (for some of them) and an impact assessment.



other Commission services, and many other Europe-wide associations.

The strategy tackles the full range of threats and creates a common framework to protect soil. Its objective is to halt and reverse the process of degradation, 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 comprises a communication laying down the principles of EU soil protection policy, a legislative proposal (a soil framework directive) and an analysis of the environmental, economic and social impacts of the strategy.

Member States are required to identify risk areas for erosion, organic matter decline, compaction, salinisation and landslides, on the basis of common criteria set out in the directive. They will set risk reduction targets for those risk areas and establish programmes of measures to reach them. These measures will vary according to the severity of the degradation processes, local conditions and socioeconomic considerations.

As far as contamination is concerned, the Member States will identify the relevant sites in their national territory. They will establish a national remediation strategy on the basis of an EU-wide definition and of a common list of potentially polluting activities. They will have to create a mechanism to fund the remediation of orphan sites. Anyone selling or buying a site where potentially contaminating activity has taken or is taking place will have to provide to the administration and to the other party in the transaction a soil status report.

The directive also addresses the prevention of diffuse contamination by limiting the introduction of dangerous substances into the soil. Member States are also required to limit sealing, for instance by rehabilitating brownfield sites, and mitigate its effects by using construction techniques that preserve as many soil functions as possible.

#### **Fact 4: The soil strategy is the first stage in the development of a proper soils policy in the European Union.**

Once adopted by the Council and the European Parliament, the soil framework directive will have to be transposed into the national legislation of the Member States. The Commission will facilitate the exchange of information and good practice between Member States and encourage active public participation, especially on the part of regional and local governments, agriculture, industry and civil society.

Through the soil strategy, the Commission is establishing a framework based on common EU-wide principles and objectives to address the different facets of soil degradation. It will be an obligation for the Member States to identify where the problems occur, but they are free to decide what to do, and to what extent, in order to address these problems.

Soil is not the only beneficiary of the strategy. Other environmental media such as water, air and nature will also be improved as a result. Land users will benefit from a soil which can better perform the economic functions they expect and the environment in general will benefit from the ecological services that a healthy soil provides.



#### **Further reading**

**Soil atlas of Europe:** more than 20 years of collaboration between European soil scientists has resulted in the publication by the European Commission of the first ever Soil atlas of Europe — a reference work for EU citizens and decision-makers, with an introduction to soils aimed at the general public and 128 pages of colourful maps, tables, figures and graphs. Currently available in English only, it is planned to be translated in other EU languages in the course of 2007. To order a hard copy of the Soil atlas of Europe (EUR 25), please visit the following Internet address: [http://eusoils.jrc.it/projects/soil\\_atlas/index.html](http://eusoils.jrc.it/projects/soil_atlas/index.html)

**Soil protection — The story behind the strategy:** the purpose of this summary brochure is to describe the process leading to the adoption of the strategy and to summarise its content. It can be downloaded from the following Internet address: <http://ec.europa.eu/environment/soil/pdf/soillight.pdf>

Data and information regarding soils at European level are available at: <http://eusoils.jrc.it/>

The full text of the strategy and other information are available at: <http://ec.europa.eu/environment/soil/index.htm>

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