CIWEM Chartered Institution of Water and Environmental Management

Policy Position Statement

# Protecting and enhancing soils

## Purpose

This Policy Position Statement reviews the importance of soils and the threats which they face. CIWEM supports action to protect and enhance soils, and identifies key actions for policy-makers.

## CIWEM calls for:

1. A European Framework Directive to protect and enhance soils. Current initiatives on soil monitoring, sewage sludge and biowaste are likely to be more successful if tackled as part of a wider integrative framework than if approached piecemeal.
2. Action to improve the evidence base for making policy decisions about soils. Comprehensive inventories of soil types and distribution are required. More research is needed into the threats to soils, the services soils provide and the implications for these of soil degradation.
3. The promotion of, and support for, soil education at all levels, and support for initiatives which improve standards in professional soil science. This will ensure the availability of an active, sustainable professional community with adequate levels of recruitment of high quality young scientists and greater societal recognition of the value of soil science.
4. All public bodies to pay greater attention to soils in their work. They should assess the implications for soils of any activities which they regulate, and the implications for soils of their own operational activities.
5. Land management organisations to promote good practice in soil management. Representative bodies are well-placed to encourage land managers to adopt 'good practice', whether through audits, assurance schemes or codes.
6. The protection of soil types of special value and scientific interest. Rare and threatened soils and their biodiversity merit protection for their own sake, not simply because they support key habitats, or reflect distinct underlying geology.
7. Greater recognition, understanding and protection of soil functions and the role of soils in the provision of Ecosystem Services. Soils are central to the provision of all Ecosystem Services and the maintenance of natural soil processes is therefore critical.
8. The continued protection of 'Best and Most Versatile land' within an integrated approach to planning. Soil protection for food production must be set within the context of the wider environmental benefits derived from soils.

9. A risk-based approach to be applied in identifying and tackling threats to soils. Soils are multi-functional and very diverse in their nature and distribution. Adopting a risk-based approach will help identify the most serious threats to any specific soils.

10. Continued action to improve soil organic matter while protecting soils against contamination. Spreading organic wastes on soils improves soil condition and sequesters organic carbon, but long-term contamination by, for example, heavy metals must be avoided.

11. The continued promotion of incentives to promote beneficial land-use changes. Agri-environment schemes should promote the conversion of land to uses which raise organic carbon levels, reduce erosion, protect buried archaeology, and buffer adjacent habitats.

12. Action to rehabilitate soils which have been contaminated or degraded. Actions could include 'unsealing' soils lost to past development, restoring agricultural soils to semi-natural habitats, or rehabilitating mineral workings as semi-natural habitats.

13. Problems to be tackled at source, working through natural processes. For example, changes in land use to reduce sedimentation should go hand-in-hand with dredging to restore ornamental lakes or with action to clear silt from roads.

CIWEM supports the Cross-compliance Soil Protection Review process. This provides a tool for tackling soil degradation and the consequent environmental impacts.

Continued action is needed to protect soils. Their requirements should be reflected in the policies and actions of all relevant stakeholders, both private and public.

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## Context

Soil is a fundamental and essentially non-renewable natural resource. Soils perform a number of valuable functions, or ecosystem services, for society including nutrient cycling, water regulation, carbon storage, support for biodiversity and wildlife, and providing a platform for food and fibre production and infrastructure. Globally, failure to manage soils in a sustainable way affects the ability of millions of people to feed themselves. Many examples of extensive, long-term environmental damage can be found, whether due to erosion by water or wind, contamination by pollutants, or salinisation through inadequate water management. Soils in the UK continue to be degraded by human activities, such as intensive agriculture, industrial pollution and urban development. Future climate change has the potential to exacerbate these impacts, resulting in further degradation.

Over the last decade, UK policy-makers have given increasing (and overdue) attention to soils. For example: in the Environment Strategy Wales (2006); in the Soil Strategy for England and Code for the Sustainable Use of Soils on Construction Sites (2009); and in the Scottish Soil Framework (2009). Many other organisations are also taking a strategic approach to soils policy. The Defra Natural Environment White Paper (The Natural Choice: securing the value of nature) (June 2011) sees the protection and correct management of soils as integral to its

success. It includes a commitment to "undertake a significant research programme over the next four years to explore how soil degradation can affect the soil's ability to support vital ecosystem services such as flood mitigation, carbon storage and nutrient cycling; and how best to manage our lowland peatlands in a way that supports efforts to tackle climate change. We will use the results of this research to set the direction of future action".

CIWEM welcomes these initiatives and offers this PPS as a contribution to this important work.

## Key Issues

### Soils are important

Soils provide an extensive and impressive range of 'services'. They:

- Support the production of food, fibre and biofuels: delivering food, timber and energy for human use.
- Store and filter water: absorbing and holding rain, reducing peak flows and flooding.
- Protect the environment: absorbing, buffering and filtering potential pollutants.
- Process organic wastes: converting organic wastes to their basic components.
- Conserve biodiversity: supporting rich species assemblages (both above and below ground), and varied surface habitats.
- Preserve cultural features: protecting valuable evidence of past cultures.
- Support construction: providing the physical basis for buildings and infrastructure.
- Provide playing surfaces: healthy soils are critical for outdoor sport and recreation.
- Influence landscapes: combining with the history of land management to create variety.

Policy-makers need to recognise that soils are:

- Multi-functional: relevant to many diverse policy areas.
- Essentially non-renewable: soils can take decades to recover from mis-management.
- Incredibly diverse: more than 300 major soil types are recognised in Europe alone.
- Locally variable: soils often vary at a field scale, as well as at a farm or landscape scale.
- Privately owned: policies need to be in tune with the rights and responsibilities of owners.

### Soils are threatened

The European Commission's Thematic Strategy for Soil Protection (2006) identifies several threats to soils:

- Erosion: Water erosion has been exacerbated by agricultural practices (e.g. winter cereal cropping, the use of tramlines for spraying crops, rearing of outdoor pigs). Wind erosion is also a problem on some sandy and peaty soils, and in some moorland areas.
- Decline in organic matter: Soil organic matter is a major carbon pool. It is closely linked to soil biodiversity, and is an indicator of desertification processes. Perhaps 0.5 per cent of soil organic carbon was lost from arable topsoils in the UK between 1980 and 1995.

- Local and diffuse contamination: Acute contamination remains a problem in many industrial areas. Diffuse contamination is widespread, mostly from atmospheric deposition, but also related to land management, including the use of pesticides, manure and inorganic fertilisers.
- Covering and sealing: Soil is lost through the construction of buildings, roads and other infrastructure.
- Compaction: Some soils are particularly vulnerable to subsoil compaction by machinery, which reduces infiltration rates. Increased run-off can lead to erosion and flooding.
- Decline in biodiversity: Contamination by air-borne pollutants, and modern agricultural practices, are strong influences on the diversity and richness of soil organisms. Changes to soil management practices will also impact on above ground biodiversity.
- Salinisation: Fertility is seriously reduced where soluble salts accumulate in soils (e.g. through irrigation, intrusion of sea water in coastal aquifers, or sea-level rise).
- Flooding and landslides: The threats of flooding and landslides are often linked to soil degradation through erosion, compaction and sealing.

### Soils are now receiving welcome policy attention

The EU is currently seeking to establish a policy framework to protect soil and preserve its capacity to perform its environmental, economic, social and cultural functions. Defra report that the UK has taken the view that, whilst there is strong support for the overall objective of protecting Europe's soils, and agreement that there is a need for action to deal with serious soil degradation in some parts of Europe, the UK already has robust domestic policies in place to protect soils. UK Ministers have called for a different approach to these issues.

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*Note: CIWEM Policy Position Statements (PPS) represents the Institution's views on issues at a particular point in time. It is accepted that situations change as research provides new evidence. It should be understood, therefore, that CIWEM PPS's are under constant review and that previously held views may alter and lead to revised PPS's. PPSs are produced as a consensus report and do not represent the view of individual members of CIWEM.*

## References


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