



**EJP SOIL**  
European Joint Programme

**Towards climate-smart sustainable management of  
agricultural soils**

**SCALE**

Managing Sediment Connectivity in Agricultural Landscapes for reducing water  
Erosion impacts

**Deliverable WP1-D2**

**Report on implementation of soil erosion and  
mitigation strategies in national legal standards**

Due date of deliverable: M24 (January 2022)

Actual submission date: 30.06.2023

## GENERAL DATA

Grant Agreement: 862695

Project acronym: SCALE

Project title: Managing Sediment Connectivity in Agricultural Landscapes for reducing water Erosion impacts

Project website: [www.scale-ejpsoil.eu](http://www.scale-ejpsoil.eu)

Start date of the project: February 1<sup>st</sup>, 2021

Project duration: 36 months

Project coordinator: Elmar M. Schmaltz (BAW)

**DELIVERABLE NUMBER:** WP1-D2  
**DELIVERABLE TITLE:** Report on implementation of soil erosion and mitigation strategies in national legal standards  
**DELIVERABLE TYPE:** Report  
**WORK PACKAGE N:** WP5  
**WORK PACKAGE TITLE:** State-of-the-art: Connectivity in soil erosion modelling and policy  
**DELIVERABLE LEADER:** AU  
**AUTHORS:** Martin Hvarregaard Thorsøe, Goswin Heckrath  
**SCALE CONTRIBUTORS:** AIS, AU, BAW, BFW, CREA, CSIC, INRAE, IUNG, LUKE, SupAgro, ULBF, UNIPA, VPO  
**ACKNOWLEDGEMENTS:** Thank you to all respondents to the survey



## Table of Contents

Introduction.....	4
Methods and data .....	5
2.1 Survey design and distribution.....	5
2.2 Data analysis.....	5
3. Results .....	6
3.1 Standards of Good Agricultural and Environmental Conditions .....	6
3.1.1 GAEC 4 – Buffer strips.....	6
3.1.2 GAEC 5 – Management of tillage, reduction of the risk of degradation and soil erosion.....	6
3.1.3 GAEC 6 – Minimum Soil Cover.....	7
3.1. 4 GAEC 8 – Non-productive Areas.....	7
3.2 Additional mandatory or voluntary mitigation measures.....	14
3.2.1 Incentives and implementation practice.....	14
4. Concluding remarks.....	22
References.....	23
Appendix 1: Survey distributed to European contacts within ministries.....	24



## Introduction

Within the European Union, soil erosion by water is one of the major threats to soils causing a negative impact on soil ecosystem services, crop production, drinking water and carbon stocks (Panagos et al., 2015). Soil erosion is particularly perceived as a major soil threat in the southern and central parts of Europe (Thorsøe, 2021). However, field observations and modelling exercises (e.g. Cerdan et al., 2010; Onnen et al., 2019; Räsänen et al., 2023) also rank parts of Northern Europe as vulnerable to water erosion where off-site effects of water erosion contribute considerably to the deterioration of surface water quality (Ulén et al., 2012). Further, future water erosion is projected to increase by 13-23% due to climate change, particularly in countries that previously have experienced comparably low soil erosion rates, including Denmark, France and the Netherlands (Panagos et al., 2021). Soil erosion by water is thus an important policy concern reflected in the EU soil strategy (EC, 2021), and a targeted use of conservation measures is needed to mitigate the erosion risk (Cerdà et al., 2018; Stavi & Lal, 2015).

This report presents the results of a European wide survey conducted for assessing how the risk of water erosion on farmland and concomitant off-site effects driven by hydrological connectivity in landscapes is addressed in the national CAP strategic plans (2023-27). The aim of the survey was to build a Europe-wide inventory of measures for mitigating water erosion that could serve as inspiration to and facilitate exchange of experiences among policymakers on erosion control. The report is based on a survey of measures and instruments for erosion control that are in place in different countries.

As a part of the Common Agricultural Policy (CAP), EU Member States (MS) are required to devise a national CAP Strategic Plan, in which they outline how the EU funding for the agricultural sector will be allocated. Whereas previously the CAP was designed as a fairly generic program with comparable requirements and opportunities across MS, CAP 2023-27 was designed with greater creative freedom which gave each MS options to decide on how funding should be allocated (New Delivery Model). To ensure some comparability and guarantee that funds are spend on ensuring national compliance with EU acquis, the CAP Strategic Plans should be based on a thorough assessment of what must be done, based on a strengths, weaknesses, opportunities and threats (SWOT) analysis of their territory and agri-food sector. By December 2022, CAP strategic plans for all MS were finally approved by the commission constituting the basis for financial support of the agricultural sector within the EU today. However, the new Delivery Model has resulted in a situation where similar measures are programmed as eco-schemes in some countries and as Pillar-2 measures in others (Runge et al., 2022).

This report is written as a part of the EJP SOIL SCALE project that explores the problem of water erosion on agricultural land, the consequent sediment redistribution in landscapes and the ecologic and economic consequences in a European context. SCALE has conducted this survey to collect systematically information on mitigation measures implemented for reducing potential damages by water erosion. For more information about the EJP SOIL SCALE project see: <https://ejpsoil.eu/soil-research/scale>.



## Methods and data

### 2.1 Survey design and distribution

The survey was designed to explore the content of national and regional erosion mitigation measures implemented as part of the CAP Strategic Plan 2023-27 as well as Statutory Management Requirements (SMR) and other national regulation. The survey fell in two main parts: 1) Provisions implemented for selected GAEC standards; 2) Other mandatory and voluntary measures under EU or national regulation. A transcript of the survey is provided in Appendix 1.

The survey was sent to relevant/competent authorities in all EU Member States that regulate the implementation of corresponding measures to mitigate runoff-induced erosion. Across partner countries of the SCALE project, the survey was distributed by SCALE partners (who facilitated a direct contact with relevant agencies and ministries). Aside from these partner countries, we have tried to gather information of countries beyond the SCALE project, via a list of contact persons who are involved in the domestic implementation of the CAP strategic plans. However, the dataset primarily consists of replies provided by SCALE partners, or contacts of SCALE partners. Since water erosion is considered a critical soil threat across the SCALE partnership, replies from these countries are highly relevant (Thorsøe et al. 2023).

The survey was conducted in 2022, which for some MS was before the CAP Strategic Plans were finally approved. In that case we asked participants to indicate the definition and availability of measures and instruments that were expected. Subsequently, national SCALE partners have assessed and adjusted the content of the tables provided in the report.

**Table 1:** Informants of the SCALE survey on erosion and policy measures in use.

Country	Institution that provided input to the report
Austria	Federal Agency for Water Management Austria (BAW)
Belgium (Flanders)	Government of Flanders/Department of Environment and Spatial Development & Department of Agriculture and Fisheries
Belgium (Wallonia)	Administration
Czechia	MZe
Denmark	Department of Agroecology, Aarhus University
Estonia	Ministry of Rural Affairs
Finland	Ministry of Agriculture and Forestry
France	INRAE
Italy	CREA
Latvia	Ministry of Agriculture
Luxembourg	Unité de contrôle
Spain	Consejo Superior de Investigaciones Científicas – CSIC

### 2.2 Data analysis

The reports from partners include qualitative and quantitative elements. This combination provides different types of information, offering a rich picture on the knowledge on and use of knowledge on sustainable soil management (Creswell, 2013). The qualitative and quantitative data were analysed in an iterative process providing complementary insights. The survey findings appear in tables, while open replies are used to deepen and discuss the insights and to highlight and unfold recurring themes.



The tables containing replies to the closed questions represent an assessment of the national partners regarding the situation in the country or environmental zone based on the data acquired through the survey. We present quantitative elements using descriptive statistics and deliberately do not use advanced statistical models for the analysis as the total number of replies is low (N=12). Additionally, the contextual differences are notable across countries and a statistical analysis would possibly disguise these differences. Furthermore, analysis of the open replies was used to highlight recurrent themes and broaden perspectives of the closed questions. Themes were grouped and regrouped in a process of constant comparison, developing distinct categories that account for the entire data set (Corbin, 1998; Silverman, 2011).

The content of the replies for the open questions differed slightly across national reports; therefore, in this report we have reorganized themes so they are presented in the same discussions, preventing redundancy. Replies to the open questions diverge across countries. Therefore, we refrain from emphasizing the country from where these inputs originate as comments may also apply to a number of other countries.

### 3. Results

The presentation of results falls in two sections. Initially we present the results of the survey with respect to the standards for Good Agricultural and Environmental Conditions (GAEC) and subsequently the various voluntary measures that are in place beyond GAEC.

#### 3.1 Standards of Good Agricultural and Environmental Conditions

Adhering to a series of requirements is the basis for farmers to receive fully direct payments under the CAP. In the following four sections, we focus on the domestic implementation of GAEC 4, GAEC 5, GAEC 6 and GAEC 8, which are the standards that are most relevant to consider with respect to mitigating erosion risk (although other GAECs also may have minor effects, including GAEC 1, GAEC 2 and GAEC 9).

##### 3.1.1 GAEC 4 – Buffer strips

GAEC 4 specifies the need to establish a protective zone around waterbodies. With respect to water erosion, buffer strips reduce hydrological connectivity in landscapes and may function as a sediment trap thus limiting sediment delivery to water bodies during erosion events in the catchment (Stutter et al., 2012; Stutter et al., 2019). Based on the survey, it is clear that buffer strips are implemented quite differently across the surveyed countries. For example, the required width ranges between 1-30 m depending on the type of river system (see table 2). Further, management options and requirements also diverge, whereas the buffer strips in some countries are completely exempted from activities (except for mandatory mowing) in countries such as Belgium (Flanders) and Denmark, in other countries buffer strips are primarily exempted from specific activities such as tillage, and application of phytosanitary measures and fertilizers (e.g. Italy). Water erosion only seems to be taken into account for defining a minimum width of buffer strips in Belgium (Flanders).

##### 3.1.2 GAEC 5 – Management of tillage, reduction of the risk of degradation and soil erosion

GAEC 5 specifies the need to adjust tillage management or adopt other appropriate cultivation techniques to limit the risk of soil degradation, taking into account the slope gradient. While a regional differentiation is implemented in some countries, such as Belgium, Denmark and France, in other countries areas are designated based on local expert knowledge or a simple terrain model (see table



3). While it seems somewhat arbitrary to have a regional differentiation in otherwise homogeneous countries, these differences in regional approach may be caused by differences in data availability or in a desire to minimize the costs of implementation by a targeted use of measures. Various erosion models are used for defining risk categories, but primarily RUSLE-type models. The designated erosion risk areas vary substantially, even between countries with comparable size and environmental conditions. Across countries, there is a substantial difference with respect to the total area affected by mandatory erosion control measures. Likewise, restricted or, conversely, permitted land management activities are also quite diverse based on the assessed erosion risk.

### 3.1.3 GAEC 6 – Minimum Soil Cover

The requirement for minimum soil cover seeks to avoid bare soil in period(s) and areas that are most sensitive to erosion. When the soil is covered by dead or alive vegetation, it becomes less prone to erosion (Carter, 1994; Ebabu et al., 2022; Gyssels et al., 2005). Provisions are in place across the surveyed countries. However, the exact timing of the soil cover requirement varies across countries, although it mostly concerns the winter season (see table 4). Given the climatic variation across countries, this is not surprising.

This GAEC 6 is synergistically connected to GAEC 3, GAEC 5 and GAEC 7. It should be noted that the configuration given to the obligations of GAEC 3, GAEC 5, GAEC 6 and GAEC 7 allows for coordinated action. Through the ban of stubble burning, GAEC 3 facilitates simultaneously pursuing the objectives of GAEC 6, i.e. maintaining minimum soil cover, by retaining crop residues and stubble in fields for a period. GAEC 6 thus exercises an erosion protection function, which is the main objective of GAEC 5. By cultivating a secondary crop until the end of its cycle, compliance with GAEC 7 ensures a minimum continuous soil cover. However, the main objectives of GAEC 7 are to avoid the specialization of pests and pathogens in monocultures as well as the nutrient depletion of soils and to favour the action of telluric microfauna and -flora.

### 3.1.4 GAEC 8 – Non-productive Areas

GAEC 8 requires land users to devote at least 4% of their arable land to non-productive elements including fallow land (on all farms of more than 10 hectares). However, if a farmer commits 7% of their arable land to non-productive areas under an eco-scheme, the share attributed to compliance with this GAEC is limited to 3%. Thus, farmers are given the freedom to decide where on their farms to implement non-productive elements and in addition are provided with an extra incentive to implement the practice beyond minimum requirements.

Table 5 presents an overview of the measures available across EU MS that are implemented to fulfil GAEC 8. The difference in the size and shape of fields as well as the prevalence of landscape features (such as ponds or streams) imply that the area, which is covered by field margins vary across the countries in the survey. This also implies that landscape features will not be equally relevant across all countries. While fallow, ponds, buffer strips, cultural elements and trees are commonly considered eligible non-productive elements, some countries also allow specific features or structures that are not found elsewhere, including terraces in Italy and Spain. These measures are potentially effective in mitigating water erosion and reducing off-site effects by improving soil cover and water infiltration or by creating barriers for surface runoff in critical landscape positions. However, the actual effect will depend greatly on how the measure is placed in the landscape. Although a number of the measures required under GAEC 8 potentially have an effect on erosion risk and sediment connectivity in the landscape, there are no specific provisions in place (such as regulations or teaching programmes) that



encourage implementation of measures in parts of the landscape where they most effectively mitigate erosion risk or off-site effects.

**Table 2:** Specification of domestic implementation of GAEC 4 – Buffer strips

	<b>Required buffer zone width</b>	<b>Vegetation cover</b>	<b>Management options</b>
Austria	3 m in general, 5 or 10 m for those watercourses which do not fulfil the WFD requirements.	No	Mowing
Belgium (Flanders)	1 m crop-free strip (no tillage) 3 m pesticide-free strip, 5 m fertilization-free strip (10 m along slopes and special areas)	No	Mowing, grazing and animal access to water
Belgium (Wallonia)	6 m	No	Mowing
Czechia	0 Pesticides and no fertilizers	Yes	Mowing
Denmark	2 (3) meters	No	Annual mowing required
Estonia	1 m, 10 m or 20 m	Yes	Mowing, grazing and animal access are allowed only under the specific circumstances. Pesticides and fertilizers are not allowed
Finland	at least 3 m wide, natural vegetation or grass planted for hay, no-till	Yes	Pesticides and fertilizers not allowed, but control of very harmful weeds allowed after application to ELY-centre, grass can be re-sown, woody plants should be cut
France	Minimum width of 5 meters	Yes	Only alkaline amendments are allowed. Shallow tilling allowed, ploughing may be permitted (invasive species).
Italy	5 m	No	No phytosanitary measures, fertilizer application or tillage allowed, no removing of grass cuttings
Latvia	3 m for ditches, 10 m for watercourses and water objects	No	All activities are allowed; only use of pesticides and fertilisers is banned
Luxembourg	15 m	Yes	Grazing
Spain	5 m	Yes	Mowing, grazing and animal access to water allowed; no tillage





**Table 3:** Specification of domestic implementation of GAEC 5 – Management of tillage, reduction of the risk of degradation and soil erosion

	<b>Regional differentiation?</b>	<b>Spatial designation</b>	<b>Expected coverage (2023)</b>	<b>Permitted activities</b>
Austria	No	Standardized indicator (slope), in areas with a slope of more than 10%, appropriate agrotechnical techniques must be used	Approx. 24 % of total agricultural area	Four actions available: 1) mulching/no-till, 2) contour farming, 3) strip-till, 4) 5m grassed buffer strip
Belgium (Flanders)	Yes	Potential erosion risk modelled with RUSLE (WaTEM) at parcel level (classes, based on WaTEM)	43.140 ha	Varies, depending on soil erosion risk class
Belgium (Wallonia)	Yes	Modelled with RUSLE model considering soil erodibility, rainfall erosivity and topography (slope length and slope rate)	222.610 ha (permanent grassland, arable lands and permanent cultures)	Varies, depending on soil erosion risk
Denmark	Yes	WaTEM-based soil redistribution modelling, areas with erosion >7.5 t/ha/y are designated high erosion risk.	3.390 ha	Tillage limits on certain dates and soil types, and autumn tillage banned on high erosion risk areas
Estonia	Uncertain	Standardized indicator (slope), in areas with a slope of more than 10%, appropriate agrotechnical techniques must be used	176.300 ha	Contour ploughing, establishing permanent grassland, grasses, minimal tillage, establishing protective strips on the slopes of hills or on the banks of water bodies.
Finland	No	In mainland Finland slope > 15%, in Åland >10% towards the watercourse	700 ha	Natural vegetation, The aim is to reduce soil degradation and reduce the risk of erosion, taking into account the slope gradient. The requirements are the same as for GAEC 4.



France	No	For Permanent culture and arable land in metropolitan France: No tillage on saturated soils. No tillage in the slope direction from December 1 <sup>st</sup> to February 15 on fields with slope > 10%, except along contours or buffer strip >5 m	No data	On slope > 10%: tillage across slope
Italy	No	Average slope gradient higher than or equal 10%	No estimates have been made	Standard on slope > 10%, creation of temporary water furrows maximum 80 m apart. Prohibition of refining and breaking up of the soil (e.g. milling) afterwards ploughing, for a period of 60 consecutive days between 15 September and February 15th. Unauthorized levelling is prohibited.
Latvia	No	Local expert knowledge and LiDAR data	~63.000 ha	Crop or stubble cover in winter period, winter crop or catch crop sowings must be arranged perpendicular to the direction of the slope
Luxembourg	No	Modelling of geospatial data	Entire country	Tillage practice, limited by date and specified interdictions
Spain	No	Plots with average slope gradient higher than 10%	No data	Tillage not allowed in the direction of the steepest slope, except if the actual slope of the plot is levelled by terraces



**Table 4:** Specification of domestic implementation of GAEC 6 – Minimum soil cover

	<b>Areal coverage (2023)</b>	<b>Soil cover requirement</b>	<b>Cover during sensitive periods?</b>	<b>Permitted land uses</b>	<b>Exceptions</b>
Austria	All arable land (1.320.338 ha)	A minimum soil cover between 1.11. and 15.2. applies nationwide for all arable and permanent crop areas. Arable land not used for production must have soil cover during the vegetation period, latest planting 15.5.	80 % of arable land and 50 % of permanent crop land per farm	Arable land: winter or catch crop, leaving crop residues, non-turning tillage. Permanent crop land: greening the tramlines, non-turning tillage, spreading chaff residues or leaving mulch in place.	Fields with sugar beets which are harvested after 15.11 and some vegetables.
Belgium /Flanders	380.000 ha	Minimum soil cover during winter (at least until 31 January).	80% of the farmland acreage	Green cover and catch crops, leaving crop residues in the field.	On plots with a heavy soil texture, namely with a clay or loamy soil, winter ploughing is permitted from 15 October on clay soils and from 1 December on loamy soils. The soil must be kept covered after the harvest of the main crop until the start of ploughing.
Belgium /Wallonia	76 180 ha	Mandatory cover crop from mid-September to 31st of December on all arable lands dedicated to a spring crop within erosion sensitivity classes "Average" to "Very High" (no arable crops allowed in extreme class)	37,7% of the total acreage under Spring crops	Winter crops, permanent crops or cover crops	
Denmark	All arable land	Soil cover required from harvest until 1st February, exemptions on certain soil types and seasons	100 %	Cover crops and residues, grassland	Nurseries

Estonia	No data	From November 1 to March 31.	At least 50 percent of the arable land and permanent crop land.	Winter vegetation: of which 40 % percent are winter crops and catch crops, 10 percent can be filled through stubble or plant residues.	Horticultural producers (30%)
Finland	700 000 ha	All: 31.10-15.3. Set-aside green or covered with straw 30.6.-31.8. (exceptions allowed)	33%	Vegetated fields of no-tillage, no-tillage and reduced tillage and areas with plant residues.	
France	No data	All France, in vulnerable areas minimum 2 months, in non-vulnerable areas 6 weeks during the period September 1- November 30.	73% of the French territory is defined as "vulnerable area".	Catch crops, dense cereal and rape regrowth, mulching (for maize, sorghum and sunflower, and autumn and winter crops	
Italy	No data	Maintaining vegetation cover, for 60 consecutive days between 15.9 - 15.5 or leaving residues of the previous crop in the same period for 60 consecutive days.	All arable land and permanent crops (orchards and vineyards) in the sensitive period	Arable land and permanent crops (orchards and vineyards).	Operations that do not interrupt the coverage are permitted vegetation of the soil or that leave the residues of the previous crop on the soil (for example fissure, ripping, injection or distribution of non-shovelable effluents with low-emission techniques). Identify the period in which soil cover must be guaranteed for 60 days consecutive, within the time interval 15 September - 15 May following, according to the prevailing



					cultivation system and/or the historical trend of rainfall and/or of the pedological characteristics and slope of the soils.
Latvia	No data	Entire country 15.11 until 15.2	65 % in NVZ, at least 55 % in Vidzeme and Latgale regions, and at least 60 % in the rest of Latvia	Arable land and permanent crops	Areas of vegetables, potatoes and beet
Luxembourg	Entire country	It is mandatory in water protection areas to have a soil cover all around the year.	80%	Permanent grassland; Winter crops; Catch crops; Harvest residues	No
Spain	No data	Entire country: Winter crops: harvest-1.9 permanent crops: October - March; fallow: Tillage is not allowed from April to June.	Not specified	All arable lands and permanent crops	In permanent crops the regional authority can authorize the removal of soil cover (water competence)



**Table 5:** Specification of domestic implementation of GAEC 8 – Non-productive areas

	<b>Eligible non-productive elements</b>
Austria	Cairns, ditches, fields margins, patches or parcels, buffer strips, hedgerows and trees, fallow, small ponds, stonewalls, cultural features
Belgium (Flanders)	Hedges, wooded strips or trees in line, field copses, ponds, ditches, land lying fallow, buffer strips and field margins
Belgium (Wallonia)	Bank, ditch, hedge and tree plantations, fallow, ponds, mowed or grazed herbaceous strip, AECM cereals on foot, AECM herbaceous strip (several types)
Denmark	Fallow, field margins, small biotopes, shrubs, cultural features.
Estonia	No data
Finland	Ditches, individual trees, small stands, islets, rock mounds and fallow
France	Hedges and trees, copses, ponds, non-masonry ditches, field margins, fallow land, cultural features, nitrogen fixing crops and catch crops
Italy	Fallow land, buffer strips and grassed strips, ditches, hedges and trees, hydraulic-agricultural systems and copses in fields, ponds, terracing, low walls, isolated and monumental trees.
Latvia	Cairns, ditches, buffer strips, hedges and trees, fallow, biodiversity islands, ponds
Luxembourg	Buffer strips, hedges and trees, groves, fallow, ponds, cairns, reed beds
Spain	Buffer strips, cairns, cultural elements, hedges and trees, fallow, ponds and lagoons, vegetation islands, rock outcrops, creeks, streams, terraces

### 3.2 Additional mandatory or voluntary mitigation measures

In the following, we present results about additional mandatory or voluntary mitigation measures that are implemented beyond GAEC standards under EU or national schemes. Initially, we asked respondents to indicate additional mitigation measures and specify if these are implemented on a mandatory and/or voluntary basis (see table 6).

With respect to agronomic measures, requirements and voluntary schemes are in place across most countries when it comes to no-till and perennial crops, cover crops and soil cover in periods of high-intensity rainfall or permanent grassland (see table 7). Aside from this, a range of voluntary measures is in place across Italy, Finland, Luxembourg and Austria.

Belgium (Flanders), Denmark, France and Italy offer various support schemes for land use changes, and across all countries voluntary schemes are in place supporting transition of agricultural land. Alternative land uses include forest, sedimentation dams, constructed wetlands (also available in Finland) and temporary ditches, although temporary ditches are unavailable in Denmark and France (see table 8).

Buffer strips beyond what is already required under GAEC standards are also available in a number of countries (see table 9). While riparian buffer strips are mandatory across some regions, buffer strips can be established in different ways on a voluntary basis. However, for most countries the farmer has the opportunity to implement the buffer strip as they see fit. In some countries, the use of buffer strips is targeted to a sensitive aquatic area, typically due to the risk of phosphorus transfer to the aquatic environment causing eutrophication. Hence, typically buffer strips are not implemented to safeguard arable land against erosion, but rather to prevent off-site damage.

#### 3.2.1 Incentives and implementation practice

Incentives and implementation practice are also crucial aspects in ensuring that measures are implemented in the most effective way across countries. Without proper incentives, farmers will not

install measures; and without proper advice and guidance, measures may not be implemented at locations where they are most effective in mitigating erosion risk (Carter, 2018).

With respect to the economic incentives that are offered to farmers for adopting measures, it appears that the voluntary measures funded under CAP Pillar II (e.g. in Italy it is reported agro-environmental climate measures 3, 4, 5 and 6) is the most commonly used source to provide a payment to farmers, and eco-schemes from the CAP Pillar I are employed to a lesser degree. While Denmark, Belgium Flanders, and Finland use a combination of the two pillars of the CAP, Belgium Flanders make also use of municipal funds. However, in general, public funding beyond the CAP or other sources of private funding is not in use when it comes to provide farmers with incentives towards the uptake of erosion mitigation measures.

Interestingly, there are only few examples of measures that are designed deliberately to mitigate erosion risk, with the exceptions of some of the measures in Belgium, Austria, and Luxemburg (see table 11). Besides, only few measures are tied to a particular erosion risk area, with the exception of buffer strips and/or agronomic measures in Belgium, Austria and Denmark (see table 12). This is unfortunate as it may imply that measures could be placed where they are most convenient for the farmer, but not where they have the biggest effect with respect to mitigating erosion risk.

It is also clear from the survey that with a few exceptions (Austria, France and Belgium (Flanders)) the effects of off-site erosion damage are not explicitly considered when implementing the measures (see table 14). However, often some form of advice or guidance is offered to farmers, particularly with respect to buffer strips and agronomic measures (see table 13). This may increase the effectiveness of the erosion measures. Open replies to the survey further indicate that various forms of advice are available to stakeholders, most commonly, regulatory bodies and advisory services offer some guidelines and advice to farmers. There are also examples of more active forms of communication between stakeholders, such as workshop demonstrations in Austria. It appears that the regions of Belgium have the most advanced advisory system when it comes to erosion, where erosion or water quality coordinators provide advice to farmers.



**Table 6:** Replies to the question: „Are the following measures implemented in your country/region beyond GAEC standards (mandatory or voluntary schemes)?“

	<b>Buffer strips</b>	<b>Agronomic measures</b>	<b>Land-use change</b>	<b>Advice and decision support</b>	<b>Other measures</b>
Austria	Yes	Yes	No	No	No
Belgium (Flanders)	Yes	Yes	Yes	Yes	Yes
Belgium (Wallonia)	Yes	Yes	No	Yes	Yes
Denmark	Yes	Yes	Yes	Yes	No
Finland	Yes	Yes	No	Yes	Yes
France	Yes	Yes	Yes	Yes	Yes
Italy	Yes	No	Yes	Yes	Yes
Latvia	Yes	No	No	Yes	No
Luxembourg	Yes	No	No	Yes	No
Spain	No	No	No	No	No

<b>Legend</b>	Yes	No
---------------	-----	----





**Table 7:** Replies to the question: “How are agronomic measures implemented in your country/region?”

	Reduced tillage and no-till	Contour tillage	Soil and crop management for reducing subsoil compaction	Ridge cropping	Cover crops and soil cover in periods of high-intensity rainfall	Double sowing	Perennial crops or permanent grassland	Field access management (traffic and livestock)	Other
Austria	Voluntary	Voluntary	Unavailable	Voluntary	Unavailable	Unavailable	Voluntary	Unavailable	Unavailable
Belgium (Flanders)	Voluntary	Unavailable	Unavailable	Mandatory	Voluntary	Unavailable	Voluntary	Unavailable	Voluntary
Belgium (Wallonia)	Mandatory	Unavailable	Unavailable	Unavailable	Voluntary	Unavailable	Mandatory	Unavailable	Unavailable
Denmark	Unavailable	Unavailable	Unavailable	Unavailable	Mandatory	Unavailable	Mandatory	Unavailable	Unavailable
Finland	Voluntary	Unavailable	Voluntary	Unavailable	Voluntary	Voluntary	Voluntary	Unavailable	Unavailable
France	Voluntary	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Mandatory	Unavailable	Unavailable
Italy	Voluntary	Voluntary	Voluntary	Voluntary	Mandatory	Voluntary	Voluntary	Voluntary	Voluntary
Latvia	Voluntary	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Voluntary	Unavailable	Voluntary
Luxembourg	Voluntary	Unavailable	Voluntary	Unavailable	Mandatory	Unavailable	Mandatory	Voluntary	Unavailable
Spain	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable

<b>Legend</b>	Mandatory	Voluntary	Unavailable	No data
---------------	-----------	-----------	-------------	---------

**Table 8:** Replies to the question: „How are land-use change measures implemented in your country/region?“

	Afforestation	Sedimentation dams/Buffer basins	Constructed wetlands/Ponds	Temporary ditches
Austria				
Belgium (Flanders)				
Belgium (Wallonia)				
Denmark				
Finland				
France				
Italy				
Latvia				
Luxembourg				
Spain				

Legend	Mandatory	Voluntary	Unavailable	No data

**Table 9:** Replies to the question: “How are the buffer strips implemented in your country/region?“

	Thalweg buffers	Hedges and woodlands	Buffer strips at field margins	In-field buffer strips	In-field soil banks/bunds	Riparian buffers	Sedimentation dams/Buffer basins
Austria							
Belgium (Flanders)							
Belgium (Wallonia)							
Denmark							
Finland							
France							
Italy							
Latvia							
Luxembourg							
Spain							

Legend	Mandatory	Voluntary	Unavailable	No data

**Table 10:** Replies to the question: “Are farmers financially compensated?”

	Buffer strips	Agronomic measures	Land use change	Advise and decision support
Austria				
Belgium (Flanders)				
Belgium (Wallonia)				
Denmark				
Finland				
France				
Italy				
Latvia				
Luxembourg				
Spain				

Legend	Eco-scheme	CAP Pillar 2	Combination	No	Other	No data
--------	------------	--------------	-------------	----	-------	---------

**Table 11:** Replies to the question: “Is the measure developed specifically to prevent erosion?”

	Buffer strips	Agronomic measure	Land use change	Advise and decision support
Austria				
Belgium (Flanders)				
Belgium (Wallonia)				
Denmark				
Finland				
France				
Italy				
Latvia				
Luxembourg				
Spain				

Legend	Yes	No	No data/Unavailable
--------	-----	----	---------------------



**Table 12:** Replies to the question: “Is the measure targeted to an identified erosion risk area?”

	<b>Buffer strips</b>	<b>Land use change</b>	<b>Agronomic measure</b>	<b>Advise and decision support</b>
Austria	Yes	No	No	No
Belgium (Flanders)	Yes	No	Yes	No
Belgium (Wallonia)	No	No	Yes	No
Denmark	No	No	Yes	No
Finland	No	No	No	No
France	No	No	No	No
Italy	No	No	No	No
Latvia	No	No	No	No
Luxembourg	No	No	No	No
Spain	No	No	No	No

<b>Legend</b>	Yes	No	No data/Unavailable
	Yes	No	No data/Unavailable

**Table 13:** Replies to the question: “Are farmers provided with guidance on how to optimally implement the measure?”

	<b>Buffer strips</b>	<b>Land-use change</b>	<b>Advise and decision support</b>	<b>Agronomic measures</b>
Austria	Yes	No	No	Yes
Belgium (Flanders)	Yes	Yes	Yes	Yes
Belgium (Wallonia)	Yes	No	No	Yes
Denmark	No	No	No	No
Finland	Yes	No	Yes	Yes
France	Yes	No	No	No
Italy	No	No	Yes	No
Latvia	Yes	No	Yes	Yes
Luxembourg	Yes	No	Yes	Yes
Spain	No	No	No	No

<b>Legend</b>	Yes	No	No data/Unavailable
	Yes	No	No data/Unavailable



**Table 14:** Replies to the question: “Are effects on off-site erosion damages also considered when implementing the measure?”

	<b>Buffer strips</b>	<b>Agronomic measures</b>	<b>Land-use change</b>	<b>Advise and decision support</b>
Austria				
Belgium (Flanders)				
Belgium (Wallonia)				
Denmark				
Finland				
France				
Italy				
Latvia				
Luxembourg				
Spain				

<b>Legend</b>	Yes	No	No data/Unavailable
---------------	-----	----	---------------------



## 4. Concluding remarks

Overall, our study of the implementation of erosion mitigation measures in Member States found that only few mandatory requirements are in place beyond what is already specified in the GAEC standards. In terms of mitigating erosion these primarily relate to buffer strips (GAEC 4), erosion control (GAEC 5) and minimum soil cover (GAEC 6). GAEC 8, further gives land users an opportunity to mitigate erosion. However, without targeting the application of the measure to areas at risk of erosion, this may not provide an erosion control effect. Interestingly, GAEC standards and voluntary measures are designed quite differently across countries, e.g. implementations diverge in terms of activities permitted and size and scope of the areas that are included by the provisions of the measures. We also observe a diverse approach to targeting the application of measures and regulatory requirements, concerning the measures that are designed specifically to prevent erosion, these are placed using both erosion modelling, terrain modelling and expert knowledge as well as various combinations of these across countries (or not targeted at all).

When considering the voluntary measures beyond the GAEC standards, only few measures are in place that are designed specifically to mitigate erosion risk, and in general measures are not targeted to areas with an identified erosion risk. Further, long-term solutions such as changing or adapting land use is only used in a few countries. Although some of the measures that are funded under voluntary schemes are not specifically designed to mitigate erosion risk, they may have an effect. However, these measures will not be highly effective if they are not targeted to an identified erosion risk area or a specific offsite problem.

This survey adds to other studies indicating that the CAP has had a modest effect on curbing erosion risk. For instance, model predictions indicate that policy interventions (CAP) reduced overall soil loss by only 20% for arable lands during last decade, particularly the GAECs (Panagos, 2015). Voluntary measures in particular are often not effective because of the voluntary nature of the schemes (Hasler et al., 2022). Our study further indicates that special attention should be given to the 4 million ha of arable land which currently have unsustainable soil loss rates of more than  $5 \text{ t ha}^{-1} \text{ yr}^{-1}$ , and to which policy measures should be targeted, which is not the case under the current CAP policy.

While the greening requirements under CAP 2014-2020 were criticized for lacking effect on soil quality, mainly due the low level of requirements and the fact that what was required was by and large in line with normal farming practice (ECA, 2017). Further, as documented by Runge et al. (2022) in a study of the implementation of eco-schemes across 15 member states, CAP 2023-27 largely builds upon components from greening obligations or stem from agri-environmental and climate schemes currently offered under Pillar 2. Whether these will have a substantial effect on mitigating soil threats such as water erosion remains uncertain and will need to be evaluated further.



## References

- Carter M.R. (1994) A review of conservation tillage strategies for humid temperate regions. *Soil and Tillage Research* 31:289-301.
- Carter, N. (2018). *The politics of the environment: Ideas, activism, policy*: Cambridge University Press.
- Cerdà, A., Rodrigo-Comino, J., Giménez-Morera, A., Novara, A., Pulido, M., Kapović-Solomun, M., & Keesstra, S. D. (2018). Policies can help to apply successful strategies to control soil and water losses. The case of chipped pruned branches (CPB) in Mediterranean citrus plantations. *Land Use Policy*, 75, 734-745. doi:<https://doi.org/10.1016/j.landusepol.2017.12.052>
- Corbin, J. M. (1998). *Basics of qualitative research : techniques and procedures for developing grounded theory* (2. ed. ed.). Thousand Oaks, USA: SAGE.
- Creswell, J. W. (2013). *Research design: Qualitative, quantitative, and mixed methods approaches*: Sage publications.
- EC. (2021). *EU Soil Strategy for 2030 : Reaping the benefits of healthy soils for people, food, nature and climate*. Retrieved from Brussels, Belgium: <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52021DC0699&from=EN>
- ECA. (2017). Greening: a more complex income support scheme, not yet environmentally effective. *Special Report - European Court of Auditors*(21). Retrieved from [https://www.eca.europa.eu/en/publications/SR22\\_16](https://www.eca.europa.eu/en/publications/SR22_16)
- Hasler, B., Termansen, M., Nielsen, H. Ø., Daugbjerg, C., Wunder, S., & Latacz-Lohmann, U. (2022). European Agri-environmental Policy: Evolution, Effectiveness, and Challenges. *Review of Environmental Economics and Policy*, 16(1), 105-125. doi:10.1086/718212
- Panagos, P., Ballabio, C., Himics, M., Scarpa, S., Matthews, F., Bogonos, M., . . . Borrelli, P. (2021). Projections of soil loss by water erosion in Europe by 2050. *Environmental Science & Policy*, 124, 380-392. doi:<https://doi.org/10.1016/j.envsci.2021.07.012>
- Panagos, P., Borrelli, P., Poesen, J., Ballabio, C., Lugato, E., Meusburger, K., . . . Alewell, C. (2015). The new assessment of soil loss by water erosion in Europe. *Environmental Science & Policy*, 54, 438-447. doi:<https://doi.org/10.1016/j.envsci.2015.08.012>
- Runge, T., Latacz-Lohmann, U., Schaller, L., Todorova, K., Daugbjerg, C., Termansen, M., . . . Velazquez, F. J. B. (2022). Implementation of Eco-schemes in Fifteen European Union Member States. *EuroChoices*, n/a(n/a). doi:<https://doi.org/10.1111/1746-692X.12352>
- Silverman, D. (2011). *Interpreting qualitative data : a guide to the principles of qualitative research* (4. ed. ed.). London, UK: SAGE.
- Stavi, I., & Lal, R. (2015). Achieving Zero Net Land Degradation: Challenges and opportunities. *Journal of Arid Environments*, 112, 44-51. doi:<https://doi.org/10.1016/j.jaridenv.2014.01.016>
- Thorsøe, M. H. (2021). Deliverable 2.7 : Report on the current availability and use of soil knowledge. Retrieved from [https://ejpsoil.eu/fileadmin/projects/ejpsoil/WP2/Deliverable\\_2.7\\_Report\\_on\\_the\\_current\\_availability\\_and\\_use\\_of\\_soil\\_knowledge.pdf](https://ejpsoil.eu/fileadmin/projects/ejpsoil/WP2/Deliverable_2.7_Report_on_the_current_availability_and_use_of_soil_knowledge.pdf)



## Appendix 1: Survey distributed to European contacts within ministries

### Survey on runoff and erosion mitigation measures

On behalf of the SCALE research project, you are kindly invited to participate in this European wide survey regarding the national implementation of runoff and erosion mitigation measures. The aim of the survey is to build a Europe wide inventory of measures taken to mitigate erosion, serving as inspiration and exchange of experiences. Therefore, your assistance in providing information on these measures is greatly appreciated and by participating we offer you a full copy of the resulting inventory.

The survey can be completed in 10-15 minutes and it is sent to relevant/competent authorities in all EU Member States that regulate the implementation of corresponding measures to mitigate runoff induced erosion. The survey explores the content of national and regional erosion mitigation measures implemented as part of the CAP Strategic Plan 2023-27 as well as Statutory Management Requirements and other national regulation. We know that the CAP Strategic Plan may not be finally approved at this stage in some countries, in that case, please indicate the measures and instruments that are currently expected. The survey falls into two main parts: 1) Provisions implemented for selected GAEC standards; 2) Other mandatory and voluntary measures under EU or national regulation.

The SCALE research project addresses the problem of water erosion on agricultural land, the consequent sediment redistribution in landscapes and the ecologic and economic consequences in a European context. SCALE conducts this survey to systematically collect information on mitigation measures implemented for reducing damages caused by water erosion.

Please note, we guarantee your anonymity. The answers to these questions are treated with confidentiality according to EU's General Data Protection Regulation (GDPR). Further, results will only be communicated in ways that completely anonymize respondents, thus, your identity will not be disclosed in any form.

For more information on the Scale research project, please see: <https://ejpsoil.eu/soil-research/scale>

### 1. Background information

Which country/region do you complete a description for?

\_\_\_\_\_

Which institution do you represent?

\_\_\_\_\_

### 2. Measures implemented under the CAP - Standards of Good Agricultural and Environmental Conditions (GAEC)

In the following 4 sections we inquire specifically about GAEC 4, GAEC 5, GAEC 6 and GAEC 8 focusing on the domestic implementation.





Which authority is responsible for the domestic implementation of GAEC measures in national regulations?

\_\_\_\_\_

Which authority is responsible for the control of GAEC implementation at farm level?

\_\_\_\_\_

#### **GAEC 4 – Buffer strips**

What is the definition of watercourses where buffer strips are required?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

What is the required width of buffer strips (to fulfill requirements in GAEC 4)?

\_\_\_\_\_

What is the expected length of watercourses for which buffer strips are established in your country/region?

\_\_\_\_\_

What is the expected total areal coverage of this measure in your country/region from 2023?

\_\_\_\_\_

Is there a requirement for vegetation cover within the buffer strip?

- (1)  Yes
- (2)  No
- (3)  Uncertain

Which management options are permitted within the buffer strips?

- (2)  Mowing
- (3)  Grazing
- (4)  Animal access to watercourses/watering place
- (5)  Others, please specify

Additional information on implementation of GAEC 4

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

#### **GAEC 5 – Tillage management**

Is there a regional differentiation?



- (3)  Uncertain
- (2)  Yes
- (1)  No

If so, how are GAEC 5 measures spatially designated?

- (2)  Local expert knowledge
- (3)  Standardized indicator
- (4)  Other, please specify \_\_\_\_\_

If relevant, which model tools or indicators are used for targeted designation of the area?

- (5)  Not relevant
- (2)  Main input data \_\_\_\_\_
- (3)  Spatial resolution \_\_\_\_\_
- (4)  Type of output, please specify \_\_\_\_\_

What is the expected total areal coverage of this measure in your country/region from 2023?

\_\_\_\_\_

What is the permitted soil and crop management in the designated areas?

- (4)  Uncertain
- (1)  Tillage practice, please specify \_\_\_\_\_
- (2)  Eligible crops, please specify \_\_\_\_\_
- (3)  Other, please specify \_\_\_\_\_

Additional information on implementation of GAEC 5

---

---

---

---

---

---

#### **GAEC 6 – Minimum soil cover**

What is the expected total areal coverage of this provision in your country/region from 2023?

\_\_\_\_\_

When is soil cover mandatory? Please specify region and period

---

---

---

---

---

---

Which percentage of the farmland acreage should be covered during the sensitive periods?

---

---

---

---



---

---

Which types of land uses can fulfil the requirement for minimum soil cover?

---

---

---

---

---

---

Any exceptions to this standard?

---

---

---

---

---

---

Additional information on implementation of GAEC 6?

---

---

---

---

---

---

**GAEC 8 – Non-productive areas**

Please list non-productive elements that are eligible for land-users to fulfil GAEC 8 in your country/region?

---

---

---

---

---

---

Are provisions made for utilizing this measure to control runoff and sediment transport?

- (1)  I don't know
- (2)  No
- (4)  Yes, please specify how \_\_\_\_\_

Additional information on the implementation of GAEC 8

---

---

---

---

---

---



### 3. Other measures

In the following we inquire about mandatory or voluntary mitigation measures that are implemented besides GAEC standards under other EU or national schemes (for instance the Water Framework Directive).

Below please indicate for both the listed and potentially additional mitigation measures, if they are implemented on a mandatory and/or voluntary basis in your country/region.

Are the following measures implemented in your country/region beyond GAEC standards (mandatory or voluntary schemes)?

	Yes	No
Buffer strips	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>
Agronomic measures (for instance relating to tillage and crops)	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>
Land-use change	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>
Advice and decision support	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>
Other measures in place to prevent erosion or off-site damages	(2) <input type="checkbox"/>	(3) <input type="checkbox"/>

If other measures are indicated, please specify below

---



---



---



---



---



---

With respect to erosion, what are the most important changes in the upcoming CAP strategic plan (2023-27) compared with previous initiatives in your country?

---



---



---



---



---



---

With respect to erosion, are other national/regional initiatives initiated to prevent the risk of erosion?



---



---



---



---



---



---

**Additional information on buffer strips in your country/region**

You indicated that buffer strips are available in your country/region. This section presents a range of follow up questions detailing the content of the measures that are used in your country/region.

How are the buffer strips implemented in your country/region?

	Mandatory	Voluntary	Unavailable	Uncertain
Thalweg buffers	(11) <input type="radio"/>	(10) <input type="radio"/>	(12) <input type="radio"/>	(13) <input type="radio"/>
Hedges and woodlands	(11) <input type="radio"/>	(10) <input type="radio"/>	(12) <input type="radio"/>	(13) <input type="radio"/>
Buffer strips at field margins	(11) <input type="radio"/>	(10) <input type="radio"/>	(12) <input type="radio"/>	(13) <input type="radio"/>
In-field buffer strips	(11) <input type="radio"/>	(10) <input type="radio"/>	(12) <input type="radio"/>	(13) <input type="radio"/>
In-field soil banks/bunds	(11) <input type="radio"/>	(10) <input type="radio"/>	(12) <input type="radio"/>	(13) <input type="radio"/>
Riparian buffers	(11) <input type="radio"/>	(10) <input type="radio"/>	(12) <input type="radio"/>	(13) <input type="radio"/>

If other measures are indicated, please specify below

---



---



---



---



---



---

Briefly describe the content of the scheme/regulation

---



---



---



---



---



---



Is the measure developed specifically to prevent erosion? If no, which threat is the measure developed to address?

- (3)  Uncertain
- (1)  Yes
- (2)  No \_\_\_\_\_

Are effects on off-site erosion damages also considered when implementing the measure?

- (3)  Uncertain
- (1)  No
- (2)  Yes, how \_\_\_\_\_

Is the measure targeted to an identified erosion risk area?

- (3)  Uncertain
- (1)  No
- (2)  Yes

How is the area in which the measure is applied spatially designated?

- (2)  Local expert knowledge
- (3)  Standardized indicator
- (5)  Modelling
- (4)  Other \_\_\_\_\_

What is the expected total areal coverage of this measure in your country/region expected from 2023?

\_\_\_\_\_

Are farmers financially compensated for establishing buffer strips?

- (1)  Yes, under an Eco-scheme
- (2)  Yes, under CAP Pillar 2 (European Agricultural Fund for Rural Development)
- (3)  Yes, by other publicly funded schemes
- (4)  Yes, by other privately funded schemes
- (5)  No
- (6)  Uncertain

Are farmers provided with guidance on how to optimally implement the measure?

- (2)  Uncertain
- (1)  No
- (3)  Yes, please indicate how \_\_\_\_\_

### **Additional information on agronomic measures in your country/region**

You indicated that agronomic measures are available in your country/region. This section presents a range of follow up questions detailing the content of the measures that are used in your country/region.

How are agronomic measures implemented in your country/region?

Mandatory      Voluntary      Unavailable      Uncertain



Reduced tillage and no-till	(11) <input type="radio"/>	(10) <input type="radio"/>	(12) <input type="radio"/>	(13) <input type="radio"/>
Contour tillage	(11) <input type="radio"/>	(10) <input type="radio"/>	(12) <input type="radio"/>	(13) <input type="radio"/>
Soil and crop management for reducing subsoil compaction	(11) <input type="radio"/>	(10) <input type="radio"/>	(12) <input type="radio"/>	(13) <input type="radio"/>
Ridge cropping	(11) <input type="radio"/>	(10) <input type="radio"/>	(12) <input type="radio"/>	(13) <input type="radio"/>
Cover crops and soil cover in periods of high-intensity rainfall	(11) <input type="radio"/>	(10) <input type="radio"/>	(12) <input type="radio"/>	(13) <input type="radio"/>
Double sowing	(11) <input type="radio"/>	(10) <input type="radio"/>	(12) <input type="radio"/>	(13) <input type="radio"/>
Perennial crops or permanent grassland	(11) <input type="radio"/>	(10) <input type="radio"/>	(12) <input type="radio"/>	(13) <input type="radio"/>
Field access management (traffic and livestock)	(11) <input type="radio"/>	(10) <input type="radio"/>	(12) <input type="radio"/>	(13) <input type="radio"/>
Other agronomic measure	(11) <input type="radio"/>	(10) <input type="radio"/>	(12) <input type="radio"/>	(13) <input type="radio"/>

If other measures are indicated, please specify below

---



---



---



---



---



---

Briefly describe the content of the scheme/regulation

---



---



---



---



---



---

Is the agronomic measure developed specifically to prevent erosion? If no, which threat is the measure developed to address?

(3)  Uncertain

(1)  Yes



(2)  No \_\_\_\_\_

Are effects on off-site erosion damages also considered when implementing the agronomic measure?

(3)  Uncertain

(1)  No

(2)  Yes, how \_\_\_\_\_

Is the agronomic measure targeted to an identified erosion risk area?

(3)  Uncertain

(1)  No

(2)  Yes

How is the area in which the measure is applied spatially designated?

(2)  Local expert knowledge

(3)  Standardized indicator

(5)  Modelling

(4)  Other \_\_\_\_\_

What is the expected total areal coverage of this measure in your country/region expected from 2023?

\_\_\_\_\_

Are farmers financially compensated for establishing agronomic measures?

(1)  Yes, under an Eco-scheme

(2)  Yes, under CAP Pillar 2 (European Agricultural Fund for Rural Development)

(3)  Yes, by other publicly funded schemes

(4)  Yes, by other privately funded schemes

(5)  No

(6)  Uncertain

Are farmers provided with guidance on how to optimally implement the measure?

(2)  Uncertain

(1)  No

(3)  Yes, please indicate how \_\_\_\_\_

### Additional information on land-use change measures in your country/region

You indicated that measures supporting land use change are available in your country/region. This section presents a range of follow up questions detailing the content of the measures that are used in your country/region.

How are land-use change measures implemented in your country/region?

	Mandatory	Voluntary	Unavailable	Uncertain
Afforestation	(11) <input type="radio"/>	(10) <input type="radio"/>	(12) <input type="radio"/>	(13) <input type="radio"/>





Sedimentation dams/Buffer basins	(11) <input type="radio"/>	(10) <input type="radio"/>	(12) <input type="radio"/>	(13) <input type="radio"/>
Constructed wetlands/Ponds	(11) <input type="radio"/>	(10) <input type="radio"/>	(12) <input type="radio"/>	(13) <input type="radio"/>
Temporary ditches	(11) <input type="radio"/>	(10) <input type="radio"/>	(12) <input type="radio"/>	(13) <input type="radio"/>
Other land-use change measures	(11) <input type="radio"/>	(10) <input type="radio"/>	(12) <input type="radio"/>	(13) <input type="radio"/>

If other measures are indicated, please specify below

---



---



---



---



---



---

Briefly describe the content of the scheme/regulation

---



---



---



---



---



---

Is the land use developed specifically to prevent erosion? If no, which threat is the measure developed to address?

- (3)  Uncertain  
 (1)  Yes  
 (2)  No \_\_\_\_\_

Are effects on off-site erosion damages also considered when implementing the measure?

- (3)  Uncertain  
 (1)  No  
 (2)  Yes, how \_\_\_\_\_

Is the land use change targeted to an identified erosion risk area?

- (3)  Uncertain  
 (1)  No  
 (2)  Yes

How is the area in which the measure is applied spatially designated?

- (2)  Local expert knowledge  
 (3)  Standardized indicator  
 (5)  Modelling  
 (4)  Other \_\_\_\_\_



What is the expected total areal coverage of this measure in your country/region expected from 2023?

\_\_\_\_\_

Are farmers financially compensated for land use change measures?

- (1)  Yes, under an Eco-scheme
- (2)  Yes, under CAP Pillar 2 (European Agricultural Fund for Rural Development)
- (3)  Yes, by other publicly funded schemes
- (4)  Yes, by other privately funded schemes
- (5)  No
- (6)  Uncertain

Are farmers provided with guidance on how to optimally implement the measure?

- (2)  Uncertain
- (1)  No
- (3)  Yes, please indicate how \_\_\_\_\_

**Additional information on advice and decision-support in your country/region**

You indicated that information and advice is available to land-users in your country/region. This section presents a range of follow up questions detailing the content of the measures that are used in your country/region.

Are the following measures implemented in your country/region?

	Mandatory	Voluntary	Uncertain
Information (Advice and decision support)	(11) <input type="radio"/>	(10) <input type="radio"/>	(13) <input type="radio"/>

Briefly describe the content of the scheme/regulation

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Is the advice and decision support developed specifically to prevent erosion? If no, which threat is the measure developed to address?

- (3)  Uncertain
- (1)  Yes
- (2)  No \_\_\_\_\_

Are effects on off-site erosion damages also considered when implementing the measure?

- (3)  Uncertain
- (1)  No
- (2)  Yes, how \_\_\_\_\_



Is the advise and decision support targeted to an identified erosion risk area?

- (3)  Uncertain
- (1)  No
- (2)  Yes

How is the area in which the measure is applied spatially designated?

- (2)  Local expert knowledge
- (3)  Standardized indicator
- (5)  Modelling
- (4)  Other \_\_\_\_\_

What is the expected total areal coverage of this measure in your country/region expected from 2023?

\_\_\_\_\_

Are farmers financially compensated for advise and decision support?

- (1)  Yes, under an Eco-scheme
- (2)  Yes, under CAP Pillar 2 (European Agricultural Fund for Rural Development)
- (3)  Yes, by other publicly funded schemes
- (4)  Yes, by other privately funded schemes
- (5)  No
- (6)  Uncertain

Are farmers provided with guidance on how to optimally implement the measure?

- (2)  Uncertain
- (1)  No
- (3)  Yes, please indicate how \_\_\_\_\_

Thank you very much for the information you have provided, it is very helpful! When you click "next" the window will close, which means that we have received your reply.

When the task is complete we will provide you with a copy of the inventory and our report if you indicate your email in the box below.

Provide your email address here if you would like our final report:

\_\_\_\_\_

