



Soil: worth standing your ground for

Arguments for the
Soil Framework Directive



The European Environmental Bureau (EEB) is a federation of over 140 environmental citizens' organisations based in most EU Member States, most candidate and potential candidate countries as well as in a few neighbouring countries. These organisations range from local and national, to European and international.

EEB's aim is to protect and improve the environment by influencing EU policy, promoting sustainable development objectives and ensuring that Europe's citizens can play a part in achieving these goals. EEB stands for environmental justice and participatory democracy. Our office in Brussels was established in 1974 to provide a focal point for our members to monitor and respond to the EU's emerging environmental policy.

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The German League for Nature and Environment (DNR) is the umbrella organisation of German conservation and environmental protection organizations. It currently has 95 member organisations which together represent over five million individual members.

The European Policy Department of DNR (German League for Nature and Environment) was established in 1991 in recognition of the increasing importance of EU environmental policy for Europe and Germany. It coordinates the activities of German environmental organizations throughout Europe, establishes contact with other activists within Europe, and influences EU policy. The team informs German environmental protection and conservation organizations about current developments at the EU level through numerous meetings, visitors programs, workshops, and publications. As a member of the umbrella organization European Environmental Bureau (EEB), the European Department closely coordinates its work with Brussels-based environmental organizations.

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Editorial

Europe's soil is under increasing pressure. Soil deterioration affects all member states and costs Europe an estimated €38 billion a year. Despite this, no common policy exists to conserve soil in the EU.

After years of preparations and consultations, on 22nd September 2006 the European Commission set out its proposal for a European Soil Directive. Although receiving support from the European Parliament, the proposal failed to be adopted in the European Council due to opposition from Germany, France, the UK, Austria and the Netherlands.

DNR and EEB believe it is high time for European member states to revise their position on Europe's role on soil protection. Soil is the basis of all our food and fibre production and plays an essential role in water purification, waste decomposition and climate mitigation. It therefore must be regarded as a natural resource of strategic importance which should be protected adequately and used efficiently throughout Europe. The reality however is that Europe is losing this natural asset, thereby jeopardising Europe's food security and its ability to deal with the consequences of climate change.

This brochure summarises the latest scientific evidence and builds the case for a common European approach to soil protection. It also explains the aims of the European Soil Directive, as well as proposes improvements to it.

DNR and EEB hope you enjoy reading this brochure.

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1 Soil provides ecological functions underpinning our daily life and economy

We rarely think about it but the soil beneath our feet has played an essential role in the development of past and current civilisations. By forming a membrane on the Earth's barren bedrock it made life on this planet viable. Nowadays soil is still crucial to our livelihoods as it supplies us with food, fibre and raw materials. It is no surprise that many philosophies and worldviews consider soil as one of the four classical elements alongside air, water and fire.

Main soil functions

- **Soil organic matter stores and releases the nutrients that sustain life on earth.**
- **Micro-organisms in the soil provide a balanced environment where plants can grow and are protected against diseases.**
- **Soil micro-organisms contribute to water purification and help remove pollution and pathogens and even provide some antibiotics.**
- **It serves as a platform for human activities, landscape and heritage, and acts as a provider of raw materials.**
- **Soil harbours a multitude of organisms which makes it an important habitat for biodiversity, and it is a gene pool. Soil biodiversity contributes to the delivery of all soil functions.**





Soil and climate

Second only to the world's oceans and before the earth's vegetation, soil is the largest carbon store on earth, and plays an important and often under-estimated role in climate protection. Seen globally, soil can store twice as much carbon as the atmosphere, and three times as much as the vegetation.

Sustainable use of soil (e.g. organic farming) increases the soil carbon stock while unsustainable use (e.g. intensive farming) leads to carbon loss from soil.

Soil can soak up rainwater as a sponge. Sealing of large urbanised areas as well as compaction by heavy machinery decreases the soil's ability to retain water. This, in turn, contributes to increased flood levels.

2 Sustainable use maintains soil functions

Soil Facts

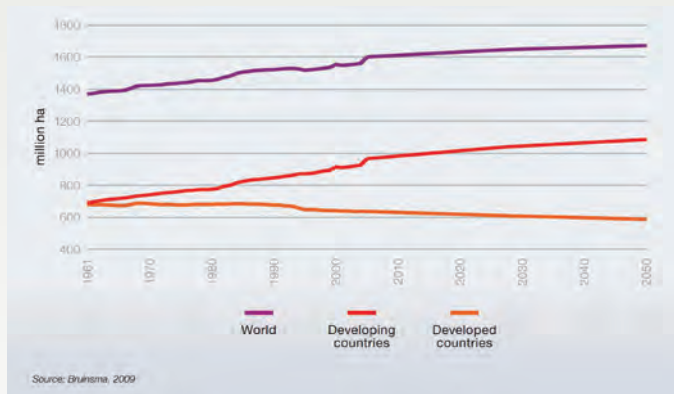
- Soil deterioration in Europe has an estimated cost of €38 billion/year.
- Organic matter is very scarce in 45% of Europe's soils.
- 9% of Europe's surface has been sealed over.
- Compaction threatens 35% of Europe's soil and contributes to flooding.
- Approximately 3 million sites with potentially polluting activities in Europe are identified.
- Soil holds 1/4th of all biodiversity on earth. One hectare of soil can hold up to five tonnes of animal life.
- Widespread use of sustainable agricultural practices could help sequester 50 to 100 million tonnes of carbon per year.

A sustainable use of soil - for example in agriculture - will maintain healthy soils and increase productivity. In contrary, intensive soil use leads to soil erosion, soil compaction, reduced resistance to pests as well as a decline in soil carbon, biological activity, soil biodiversity, and nutrient retention. CO₂ storage or release also depends on the type of use.



Intensive soil use releases carbon dioxide.

Land use in 2050



Demand for cereals, for both food and animal feed uses is projected to reach some 3 billion tonnes by 2050, up from today's nearly 2.1 billion tonnes. This means pressure on soils will increase. Source: FAO, 2009



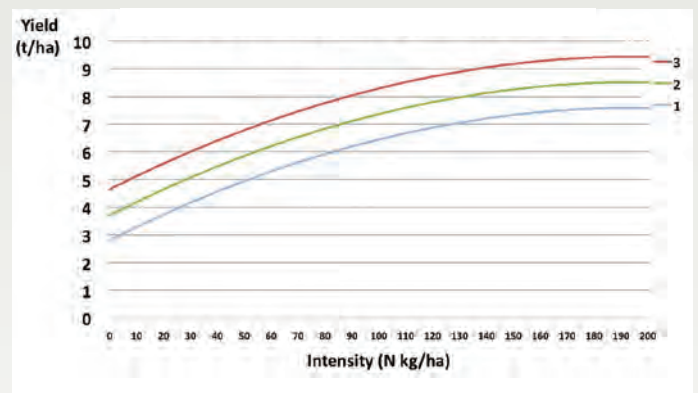
Extensive soil uses, such as grazing or organic agriculture maintain and increase soil carbon.

The 2010 State of the Environment Report by the European Environment Agency concluded that soil degradation is accelerating in many parts of Europe, exacerbated by human activities such as the inappropriate management of arable land, grassland and forest land. Soil is also lost or degraded due to impacts from industrial activities and land use change.

This degradation threatens the ability of soil to provide its essential functions in the future. With a growing world population and increasing production and consumption, larger areas will be cultivated more intensively. Demand for food, bio-energy and other bio-based products will only increase to worsen this situation.

Water purification and waste decomposition provided as free services by soil will also be in greater demand with a larger population, and we will likely become more dependent on soil to store carbon or restore biodiversity.

Production function winter wheat, Sweden



Soil carbon is a natural capital for farmers' economy. The graph shows how the need for fertiliser input decreases with higher soil organic matter content in a wheat field in Sweden. Thus one way to maintain yield is to conserve and increase soil organic matter. Graph courtesy of EU FP 7 research project SOILSERVICE.

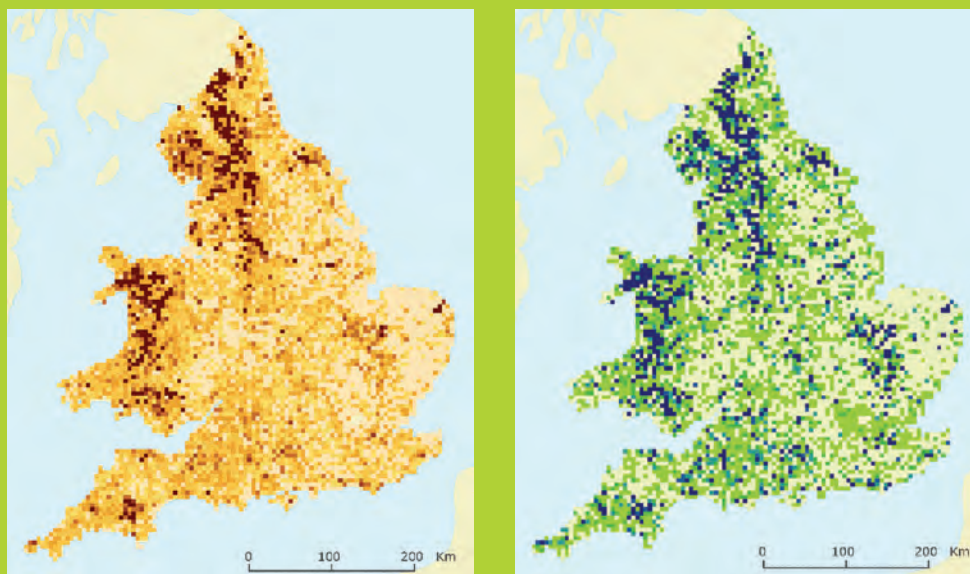
3 Threats to soil

A number of processes can lead to the deterioration of soil.

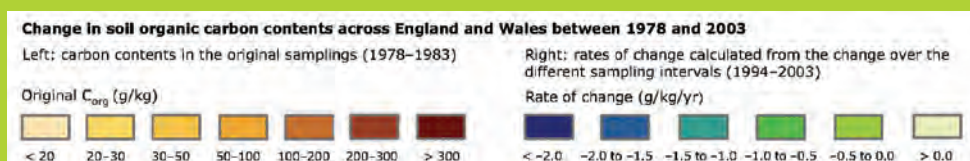
- **Erosion** is a natural geological phenomenon, but nowadays it is exacerbated as a result of unsustainable land management. 16% of Europe's total land area is estimated to be affected by water erosion while wind erosion affects 2%.
- **Loss of organic matter:** Soil Organic Matter (SOM) is the sum of living and dead matter in soil, including plant residues and micro-organisms. It is an extremely precious resource and a major contributor to soil fertility. 45% of Europe's soil contains low or very low levels (<2%) of SOM. This problem is encountered predominantly in southern Europe, but parts of France, the UK, Germany and Sweden are also affected. A loss of 0.1% of carbon from EU soils is equivalent to carbon emissions of 100 million extra cars, or about half the existing EU car fleet.

- **Sealing:** In Europe as a whole, 9% of the soil has been sealed over. In Germany alone, around 100 hectares (or some 140 football pitches) are appropriated each day for housing, roads and industrial use. During the 1990s the sealed area in the EU-15 increased by 6%. These tendencies are predicted to remain stable in the coming decades.
- **Compaction:** Around 35% of the EU's soil is under moderate to severe threat from consolidation. In consolidated soil there is reduced space between the particles of earth. This causes the soil to lose all or part of its ability to store water. Just like soil sealing, compaction contributes to flooding.

Change of soil organic carbon



European agriculture is losing its organic matter. The map shows the loss of soil organic carbon content across England and Wales between 1978 and 2003. Soil organic matter helps mitigate carbon emissions; contributes to soil fertility and is closely linked to soil biodiversity. But perhaps most importantly, organic matter is a key element for high quality agricultural soils which in turn are a must for a competitive, energy efficient and low carbon agriculture. Source: EEA, 2008



- **Soil contamination:** the number of sites in Europe where potentially polluting activities have taken place now stands at approximately three million. These sites cause water and food contamination and human health problems. While some countries have made significant progress, the identification and remediation of contaminated sites in many countries is patchy, with limited improvement.
- **Reduced biodiversity:** As much as five tonnes of animal life can live in one hectare of soil. Greater soil biodiversity contributes to better carbon and nutrient retention, higher SOM and increased pest control.

Improper land use also leads to more tangible threats such as desertification and landslides. Climate change is expected to add to these threats, such as through enhancing erosion, loss of organic matter and desertification. It may also trigger a negative feedback loop that results in more stored carbon being released from soils.



4 Soil and CAP

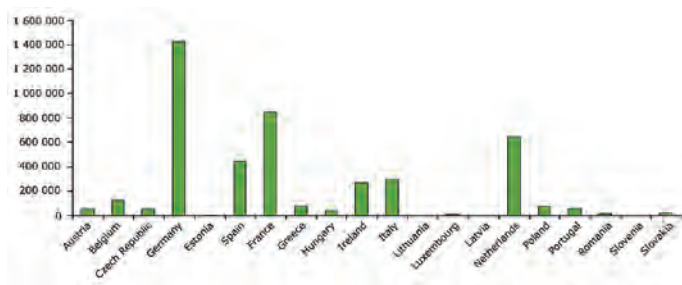
Appropriate agricultural practices (e.g. crop rotation) can maintain and enhance organic matter in the soil and sustain the ecosystem services that good soils can provide. But unsustainable agriculture can accelerate water and wind erosion, drain soil organic matter and cause loss of soil fertility. For example overgrazing by cattle and use of heavy machinery can cause soil compaction, and irrigation can lead to salinisation and water logging.

This all has a profound impact on soil quality and diminishes crop yields. Yearly economic losses in affected agricultural areas in Europe are estimated at around €53 euros per hectare.

Soil organic matter is a farmer's natural economy, but European agriculture is losing its organic matter. Production with a high input of fertilisers, pesticides and energy gives a high yield but also creates a net loss of organic matter. A radical shift in agricultural practices is needed.

The methods and techniques for better soil management in agriculture are well known from studies and pilot projects. The reform of the CAP needs to make these become everyday practice.

Loss of agricultural land



Europe is continuously losing precious productive agricultural land for urbanisation and traffic. The graph shows average annual impact of soil losses due to urbanisation in the EU 25 between 1990 and 2000. The amount of soil sealed over in the EU is equivalent to an estimated loss of more than 4.4 million of tonnes of wheat. This would be enough to feed nearly 18 million people for a year, if they would only eat wheat. Source: EEA, 2010

5 The European Union's soil conservation policy

Different EU policies for water, waste, chemicals, industrial pollution prevention, nature protection, pesticides and agriculture are contributing to soil protection. However, as these policies have other aims and other scopes of action, they are not sufficient to ensure an adequate level of protection for soil in Europe. The proposed Soil Framework Directive addresses these different concerns in a balanced and appropriate manner.

From a 2010 report for the European Union Council, it emerged that the majority of the EU countries (with some reservations) support soil conservation guidelines in general in order to fill a gap in the EU's environmental legislation, and to enable a more integrated approach to soil conservation. At present, only nine EU member states have implemented legal provisions for soil conservation on a national scale.

In September 2006 the European Commission put forward its thematic strategy for soil conservation, including the proposal for a Soil Framework Directive. While the Regional and the Economic and Social Committees and the European Parliament have endorsed the proposal, the EU Council of Environment Ministers in December 2007 under the Portuguese Presidency failed to adopt a common position because of opposition from Germany, the UK, France, Austria and the Netherlands. The attitude of these member states has not changed since then despite several attempts by subsequent presidencies to re-open the discussion.

The main arguments used to refuse the Directive were the following:

- It is incompatible with the subsidiarity principle.
- It demands an excessive amount of bureaucracy.
- The expenses incurred following its implementation would be very high.

As our next chapters show, none of these arguments stand up to scrutiny.

6 The EU's proposed Soil Framework Directive

The Directive aims to establish a common, harmonised approach for the protection and sustainable use of soils throughout Europe. The standard of soil conservation still varies significantly among the individual EU countries: whilst Germany, Denmark, Czech Republic and the Netherlands already have national legislation concerning soil conservation, other EU countries are only just beginning to introduce such regulations. In most of the new member states and the countries bordering the Mediterranean, soil conservation has not been a political priority until now.

According to the Soil Directive, Member States would have to:

- 1 Assess the impact of different sectors (transport, industry, agriculture, etc.) on soil quality and propose measures for the better integration of soil conservation in these sectors.
- 2 Identify and designate areas at risk from soil erosion, decline of organic matter, salinisation, acidification, compaction or landslides. Contaminated sites should be inventoried.
- 3 Draw up their own national programmes to fight these challenges including strategies to combat soil sealing and remediate contaminated sites.
- 4 Collect data on the status of soil according to a harmonised EU approach.

Environmental groups, while welcoming the Directive, criticised the lack of adequately defined, time-bound, EU-wide goals for soil quality (e.g. in the field of soil erosion, soil organic matter content, sealing, contamination, etc.). They argued that the original proposal also gave too much freedom for member states to determine their policies and measures at national level and provided no real motivation for land users to change harmful land use practices.



7 Arguments in favour of an EU Soil Directive

Opponents of the Soil Framework Directive argue, amongst other things, that it will lead to increased bureaucracy, additional costs and meddling. None of these arguments stand up to scrutiny.

1) It is more costly to do nothing

Opponents of the EU's Soil Directive often argue that it would be expensive to implement the Directive. They are right that soil decontamination is expensive. If it is considered to be too expensive, this is an argument in favour of not cleaning up soils, not against a policy on this to be adopted at EU rather than national level.

Nobody however is arguing against the need to clean up contaminated soils. The high costs of cleaning up contaminated sites is in fact an argument in favour of an EU policy, because only when there is an obligation to de-pollute

will there be a preventive effect that will avoid future pollution. Precise indications of the actual level of additional expenditure, which national and regional governments would face, vary significantly because individual interests often sway the estimates.

Moreover it should be pointed out that, in the longer term, the directive's benefits will outweigh its costs by far. If soil degradation is not stopped now by a harmonising EU directive, the subsequent cost to the economy could run into billions. As we have noted, even now soil deterioration already costs the EU €38 billion per year. The comparison of the soil's productivity with the consequences of its destruction brings the Economics of Ecosystems and Biodiversity (TEEB) study to the conclusion that the benefits of cross-border protection measures outweigh the costs, which rise when such measures are not in place.

Without healthy soil neither effective environmental conservation nor long-term food security can be achieved.



2) Harmonisation does not lead to additional effort

Some EU member states fear that an EU Soil Directive would result in more bureaucracy and over-regulation in countries with existing soil regulation.

However, these countries would benefit from their relative progress as regards to existing administrative structures and data collection. This would ease the introduction of the Directive. In Germany, for instance, the condition of the soil is already well documented thanks to national soil legislation created in 1998.

3) EU regulations will only intervene where action is needed

Farmers' associations frequently express fears over inappropriate restrictions being placed on agriculture. The EU Soil Directive considers action to be necessary only when the results of the initial survey and the catalogue of measures in the first analysis indicate that a particular member state cannot guarantee a satisfactory level of soil conservation. Only in such cases would the member state in question be forced to take action.

In addition, reporting on the topic of soil conservation will help to raise awareness amongst the public, politicians and local authorities. This in turn will lead to greater consciousness of the threats to the soil, and to better information about the soil's condition and potential sources of pollution. This will also ensure that the soil plays a greater role in future agreements on climate change.

4) Subsidiarity is no excuse for a lack of solidarity

A further argument is that the Soil Directive is not compatible with the subsidiarity principle. Opponents claim that soil by its nature is a matter of national interest that can be best dealt with at national and regional levels.

However, this misses the point completely as the impacts of soil deterioration are felt, either immediately or with some delay, beyond the borders of the affected country.



Compacted, deteriorated soil which is unable to store rainwater contributes to increased flooding in neighbouring countries. Water pollution and eutrofication also happens as a consequence of soil pollution and is not limited by country borders. Sediment washed away by soil erosion in one country can block dams or damage infrastructure such as harbours in other countries.

European action is also necessary when contaminated soil pollutes the ground water in a neighbouring country. This is the only way in which land users can be better protected from harmful consequences for which they are not responsible.

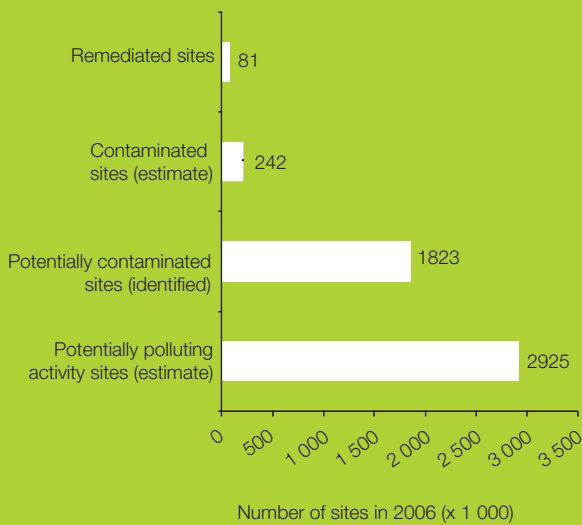
These impacts heavily influence Europe's ability to deal with agreed common challenges such as climate change, food security and avoiding ecosystem collapse. These challenges make us consider soil a common European resource of strategic importance. Therefore harmonised EU action for soil will contribute to long-term security in Europe.

5) Data are needed to clarify certain points

Much essential information on the state of soil is currently missing. This makes it more difficult to conserve soils and to estimate its role from a socio-economic point of view. An EU Soil Directive guarantees that extensive data relating to the soil's CO₂ content and sources of pollution can be collected and analysed. This enables better monitoring of the condition of the soil. The data can be used to improve the soil's condition and for exchanging knowledge.

Two thirds of EU member states still lag behind where soil conservation is concerned. An EU Soil Directive would enable these countries to learn from the experiences of countries with existing legislation such as Germany, the Netherlands, Denmark and the Czech Republic in dealing with legislation, practicalities and the enforcement of measures.

Contaminated sites in Europe



The graph shows the status of identification and clean-up of contaminated sites in Europe in 2006. Remediation of contaminated sites is still a challenge for Europe. The cleaning up would provide an opportunity to export technology and know-how for specialised firms and create jobs. Graph: EEA, 2010

6) Soil conservation creates jobs

According to opponents, a Soil Directive would endanger economic growth as they fear that the regulations for soil conservation could put jobs in jeopardy.

Effective soil conservation guarantees agricultural productivity and thus maintains or even creates jobs. In addition, the Soil Directive requires the drawing up and implementation of soil remediation plans across the EU which provides a unique opportunity to front runner countries to export their expertise and experience in this field, which at the same time creates opportunities for the local economy through, for example, brownfield redevelopment.

7) The member states are responsible for maintaining high standards

The Soil Directive's opponents argue that a too rigid implementation of the EU Soil Directive could lead to national standards being weakened.

In order to implement EU-wide soil conservation, guidelines would be chosen which would allow the member states some room for manoeuvre in their implementation, depending on their national situation. Thus member states would not have to deviate from existing high standards of soil conservation and their own related directives.

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