



Strategy for Soil Protection

Policy Review



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 642317.

Authors

Ruta Landgrebe, Ecologic Institute

Ana Frelih-Larsen, Ecologic Institute

With thanks to:

Alexandra Rossi, ACTeon (Review)

Project coordination and editing provided by Ecologic Institute.

Acknowledgments & Disclaimer

This project has received funding from the *European Union's Horizon 2020 research and innovation programme* under grant agreement No 642317.

Neither the European Commission nor any person acting on behalf of the Commission is responsible for the use which might be made of the following information. The views expressed in this publication are the sole responsibility of the author and do not necessarily reflect the views of the European Commission.

Reproduction and translation for non-commercial purposes are authorised, provided the source is acknowledged and the publisher is given prior notice and sent a copy.

Strategy for Soil Protection

Policy Review

Name/Type of the Legal Act or Policy

The Thematic Strategy for Soil Protection consists of a Communication from the Commission to the other European Institutions ([COM\(2006\) 231](#)), a proposal for a framework Directive ([COM\(2006\) 232](#)), and an Impact Assessment ([SEC \(2006\) 1165](#) and [SEC\(2006\) 620](#)).

After almost eight years of not reaching qualified majority in the Council, the Commission withdrew the proposal for a Soil Framework Directive on 30 April 2014. However, the [Commission indicated that it will remain committed](#) to the objective of the protection of soil and will examine options on how to best achieve this.

Based on the background of this note about the policy process in the EU please include space for the inclusion of subsequent legal Acts (Communication, Directives and regulations) related with the reviewed Type of the Legal Act or Policy.

Please name all regulations and other legal texts relevant for the Legal Act and Policy. Afterwards, please link the text in the template to the identified policy and subsequent regulations and try to be as explicit as possible as to their interaction.

Achieving the objectives of the Thematic Strategy for Soil Protection is of particular importance for agriculture sector, the aquatic environment, protected areas, air quality and climate change mitigation as it yields benefits in all these areas and vice versa. The following EU legal acts are therefore related to the Thematic Strategy for Soil Protection:

- ▶ The seventh Environment Action Programme (EAP):¹ entered into force in January 2014 and will be guiding European environment policy until 2020 (2014–2020). As regards soil protection, the 7th EAP recognises soil degradation as a serious challenge and aims that land is managed sustainably, soil is adequately protected and the remediation of contaminated sites is well in progress in the European Union by 2020. [It commits the EU and its Member States to strengthen efforts to reduce soil erosion](#), increase soil organic matter and to remediate contaminated sites, as well as to enhance the integration of land use aspects into coordinated decision-making involving all relevant government levels, supported by the adoption of targets on soil and on land as a resource, and land planning objectives.
- ▶ The Resource Efficiency Roadmap: the Communication on Roadmap to a Resource Efficient Europe ([COM/2011/0571 final](#)) sets soil and land related milestones to be reached by 2020, and a vision for the structural and technological change needed up to 2050:
 - EU policies take into account their direct and indirect impact on land use in the EU and globally, and keeping on track the rate of land take with an aim to achieve no net land take by 2050;

¹ Issued with the Decision No 1386/2013/EU

- continuously implement the actions needed for reducing soil erosion and increasing soil organic matter, as well as for remedial work on contaminated sites in progress.
- Water Policy:
 - The Water Framework Directive ([2000/60/EC](#)), the Groundwater Directive ([2006/118/EC](#)), the [Nitrates Directive](#) – the aquatic environment is especially sensitive to pollution coming from/through soil. It is therefore necessary to pay particular attention to avoid pollution of surface water and groundwater by taking appropriate soil management measures. The EU [Floods Directive](#) – the promotion of sustainable and integrated flood management in the Floods Directive results in an indirect contribution to the protection of soils mainly by aiming to maximising natural infiltration and retention capacities of soils.
 - ▶ Nature Conservation Policy:
 - The Wild Birds Directive ([2009/147/EC](#)) and the Habitats Directive ([92/43/EEC](#)) – soil is a major element of the terrestrial ecosystems, therefore a good quality of soil contributes significantly to the favourable conservation status of the Natura 2000 sites protected in accordance with the Wild Birds and Habitats Directives.
 - ▶ The Common Agricultural Policy (CAP):
 - Pillar 1 of the CAP – direct payments (cross-compliance and greening requirements): two [Regulations 1306/2013](#) and [1307/2013](#) are of relevance to soil protection, the former of which includes the rules for cross-compliance with the Annex II table laying out the Statutory Management Requirements (SMRs) and the Good Agricultural and Environmental Conditions (GAECs). Regulation 1307/2013 specifies the direct payments for farmers (dependent upon their compliance with the cross-compliance scheme) and includes the new greening requirements under the 2014–2020 programming period.
 - The Pillar 1 of the CAP is relevant to soil protection because the cross-compliance standards include soil provisions which the MS’ adopt as GAECs according to their specific context. There are three specific GAEC issues dedicated to soil in Annex II of the Regulation 1306/2013 for the cross-compliance system (GAEC 4 – minimum soil cover, GAEC 5 – minimum land management reflecting site specific conditions to limit erosion, and GAEC 6 – maintenance of soil organic matter level through appropriate practices including ban on burning arable stubble, except for plant health reasons)²; GAEC 7 – retention of landscape features – is indirectly focused on soil.
 - All three greening requirements are indirectly relevant to soil protection, because the environmentally-friendly farming practices such as crop diversification and maintenance of permanent grassland contribute

² The requirement can be limited to a general ban on burning arable stubble, but a Member State may decide to prescribe further requirements.

positively to soil functionality and health; and the conservation of the areas of ecological interest – contributes to extensive agriculture and in this way contributes to soil quality.

- Pillar 2 – the Rural Development Policy ([EAFRD Regulation, EU, No. 1305/2013](#)): One of the EAFRD objectives – “ensuring the sustainable management of natural resources, and climate action” (Art. 4) – is relevant to soil protection because the measures which incentivise “sustainable management of natural resources, and climate action” (e.g., agri–environment–climate, organic farming) may contribute to more farmers practicing soil–friendly methods of land management and agricultural production.
- There are six priorities which have been determined for rural development in the EU, and the MS must include at least 4 of the 6 in their rural development programmes (RDPs). One of these priorities – Priority 4 “on restoring, preserving and enhancing ecosystems related to agriculture and forestry” – focuses in part on “preventing soil erosion and improving soil management” (EAFRD Reg. No. 1305/2013, Art.4). Another Priority 5 may result indirectly in soil protection as one of the focuses is on “fostering carbon conservation and sequestration in agriculture and forestry”. This would be relevant to soil as it would promote use of methods which increase soil carbon sequestration and building climate resilient agriculture would encourage adaptation methods, such as using cover crops to potentially increase water infiltration for flood prevention and reduced erosion as well as retain soil moisture for drought resistance ([UNEP, 2012](#)).
- ▶ Air Policy: the National Emission Ceilings Directive ([2001/81/EC](#)) sets upper air emissions limits for each Member State for the four pollutants responsible for acidification, eutrophication and ground–level ozone pollution (sulphur dioxide, nitrogen oxides, volatile organic compounds and ammonia). In addition to Community activities, Member States are largely responsible for taking relevant measures in order to comply. The NEC Directive does not consider the protection of soil directly but the measures taken to reduce acidification also contributes to soil health and quality.

Climate change (LULUCF): the [Decision No 529/2013/EU](#) on accounting rules on greenhouse gas (GHG) emissions and removals resulting from activities relating to land use, land–use change and forestry (LULUCF) is of relevance to soil protection. It is because forests and agricultural lands, that currently cover more than three–quarters of the EU territory, naturally hold large stocks of carbon, preventing its escape into the atmosphere. Good practices of farmers and forest owners contribute for securing carbon stored in soils and forests. This contribute at the same time to reduced GHG emissions and to increased soil organic matter and quality of soil in general.

Entry into force

Communication on the Thematic Strategy for Soil Protection (COM/2006/0231 final) was issued on 22.9.2006.

<p>Departments/Units in charge</p>
<p>The Thematic Strategy for Soil Protection: DG Environment, Unit B1: Agriculture, Forests and Soil</p> <p>Role of the Unit B1: Dir. B is responsible for the protection of the natural environment; Unit B1 focuses on soil conservation, forest protection and management and environmental policy aspects of agriculture.</p> <p><u>Contact details of relevant officials</u>: Olazabal C. (Head of Unit), Delsalle J. (Team Leader – Soil protection and sustainable land use), Masson J. (Policy Officer – Soil protection and sustainable land use).</p>
<p>Common Implementation strategy (CIS processes)</p>
<p><u>Commission Expert Group to implement the soil protection provisions of the 7th EAP</u>: following the withdrawal of the legislative proposal for a Soil Framework Directive (COM(2006) 232) in 2014, and as required by the 7th EAP, to reflect with Member States on how soil quality issues could be addressed using a targeted and proportionate risk-based approach within a binding legal framework, the DG Environment established an informal, permanent Expert Group to implement the soil protection provisions of the 7th EAP, composed by experts mandated by Member States to support the Commission in this work (EU, Soil Quality Issues, 2016).</p>
<p>Administrative body handling implementation in MS</p>
<p>The Thematic Strategy for Soil Protection is a Communication from the Commission to the other European Institutions (COM/2006/0231 final) and thus not legally binding (“A Communication is a policy document with no mandatory authority. The Commission takes the initiative of publishing a Communication when it wishes to set out its own thinking on a topical issue. A Communication has no legal effect”).</p>
<p>Main Objective</p>
<p>Section 3.1: “The overall objective is protection and sustainable use of soil, based on the following guiding principles:</p> <p>(1) Preventing further soil degradation and preserving its functions:</p> <ul style="list-style-type: none"> ▶ 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. <p>(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.”</p>
<p>Principles included in the legal text</p>
<p>principles of subsidiarity (section 3.2)</p>

<p>The following principles were mentioned in the proposal for the Soil Framework Directive: precautionary principle (explanatory memorandum), polluter pays principle (preamble 26, Art. 13), subsidiarity principle (explanatory memorandum, Preamble 10), proportionality principle (explanatory memorandum, preamble 10), prevention principle (preamble 20), principle of sustainable development (preamble 35).</p>
<p>Other objectives/Key concepts/key elements of the legislation</p>
<p>The Thematic Strategy for Soil Protection is built around four key pillars to meet the goals of the Thematic Strategy:</p> <ol style="list-style-type: none"> 1. Legislation: binding framework legislation on protection and sustainable use of soil is a principal aim of the Strategy. The Commission aims with it to establish a targeted policy to close the gap of missing binding legislation on soil protection and ensure comprehensive soil protection. 2. Integration: integration of soil protection in the formulation and implementation of national and Community policies such as agriculture, regional development, transport and research have a significant impact on soil. Therefore, soil protection needs to be further integrated in other policy areas. 3. Research: closing the current recognised knowledge gap in certain areas of soil protection through research supported by Community and national research programmes is important for further effective soil protection policy development. The previous Seventh Framework Programme (2007–2013) and the current Horizon 2020 (2014–2020) work programme covers research on soil functions as part of priority areas (Horizon 2020 – priority area on ‘Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bio–economy’). 4. Awareness–raising: increasing public awareness of the need to protect soil is important to change the perception, and consequently the behaviour of the public with regard to soil and its protection.
<p>Terminology</p>
<p>“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.” Defines degradation processes and threats of soil, including: erosion, decline in organic matter, local and diffuse contamination, sealing, compaction, decline in biodiversity, salinisation, floods and landslides</p>
<p>Derogations</p>
<p>No, not a legal act.</p>
<p>Types of management measures</p>
<p>Voluntary: research, integration, awareness–raising</p>
<p>Spatial coverage</p>

The Thematic Strategy for Soil Protection addresses all soil (types) in EU.

The proposal for a framework Directive (COM(2006) 232) introduced ‘areas at risk’ to be delineated by Member States to five major soil threats (i.e. erosion, organic matter decline, compaction, salinisation and landslides). The proposal further required the MSs to identify contaminated sites.

Reporting units – what are the specific transposition requirements

Member States

Management unit

The Thematic Strategy for Soil Protection does not refer to any ‘operational management unit’ as such. The Thematic Strategy for Soil Protection addresses all soil (types) in EU. The proposal for a framework Directive (COM(2006) 232) introduced ‘areas at risk’ to be delineated by Member States to five major soil threats (i.e. erosion, organic matter decline, compaction, salinisation and landslides). The ‘risk areas’ are the areas in the national territory of the Member States, defined at the appropriate level, ‘where there is decisive evidence, or legitimate grounds for suspicion, that one or more of [...] soil degradation processes has occurred or is likely to occur in the near future’. To ensure a coherent and comparable approach in different Member States, the identification of risk areas should be based on a common methodology, which includes elements known to be driving forces for the various degradation processes (common elements for the five soil threats are provided in Annexes I–V). In the identified ‘risk areas’, Member States should take measures to prevent further soil degradation. Such ‘risk areas’ shall be made public and reviewed at least every ten years. The proposal further required the MSs to identify contaminated sites.

Key planning steps

The Thematic Strategy for Soil Protection established a ten-year work program for the European Commission, and foreseen the following ‘next steps’:

- ▶ To develop calls for research projects to support policymaking in line with the objectives of the Thematic Strategy;
- ▶ To incorporate in decision-making any new knowledge acquired on soil biodiversity from 2006 onwards;
- ▶ To review the Sewage Sludge Directive in 2007, and to ensure that maximum benefit is gained from the reintroduction of nutrients while further limiting the release of dangerous substances into the soil;
- ▶ To review the Integrated Pollution Prevention and Control (IPPC) Directive in 2007 to strengthen its soil protection and contamination prevention aspects, in particular focusing on harmonisation of the basic obligation to avoid any pollution risk, returning the sites of IPPC installations to a “satisfactory state”, and periodically monitoring soil on the sites;
- ▶ To monitor whether the need to protect soil is adequately taken into account in the Rural Development Plans for 2007–2013, and onwards;

- ▶ To check the contribution made to soil protection by the minimum requirements for good agricultural and environmental condition (GAEC) defined by Member States in accordance with Art. 5 and Annex IV of Regulation 1782/2003;
- ▶ To initiate activities to develop best practices to mitigate negative effects of sealing on soil functions in 2007;
- ▶ To 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 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;
- ▶ To 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;
- ▶ To 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;
- ▶ To 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;
- ▶ To ensure integration of soil protection aspects in product policy to prevent contamination of soil; and
- ▶ To 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.

Timelines

The Thematic Strategy for Soil Protection set a frame for soil protection in the EU and established a ten-year work program for the European Commission. Approximately five years after the adoption of the Soil Thematic Strategy, on 13 February 2012, the European Commission published a policy report on the implementation of the Soil Thematic Strategy and ongoing activities (COM(2012) 46). The report provides an overview of the actions undertaken by the European Commission to implement the four pillars of the Strategy. It also presents the ongoing soil deterioration trend both in Europe and globally, as well as future challenges to ensure its protection. The Thematic Strategy for Soil Protection foresees that the progress towards meeting its objectives will be evaluated as part of the review of the Sixth EAP.

Integration/coordination issues with other related pieces of legislation

In the Thematic Strategy for Soil Protection, two out of four key pillars considered integration as and coordination issues, i.e.:

- ▶ framework legislation with protection and sustainable use of soil as its principal aim;
- ▶ integration of soil protection in the formulation and implementation of national and Community policies;

(1) A proposal for the framework legislation for soil (as proposed in the Thematic Strategy for Soil Protection) refers to other numerous issues and pieces of legislation. It proposes that programmes of measures could 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;
- ▶ measures under the river basin management plans for the Water Framework Directive;
- ▶ flood risk management plans;
- ▶ national forest programmes and sustainable forestry practices and forest fire prevention measures;
- ▶ sewage sludge.

(2) Under the integration aspects, the Thematic Strategy for Soil Protection refers to community policies, inter alia, agriculture, regional development, transport and research, which have a significant impact on soil. It states that soil protection will need to be further integrated in other policy areas, if the goals of this strategy are to be met, and refers to:

- ▶ Sewage Sludge Directive: review the Sewage Sludge Directive in 2007 to ensure that maximum benefit is reaped from the reintroduction of nutrients while further limiting the release of dangerous substances into the soil;
- ▶ IPPC Directive: review the Integrated Pollution Prevention and Control (IPPC) Directive in 2007 to strengthen its soil protection and contamination prevention aspects;
- ▶ CAP – rural development: monitor whether the need to protect soil is adequately taken into account in the Rural Development Plans for 2007–2013;
- ▶ CAP – cross-compliance: check the contribution made to soil protection by the minimum requirements for good agricultural and environmental condition defined by Member States in accordance with Art. 5 and Annex IV of Regulation 1782/2003,
- ▶ Soil sealing: initiate activities to develop best practices to mitigate negative effects of sealing on soil functions in 2007;
- ▶ Climate change: address the interaction between soil protection, climate change and rural development so that policies in this areas are mutually supportive;
- ▶ WFD: 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;
- ▶ Marine Environment: 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;
- ▶ Product policy: integration of soil protection aspects in product policy to prevent contamination of soil;

- ▶ International commitments: 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.

The Thematic Strategy for Soil Protection does not indicate in this list the EU [Floods Directive](#) as it was issued one year later in 2007. The promotion of sustainable and integrated flood management in the Floods Directive results in an indirect contribution to the protection of soils mainly by aiming to maximising natural infiltration and retention capacities of soils. In addition, EU promotes the [development of Natural water retention measures](#). They are measures that aim to safeguard and enhance the water storage potential of landscape, soil, and aquifers, by restoring ecosystems, natural features and characteristics of water courses and using natural processes. In addition, the third key pillar ‘Research’ refers to soil biodiversity aiming to get a better understanding of the function of biodiversity as an environmental service, and refers to: the Convention on Biological Diversity and the Forest Focus Programme. The work programme of the current EU Research and Innovation programme – Horizon 2020 (2014 to 2020) consider issues on sustainable use of soil to be more important and foresees a funding for soil-related research projects. This should thus ensure a progress in research and increased knowledge on different aspects of soil protection.

Coordination issues with the EU Biodiversity Strategy

The activities of integration of soil aspects into other policy areas foreseen to meet the goals of the Thematic Strategy for Soil Protection refer to many EU policies that contribute to maintaining and enhancing ecosystems and their services thus directly affect the target 2 of the EU biodiversity strategy. (See point 7.1 above). In addition, soil biodiversity directly contributes to the target 2.

Relevance to ecosystems/habitats?

Ecosystems are addressed in general terms. Though soil/land plays a central role in the terrestrial ecosystems. Soil is a habitat. The three major ecosystem groups, according to the MAES typology, terrestrial freshwater and marine can be impacted by the goals of the Thematic Strategy for Soil Protection, though this is not explicitly stated in the Communication. Terrestrial ecosystems are directly addressed as land/soil is a key building component of them. The freshwater and marine ecosystems are indirectly impacted by the Thematic Strategy for Soil Protection. Certain measures aiming at protection and sustainable use of soil also contribute to reduction of pollution to water ecosystems. Such measures contribute to achieving the goals of the water related legislation such WFD, Nitrates Directive and Thematic Strategy on the Protection and Conservation of the Marine Environment. Aquatic Biodiversity is not mentioned in the Thematic Strategy for Soil Protection. The Strategy states that soil not performing its broad range of functions and services to ecosystems and humans, results in loss of soil fertility, carbon and biodiversity, lower water-retention capacity, disruption of gas and nutrient cycles and reduced degradation of contaminants.

Drivers

The Thematic Strategy for Soil Protection states that soil degradation in Europe is driven or exacerbated by human activity such as inadequate agricultural and forestry practices, industrial activities, tourism, urban and industrial sprawl and construction works. Drivers which the legal act/policy address: agricultural and forestry sectors, industry, tourism, urbanisation and industrialisation, construction works. The Thematic Strategy for Soil Protection does not introduce any indicators; and there is no any official guidance document on indicators yet. Nevertheless, most relevant could be the [agri-environmental indicators](#) used at operational level within the EU statistical system EUROSTAT (see driving forces indicators, such as: mineral fertiliser consumption, consumption of pesticides, irrigation, energy use, land use change, cropping patterns, livestock patterns, soil cover, tillage practices, manure storage, intensification/ extensification, specialisation, and risk of land abandonment).

Pressures

The Thematic Strategy for Soil Protection does not define pressures for soil.

Pressures determine changes in the state of soil resources and result in soil threats, such as erosion, decline in organic matter, local and diffuse contamination, sealing, compaction, decline in biodiversity, salinisation, floods and landslides (as identified in the Thematic Strategy for Soil Protection). A combination of some of these threats can ultimately lead to desertification in arid or sub-arid climatic conditions. Examples of pressures for certain soil threats:

- ▶ For soil erosion: intensive agricultural activities, monocropping, intensive use of artificial fertilisers, etc.
- ▶ For soil sealing: expanding urban areas, road infrastructure, etc.

The Thematic Strategy for Soil Protection does not introduce any indicators; and there is no any official guidance document on indicators yet. Nevertheless, most relevant could be the [agri-environmental indicators](#) used at operational level within the EU statistical system EUROSTAT (see the pressures and risks indicators, such as: gross nitrogen balance, risk of pollution by phosphorus, pesticide risk, ammonia emissions, greenhouse gas emissions, water abstraction, soil erosion, genetic diversity, high nature value farmland, renewable energy production).

Assessment of Environmental State

The Thematic Strategy for Soil Protection states that soil is subject to a series of degradation processes or threats, including: erosion, decline in organic matter, local and diffuse contamination, sealing, compaction, decline in biodiversity, salinisation, floods and landslides. These soil threats cover all three parameters: physical (e.g. erosion, sealing, compaction, floods and landslides), chemical (e.g. decline in organic matter, local and diffuse contamination, salinisation) and biological (e.g. decline in biodiversity).

Some datasets related to soil threats as they have been identified by the Thematic Strategy for Soil Protection are available under the Joint Research Centre, European Soil Data Centre (ESDAC) For example:

- ▶ For salinisation: salinisation is the process that leads to an excessive increase of water-soluble salts in the soil. The accumulated salts include sodium (Na⁺), potassium (K⁺), magnesium (Mg²⁺) and calcium (Ca²⁺), and chloride, (Cl⁻);
- ▶ For soil erosion by water: soil loss rate (t ha⁻¹ yr⁻¹);
- ▶ For [topsoil soil organic carbon](#) (LUCAS): topsoil organic carbon content (g C kg⁻¹).

The Thematic Strategy for Soil Protection does not introduce any indicators; and there is no any official guidance document on indicators yet. Nevertheless, most relevant could be the [agri-environmental indicators](#) used at operational level within the EU statistical system EUROSTAT (see the state/impact indicators, such as: *soil quality, water quality – nitrate pollution, water quality – pesticide pollution, landscape – state and diversity*).

Assessment of Status

The Thematic Strategy for Soil Protection describes the ‘state’ of Europe’s soils, identifying soil degradation as a serious problem in Europe. It states that anthropogenic pressures drive the degradation of soil and have a negative impact, preventing the soil from performing its broad range of functions and services to humans and ecosystems. The results include the loss of soil fertility, carbon and biodiversity, lower water-retention capacity, disruption of gas and nutrient cycles and reduced degradation of contaminants. The Thematic Strategy indicates that soil degradation processes vary considerably among Member States, including different threats to soil (as they have been identified in the Thematic Strategy for Soil Protection), which have different degrees of severity. Even though, soil degradation is an issue all over the EU. The [2010 Status of the Environment Report of the European Environment Agency \(EEA\)](#) demonstrates that soil degradation is increasing.

The further reports describing the state of Europe’s soils include, for example:

- [Guidelines on best practice to limit, mitigate or compensate soil sealing](#) (European Union, 2012)
- [Risk Assessment Methodologies of Soil Threats in Europe](#). Status and options for harmonization for risks by erosion, compaction, salinization, organic matter decline and landslides.

However, the overall objective of the Thematic Strategy for Soil Protection is qualitative: ‘protection and sustainable use of soil, by preventing further soil degradation and preserving its functions, and restoring degraded soils to a level of functionality consistent at least with current and intended use’. Concrete environmental objectives would have been the responsibility of the Member States, if the binding legislation (the Soil Framework Directive), proposed together with the Thematic Strategy for Soil Protection would have come into force.

Some datasets related to soil threats as they have been identified by the Thematic Strategy for Soil Protection are available under the Joint Research Centre, European Soil Data Centre (ESDAC) For example:

- For [salinisation](#): salinisation is the process that leads to an excessive increase of water-soluble salts in the soil. The accumulated salts include sodium (Na⁺), potassium (K⁺), magnesium (Mg²⁺) and calcium (Ca²⁺), and chloride, (Cl⁻);
- For [soil erosion by water](#): soil loss rate (t ha⁻¹ yr⁻¹);

- For [topsoil soil organic carbon](#) (LUCAS): topsoil organic carbon content (g C kg⁻¹).

Data

1. Joint Research Centre, European Soil Data Centre (ESDAC): The European Soil Data Centre has exploited in detail the threats to soil as they have been identified in the Thematic Strategy for Soil Protection. <http://esdac.jrc.ec.europa.eu/content/esdac-themes>
2. EUROSTAT, [Agri-environmental indicators](#) (AEIs)

Funding

The report presenting the implementation of the Soil Thematic Strategy and ongoing activities ([COM\(2012\) 46](#)) lists the following activities carried out to implement the Strategy:

- EU funded information and training events, and specific soil deliverables for the rotating Presidencies of the Council (e.g. information material on national soil types).
- Supporting research projects, particularly in the areas of landslides, soil sealing, soil functions and their link to biodiversity, the soil carbon and nitrogen cycles (with a focus on peatland restoration), soil fertility, and nutrients recycling in agriculture. (Since the adoption of the Strategy, around 25 research projects have been funded under the [7th Framework Programme for Research](#) – i.e. funded by DG Research).
- The [Commission has proposed](#) that the Cohesion Funds and the European Regional Development Fund should continue to support the regeneration of brownfield sites in the next programming period 2014–2020. In addition, the EU macro-regional strategies include some specific actions on soil protection (particularly on solid waste).

Member States may grant State aid for carrying out soil remediation under the [Environmental aid guidelines](#). However, such aid can be granted only if the ‘polluter pays’ principle is fully respected.

Aspects of soil protection are integrated into the Common Agricultural Policy (CAP), under [European Agricultural Fund for Rural Development \(EAFRD\)](#) and the [European Agricultural Guarantee Fund \(EAGF\)](#): Good Agricultural and Environmental Conditions (GAEC) since the introduction of cross compliance in 2003. Rural development measures, in particular, for example agri-environment-climate schemes which may specifically support soil-protective operations. The "greening payment" of the first pillar of the CAP would improve the situation further, particularly in relation to erosion and soil organic matter.

Agricultural flood-relevant Natural Water Retention Measures (NWRM) can be financed by the European Agricultural Fund for Rural Development (EAFRD), and hence under the Rural Development Program (RDP – Pillar 2 of the CAP). The following table lists the articles of the Rural Development Regulation with relevance for NWRM implementation and gives examples of NWRM included in actions eligible for funding ([CIS WG Agriculture, 2014](#))

Rural Regulation – Articles	Development	Examples of NWRM included in actions eligible for funding
-----------------------------	-------------	---

Art. 17 – Investments in physical assets Artificial wetlands for treatment and reuse of waste water; Reconnection of floodplains; Creation of natural banks; Re-meandering of rivers; Pond restoration and creation; Restoration of terraces

Art. 18 – Restoring agricultural production potential damaged by natural disasters and catastrophic events, and introduction of appropriate prevention actions Flood prevention measures (e.g. afforestation upland to prevent erosion)

Art. 22 – Afforestation and creation of woodlands Establishment of forests and their maintenance – if done in the right place with the right species can maintain stable water tables, protect and improve water quality, and slow down flows (reduce flash floods. Targeted woodland creation to improve water quality and flood alleviation, e.g., afforestation of mountain areas, of reservoir catchments, of riparian areas, and targeted planting in Mediterranean areas for catching precipitation.

Plant tree shelter belts on slopes. Preserve or re-establish native trees along river margins/buffers

Art. 23 – Establishment of agro-forestry systems Establishment of agro-forestry systems in agricultural land and corresponding infrastructures – if done in the right place with the right species can maintain stable water tables, protect and improve water quality and slow down flash floods.

Art. 28 – Agri-environment-climate Wetland creation, restoration and management
Restoration/management/protection of sediment capture ponds; Riparian buffer strips (with vegetation or woodland)

Riparian trees in agricultural landscapes; Soil management practices, tillage methods, diversified crop rotations and patterns, catch crops, cover crops, winter cover crops, nitrogen fixing crops, choice of drought tolerant species or varieties; Planting hedgerows; reintroducing/maintaining terraces

Art. 30 – Natura 200 and Water Framework Directive payments Large buffers, wetlands, conversion of arable to forestry/extensive grassland

Other issues to be aware of relevant for AQUACROSS?

Soil Thematic Strategy remains a soft instrument, i.e. with no regulatory powers. The 7th EAP is now being used by DG Environment to push the soil protection agenda forward. It's important to keep the 7th EAP in mind, even though it is not included in the directory. It has a stronger formal weight than the Soil Thematic Strategy at the moment.

About AQUACROSS

Knowledge, Assessment, and Management for AQUATIC Biodiversity and Ecosystem Services across EU policies (AQUACROSS) aims to support EU efforts to protect aquatic biodiversity and ensure the provision of aquatic ecosystem services. Funded by Europe's Horizon 2020 research programme, AQUACROSS seeks to advance knowledge and application of ecosystem-based management (EBM) for aquatic ecosystems to support the timely achievement of the EU 2020 Biodiversity Strategy targets.

Aquatic ecosystems are rich in biodiversity and home to a diverse array of species and habitats, providing numerous economic and societal benefits to Europe. Many of these valuable ecosystems are at risk of being irreversibly damaged by human activities and pressures, including pollution, contamination, invasive species, overfishing and climate change. These pressures threaten the sustainability of these ecosystems, their provision of ecosystem services and ultimately human well-being.

AQUACROSS responds to pressing societal and economic needs, tackling policy challenges from an integrated perspective and adding value to the use of available knowledge. Through advancing science and knowledge; connecting science, policy and business; and supporting the achievement of EU and international biodiversity targets, AQUACROSS aims to improve ecosystem-based management of aquatic ecosystems across Europe.

The project consortium is made up of sixteen partners from across Europe and led by Ecologic Institute in Berlin, Germany.

AQUACROSS PARTNERS

Ecologic Institute (ECOLOGIC) | Germany

Leibniz Institute of Freshwater Ecology and Inland Fisheries (FVB-IGB) | Germany

Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization (IOC-UNESCO) | France

Wageningen Marine Research (WMR) | Netherlands

University of Natural Resources & Life Sciences, Institute of Hydrobiology and Aquatic Ecosystem Management Austria

Fundación IMDEA Agua (IMDEA) | Spain

Universidade de Aveiro (UAVR) | Portugal

ACTeon – Innovation, Policy, Environment (ACTeon) | France

University of Liverpool (ULIV) | United Kingdom

University College Cork, National University of Ireland (UCC) | Ireland

Royal Belgian Institute of Natural Sciences (RBINS) | Belgium

Stockholm University, Stockholm Resilience Centre (SU-SRC) | Sweden

Danube Delta National Institute for Research & Development (INCDDD) | Romania

Eawag – Swiss Federal Institute of Aquatic Science and Technology (EAWAG) | Switzerland

International Union for Conservation of Nature (IUCN) | Belgium

BC3 Basque Centre for Climate Change (BC3) | Spain

Contact Coordinator

aquacross@ecologic.eu

Duration

Dr. Manuel Lago, Ecologic Institute
1 June 2015 to 30 November 2018

Website

Twitter

LinkedIn

ResearchGate

<http://aquacross.eu/>

[@AquaBiodiv](https://twitter.com/AquaBiodiv)

www.linkedin.com/groups/AQUACROSS-8355424/about

<https://goo.gl/lcdtZC>